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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.

WHAT IS MINED IS NO LONGER OURS: MINING LAWS IN SUPERIOR NATIONAL FOREST

Sarah Mooradian*

Created in 1909, Superior National Forest spans more than three million acres of wilderness in northeastern Minnesota. Within the Forest's borders lie countless waterways, lakes, and cultural sites, as well as three endangered species and many unique ecosystems. Yet, recent mineral extraction proposals located within the Forest have called into question the legality of mining operations on these protected lands. Federal mining laws typically provide primary guidance on such issues. But these generally applicable federal laws have little influence on most of the lands within the Forest. Ownership of the land within the Forest is split amongst the federal government, the State of Minnesota, and private individuals. Federal mining laws also created exceptions for Superior National Forest, making federally owned lands within it outside of the purview of such laws. As the State faces new issues of mineral ownership, leasing, and extraction, the differences in applicable law are essential to recognize and comprehend. Without an understanding of the mining laws at play in Superior National Forest, no legal claims by mining companies, individuals, the State, the federal government, or concerned parties will be successful.

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I. INTRODUCTION

Endless waterways stretch out to the horizon line, bordered by wetland grasses, tall jack pines, and black spruces. The water itself is anything but still—the buzz of insects above, punctuated by the haunting calls of loons and the sudden splash of a walleye's tail. A canoe carves through the water quietly, the gentle dip of each paddle propelling the craft forward. This place is wilderness; a swath of more than three million acres supporting a vibrant freshwater ecosystem in the northeast corner of Minnesota.

Superior National Forest (the Forest) is a point of pride for many Minnesotans, a place where one can leave behind the worries of a busy life and enter a pristine patchwork of rivers, streams, lakes, and forests. The Forest was created by the federal government for the purpose of public enjoyment in 1909,[1] but the land within its borders remains a complicated mix of federal, state, and private land. The complexity of ownership and rights to access and use only increases when applying federal and state mining laws to each type of land.

A suite of federal mining laws applies to a majority of federally owned and managed lands throughout the United States. Yet Minnesota is unique. These generally applicable federal mining laws have little influence on a majority of land within the Forest. There is even less federal control over the Boundary Waters Canoe Area Wilderness (BWCAW) and private inholdings.[2] As the State faces new issues of mineral ownership, leasing, and extraction, the differences in applicable law are essential to recognize and understand. Without an understanding of the mining laws at play in Superior National Forest, no claims by mining companies, individuals, the State, the federal government, or concerned parties will be successful.

Part II of this note will provide a background on the history of mining within the U.S. and Minnesota and include a discussion of land ownership by each entity. Part III of this Note contains the legal analysis of three key elements of federal mining laws—the General Mining Law of 1872, the Mineral Leasing Act of 1920, and the agencies administering these federal laws. Part III will then discuss the applicability of these federal laws to different types of land within the Forest. Part III will also consider the application of state mining laws to state lands found within Superior National Forest. Finally, Part III will conclude by addressing a recent development in mining law in Minnesota—the lease renewal at issue in *Friends of the Boundary Waters v. BLM*.

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1. *History of the BWCAW*, U.S. FOREST SERV., https://www.fs.usda.gov/detail/superior/specialplaces/?cid=stelprdb5127455 (last visited Oct. 21, 2019).

2. *Id.* (describing the BWCAW as a subset of land within Superior National Forest, which is regulated under a different set of statutes).

II. BACKGROUND

A. History of Mining in the United States

Mining has an extensive history in the United States, developing before the country's independence.[3] As early as 1803, the federal government recognized the economic advantages of minerals when Thomas Jefferson sent Lewis and Clark out on their famous expedition west.[4] When gold was first discovered in the California countryside, the value of minerals became even more apparent.[5] Lying beneath millions of acres of land were untold riches in the form of precious metals, minerals, and fuel.[6] Oil and gas have become key energy minerals at the focus of the national drive to mine.[7] Essential to the discussion of mining in the U.S. is the dissemination of property rights between the federal government, the state governments, and private actors.

1. Land Ownership

The federal government obtained all real property in the U.S. through purchase, treaties, cessions, or the forcible removal of Native American populations.[8] The lands obtained by the federal government can be broadly classified into three categories: public domain lands, acquired lands, and reserved or withdrawn lands.[9] Public domain lands are lands owned by the federal government and managed primarily by the Bureau of Land Management (BLM), under the Department of the Interior (DOI).[10] Public domain lands are generally subject to all public land laws—including mining laws—of the U.S.[11] Acquired lands are those lands obtained by the federal government through purchase, condemnation, or gift.[12] In general, the public lands laws do not apply to acquired lands.[13]

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3. *See* GEORGE C. COGGINS ET AL., FEDERAL PUBLIC LAND AND RESOURCES LAW 473 (7th ed. 2014) (describing history of mining in the U.S.).
4. *Id.*
5. *Id.*
6. *Id.*
7. Press Release, Bureau of Econ. Analysis, Gross Domestic Product by Industry: Second Quarter 2018 (Nov. 1, 2018).
8. COGGINS ET AL., *supra* note 3, at 46–47.
9. 1 ROCKY MOUNTAIN MINERAL LAW FOUND., AMERICAN LAW OF MINING § 3.02[1] (2nd ed. 1991).
10. TERRY S. MALEY, HANDBOOK OF MINERAL LAW 37 (2nd ed., rev. 1979).
11. 1 ROCKY MOUNTAIN MINERAL LAW FOUND., *supra* note 9, at § 3.02[3].
12. *Id.* § 3.02[5].
13. *Id.*

Reserved and withdrawn lands are similar to acquired lands in that their status often places them outside the purview of the federal public land laws.[14] Reserved lands are those lands set aside by the federal government for specific purposes, such as a wildlife refuge or recreation area.[15] These lands are typically not subject to disposition under the public land laws.[16] Withdrawn lands are lands that have been removed from "settlement, sale, location, or entry" under the typical federal laws that would apply, such as the General Mining Law or the Timber and Stone Act.[17] Thus, depending on the means of attainment by the federal government, different public lands will be subject to different laws of management and disposition.

Additional consideration must be given to state- and privately-owned lands. Though the federal government originally held title to these lands in the states outside of the original thirteen colonies, it granted states and individuals parcels of land through the administration of laws enacted to encourage development and settlement of the West.[18] Acts impacting ownership included the Homestead Act of 1862, the Taylor Grazing Act of 1934, and individual railroad grants.[19] Under these acts, the federal government generally only granted lands not believed to hold minerals (lands nonmineral in character) to states and individuals.[20] Yet, at the time, knowing with complete certainty whether valuable minerals lay underneath the disposed land was impossible.[21] To combat this uncertainty, the government chose in some instances to reserve any mineral rights discovered in the future.[22] In other cases, the government allowed the grantee to keep any potential minerals.[23] When the government chose the former course of action, it created the severance of lands—the split ownership of mineral and surface rights—or the "split estate."[24] One entity, usually the federal government, held the rights to the mineral interest in the land, while another—a private party or the state—held the rights to the rest of the land, or the surface estate.[25]

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14. *Id.* § 3.02[6].
15. *Id.*
16. *Id.*
17. *Id.* § 3.02[6] n. 20; *Withdrawals*, BUREAU OF LAND MGMT., https://www.blm.gov/programs/lands-and-realty/land-tenure/withdrawals (last visited Sept. 28, 2019).
18. MINN. DEP'T OF NAT. RES., PUBLIC LAND AND MINERAL OWNERSHIP IN MINNESOTA: A GUIDE FOR TEACHERS 10 (rev. 2016).
19. *Id.* at 11–12; TERRY S. MALEY, MINERAL LAW 148, 182, 204–05 (6th ed. 1996).
20. MALEY, *supra* note 10, at 63.
21. *See generally id.* (describing the means of determining whether lands were mineral or nonmineral in character).
22. *Id.* at 62.
23. *Id.* at 63.
24. *Id.* at 62.
25. *Id.*

The federal government's acquisition and subsequent disposal to multiple different entities was an amalgamation of varying property rights and mineral access.[26] Some lands are owned outright by the federal government with no split estate and, therefore, no underlying interest in the mineral deposits exists underneath the surface lands.[27] The federal government retains surface ownership of other lands while knowingly granting or leasing the mineral rights to a non-federal entity.[28] Alternatively, a non-federal entity may own the surface rights to a parcel of land, but not the underlying mineral rights, if the federal government has reserved those rights for itself.[29] Finally, in some instances, a non-federal entity may have a claim over both the surface and mineral rights on the parcel of land.[30]

2. Mining in the United States

Mining has been recognized as a lucrative means of land use since before the establishment of the U.S. as an independent nation.[31] The charters of the American colonies authorized grants of mineral lands to those who discovered them, though these rights were subject to perpetual reservation by the Crown for future use.[32] After obtaining independence, the U.S. continued the tradition of reserving a portion of mineral rights on public lands for the federal government and enacted the Land Ordinance of 1785.[33] In 1803, Thomas Jefferson explicitly instructed Lewis and Clark to note "mineral productions of every kind; but more particularly metals, limestone, pit coal & saltpetre," on their expedition westward.[34] The California Gold Rush in 1849 further solidified the importance of mineral access as an ownership right in the U.S.[35] Most recently, coal, oil, and gas—all classified as extractable minerals—have grown increasingly important as sources of energy within the U.S.[36]

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26. *Id.* at 37–44.
27. *Id.* at 62.
28. *Id.*
29. *Id.*
30. *Id.*
31. JOHN D. LESHY, THE MINING LAW: A STUDY IN PERPETUAL MOTION 9 (1987).
32. *Id.*
33. *Id.*; Robert W. Swenson, *Legal Aspects of Mineral Resources Exploitation*, *in* HISTORY OF PUBLIC LAND LAW DEVELOPMENT 701–02 (Joseph Cellini ed., 1979) (noting the Land Ordinance of 1785 expired after the Continental Congress dissolved).
34. Letter from Thomas Jefferson, President, U.S., to Meriwether Lewis, Captain, U.S. 1st Infantry (June 20, 1803).
35. COGGINS ET AL., *supra* note 3, at 473.
36. *See* Press Release, Bureau of Econ. Analysis, *supra* note 7 (finding that mining activities have contributed between 300 and 400 billion dollars to the annual U.S. economy in the past ten years alone).

The patchwork quality of a majority of the lands within the U.S. has created a complicated framework for the management and regulation of mining. Depending on the property rights and limitations of a given parcel of land, an individual may have one of three types of rights: (1) the right to mine with little interference from the state or federal government; (2) mineral leasing rights; or (3) no recognized right to mine at all. To understand how federal and state mining laws impact mining claims in Superior National Forest, it is essential to first examine the history of land ownership within the Forest's boundaries.

B. History of Superior National Forest

1. Land Ownership

The land that is now Superior National Forest was first "owned" by Native American tribes (including the Ojibwe), England, and France.[37] The U.S. federal government obtained the land within the state of Minnesota through the Treaty of Paris, the Louisiana Purchase, and individual "agreements" with tribal nations.[38] Federal public lands in Minnesota therefore fit under both the classification of public domain lands and acquired lands.

After Congress granted Minnesota statehood, it agreed to give the State three million acres of land.[39] Of those lands granted by the federal government, parcels 16 and 36 in each township were reserved for use to support the public school system.[40] An additional 72 parcels were reserved for the use and support of public universities.[41] A portion of lands were also given to individuals via the Homestead Act, to railroad companies via railroad grants, and reserved for tribal nations via individual agreements.[42] Generally, the system of disposal of lands in Minnesota followed federal policy nationally.[43] That is, if the land granted by the federal government was believed to be nonmineral in character, the land was disposed of to the state

37. MINN. DEP'T OF NAT. RES., *supra* note 18, at 5–6; *The Ojibwe People*, MINN. HISTORICAL SOC'Y, https://www.mnhs.org/fortsnelling/learn/native-americans/ojibwe-people (last visited Dec. 28, 2019).

38. MINN. DEP'T OF NAT. RES., *supra* note 18, at 5–7.

39. Act of Feb. 26, 1857, ch. 60, 11 Stat. 166 (1857) (authorizing the People of the Territory of Minnesota statehood).

40. MINN. DEP'T OF NAT. RES., *supra* note 18, at 13.

41. *Id.* (noting that an additional 94,439 acres was granted to establish agricultural and mechanic arts colleges by the Morrill Act of 1862).

42. *Id.* at 10–13.

43. MALEY, *supra* note 10, at 63.

or individuals.[44] Depending on the language of the grant or sale, any future minerals discovered may have been included in the grant or may have been reserved for ownership by the federal government.[45] The result was a patchwork of ownership with varying claims to mineral deposits in the State.[46]

Starting in the early 1900s, after much of the land within the State had been acquired and disposed, one enterprising Minnesotan, General Christopher C. Andrews, promoted the conservation of substantial tracts of land in Northeastern Minnesota.[47] He succeeded in convincing the federal government to withdraw nearly 500,000 acres of land from further settlement and development.[48] Two more withdrawals followed in 1905 and 1908 before President Roosevelt finally announced the establishment of Superior National Forest in 1909.[49] Between 1909 and 1950, the federal government continued to purchase and acquire land and expand the borders of Superior National Forest.[50] The final boundaries of the National Forest included nearly three million acres of wilderness, managed by the federal government for multiple uses.[51] Much of Superior National Forest can therefore be classified as withdrawn public land. Yet some lands within the borders of Superior National Forest remain in private ownership, state ownership, or have been dedicated to the public-school system for use.[52]

2. Mining in Minnesota

Minnesota is no stranger to the mining industry. Mining has occurred in northern Minnesota since the discovery there of iron ore by George Stuntz in 1865.[53] Throughout the 19th and 20th centuries, iron ore was the dominant

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44. *Id.* at 62–63.
45. *Id.*
46. MINN. DEP'T OF NAT. RES., *supra* note 18, at 10.
47. *History of the BWCAW*, *supra* note 1.
48. *Id.*
49. *Id.*
50. *Id.*
51. *About the Forest*, U.S. FOREST SERV., https://www.fs.usda.gov/main/superior/about-forest (last visited Nov. 7, 2019).
52. *See* U.S. FOREST SERV., SUPERIOR NATIONAL FOREST MANAGEMENT AREAS (June 2004) (showing the general outline of areas within the forest owned and managed by the federal government in color and those owned by private individuals or companies in white); *School Trust Lands- Maps*, MINN. DEP'T OF NAT. RES., https://www.dnr.state.mn.us/aboutdnr/school_lands/map.html (last visited Nov. 27, 2019) (directing to maps showing school trust lands).
53. *A Timeline of Minnesota's Iron Range* (May 2006), http://news.minnesota.publicradio.org/features/2006/05/rangetimeline/index.shtml.

mineral sought in Minnesotan mining operations.[54] The mining operations followed a "boom and bust" cycle during this time before facing a dramatic decline in the early 1980s.[55] Despite this, Minnesota remains the largest producer of iron ore and taconite (a low-grade iron ore[56]) in the U.S.[57] In addition to iron ore, Minnesota has mining operations for silica sand, granite, limestone, kaolin clay, peat, and crushed stone.[58] The Minnesota Department of Natural Resources also lists potential mineral sources for copper/nickel, manganese, sulfur, and titanium, though no mining operations for these minerals have begun.[59]

III. LEGAL ANALYSIS

Given the history of ownership and its effect on applicable public land laws, the regulatory scheme of mining on public lands can be difficult to piece together. The confusion is especially apparent within Superior National Forest, where federal lands fall into each of the three categories of ownership (public land, acquired land, and reserved or withdrawn land), and state and private interests are interspersed throughout those federal lands. Three of the major federal mining laws applicable to public lands are discussed below. A discussion of the exceptions to and nuances of these laws as applied to Minnesota follows.

A. Federal Mining Laws

A number of federal laws cover the mining activities on U.S. lands. These include, but are not limited to, regulations of extraction techniques, working environments and workplace safety, taxation, and environmental impacts.[60] Two federal laws, the General Mining Act of 1872 and the Mineral Leasing Act of 1920, as well as the role of administrative agencies, will be the focus of this Note for their general applicability to a majority of federal public lands where mining may take place.

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54. *Id.*; *see generally* THOMAS MICHAEL POWER, THE ECONOMIC ROLE OF METAL MINING IN MINNESOTA: PAST, PRESENT, AND FUTURE 3 (2007) (describing the historical economic impact of iron ore mining in Minnesota).

55. *A Timeline of Minnesota's Iron Range*, *supra* note 53.

56. *Taconite*, MINN. DEP'T OF NAT. RES., https://www.dnr.state.mn.us/education/geology/digging/taconite.html (last visited Nov. 8, 2019).

57. *Mining in Minnesota*, MINN. DEP'T OF NAT. RES., https://www.dnr.state.mn.us/education/geology/digging/mining.html (last visited Nov. 7, 2019).

58. *Id.*

59. MINN. DEP'T OF NAT. RES., MINERAL INDUSTRIES OF MINNESOTA (1998), https://images.dnr.state.mn.us/education_safety/education/geology/digging/minmap.gif.

60. NAT'L RES. COUNCIL, HARDROCK MINING ON FEDERAL LANDS 45, 47, 53 (1999).

1. General Mining Act of 1872

Prior to the passage of the General Mining Act, the federal government generally regulated mining on a case-by-case basis and by resort to custom.[61] The general rule was to dispose of public land for revenue, settlement, or conservation.[62] After a number of failed attempts at regulating mineral claims and the Gold Rush of the 1840s and 50s, the federal government introduced a policy of free mining in 1866.[63] While the 1866 Mining Law created an initial framework for mining claims, the federal government chose to enact a complete version in the General Mining Act of 1872.[64] The essential language of the Act establishes the policy that:

> [A]ll valuable mineral deposits in lands belonging to the United States, both surveyed and unsurveyed, are hereby declared to be free and open to exploration and purchase, and the lands in which they are found to occupation and purchase, by citizens of the United States and those who have declared their intention to become such. . . .[65]

Since 1872, the General Mining Act has provided any U.S. citizen the broad authority to discover and then obtain a claim to any valuable mineral deposits on the public lands of the U.S.[66] It is important to note that the claim allowed under the General Mining Act is not necessarily for the land itself, but for the minerals located within the parcel. Though individuals can obtain title to the land on which the minerals were located (patent their claim), it is not required to hold a valid mineral claim in the U.S.[67] Those with unpatented claims would still have *pedis possessio* rights to the surface lands against adverse claimants or the general public.[68]

Further sections of the Act stipulate the means by which an individual can and should go about obtaining a claim to a valuable mineral deposit. Generally, the Act requires the completion of a three-step process to obtain a valid claim.[69] First, the individual must discover the mineral deposit on

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61. MALEY, *supra* note 10, at 2, 203–04.
62. Swenson, *supra* note 33, at 707.
63. *Id.*
64. 1 ROCKY MOUNTAIN MINERAL LAW FOUND., *supra* note 9, § 4.11[1].
65. General Mining Act, 30 U.S.C. § 22 (2018).
66. *Id.*
67. COGGINS ET AL., *supra* note 3, at 510–11.
68. MALEY, *supra* note 10, at 203–04.
69. COGGINS ET AL., *supra* note 3, at 486–87.

recognized federal public property.[70] Second, the mineral deposit must be "located" by the individual posting notice at or near the site to successfully exclude claims by others. Finally, the claimant must develop the deposit so that they can adequately assess the "character and extent" of the deposit.[71] An individual may successfully obtain a claim to the mineral deposit only when all three requirements are met.[72] Again, a claim under the General Mining Act only applies to the mineral deposit itself, not the surrounding land. Thus, a successful claimant owns only the rights to mineral extraction, while the federal government retains the title to the surrounding land.[73] However, an individual could obtain further ownership rights by patenting their claim and completing an application with the federal government.[74] In doing so, the individual received fee simple title over the lands.[75]

While the General Mining Act is specific in its description of the means for acquisition, it fails to define the term "all valuable mineral deposits."[76] In the years since its enactment, the courts and Congress have interpreted and amended the law to bridge this gap. In general, a material is a mineral if it is (1) "recognized by the standard authorities as a mineral" and (2) has commercial value.[77] Minerals considered locatable under the General Mining Act include both metalliferous minerals[78] and nonmetalliferous minerals such as marble, mica, kaolin, and umber.[79] Other mineral deposits, such as sand, gravel, peat, oil, and salt were excluded from the language of the General Mining Act via specific statutes and therefore cannot be acquired under the Act.[80]

Despite the broad language used in the Act, the law applies to a narrow set of circumstances. First, the mineral deposit must be only of the kinds described above.[81] Second, the deposit must be located on federal lands open to development—that is, not acquired public lands or lands withdrawn by the

70. *Id.*
71. *Id.*
72. *Id.*
73. *See id.* at 511 (discussing unpatented versus patented claims).
74. *See id.* at 510-11 (discussing patented claims).
75. *Id.* at 510.
76. General Mining Act, 30 U.S.C. § 22 (2018); 1 ROCKY MOUNTAIN MINERAL LAW FOUND., *supra* note 9, § 4.11[2].
77. 1 ROCKY MOUNTAIN MINERAL LAW FOUND., *supra* note 9, § 8.01[2].
78. *Id.* § 8.01[3] n.20 ("[A] metalliferous mineral is one which is valuable for the production of the metal which is extracted from the material.").
79. *Id.*§ 8.01[3].
80. *E.g.*, *compare* An Act to provide for the Disposal of Materials on the Public Lands of the United States, Pub. L. No. 291, 61 Stat. 681 (1947) *with* Surface Resources Act, Pub. L. No. 167, 69 Stat. 367 (1955) (amending earlier act to remove "common varieties" of sand, stone, gravel, pumice, pumicite, cinders, and clay from location).
81. 1 ROCKY MOUNTAIN MINERAL LAW FOUND., *supra* note 9, § 8.01[4][a][i].

government from mining uses.[82] Third, the claimants must successfully stake their claim to the exclusion of others.[83] Claims under the Act are also limited in that they apply only to the minerals themselves, not necessarily the surrounding lands.[84]

2. Mineral Lands Leasing Act of 1920

The Mineral Lands Leasing Act of 1920 was enacted to address the access to mineral lands not open for development under the General Mining Act.[85] While the General Mining Act had instilled a policy of free mining, that sentiment rapidly waned.[86] Congress enacted legislation between 1872 and 1920 in an attempt to reserve mineral rights while still encouraging westward settlement, but the efforts were too widespread and specific to be of much national significance.[87] The Mineral Lands Leasing Act sought to consolidate these expansive interests in minerals reserved by the federal government into one system of leasing.[88]

The language of the Act provides that "coal, phosphate, sodium, oil, oil shale or gas [deposits], and lands containing such deposits owned by the United States, including those in national forests . . . and those in national parks . . . shall be subject to disposition in the form and manner provided by this Act . . . ."[89] The "form and manner" provided by the Act is leasing.[90] The terms of each lease are decided by the Secretary of the Interior, who also has the authority to grant and deny leases.[91] Though each type of mineral listed receives its own special consideration within the Act and its subsequent amendments, each is too specific to explain in detail here.[92]

The Leasing Act is significantly different from the General Mining Act in two ways. While the General Mining Act allows for self-initiated claims, the Leasing Act places the authority for granting a lease in the hands of the Secretary of the Interior.[93] The Leasing Act also only gives ownership to the minerals removed, not the entire fee connected to those deposits.[94] While the

82. *Id.* § 6.01.
83. *Id.* § 6.04[1].
84. COGGINS ET AL., *supra* note 3, at 511.
85. 1 ROCKY MOUNTAIN MINERAL LAW FOUND., *supra* note 9, § 4.15.
86. LESHY, *supra* note 31, at 4344.
87. *Id.*
88. 1 ROCKY MOUNTAIN MINERAL LAW FOUND., *supra* note 9, § 4.15.
89. Mineral Leasing Act of 1920, 30 U.S.C. § 181 (2018).
90. *Id.*
91. 1 ROCKY MOUNTAIN MINERAL LAW FOUND., *supra* note 9, § 4.15.
92. *See generally* 30 U.S.C. §§ 181–263 (detailing item-specific considerations for each mineral resource encompassed by the Act).
93. 1 ROCKY MOUNTAIN MINERAL LAW FOUND., *supra* note 9, § 4.16.
94. *Id.*

General Mining Act does not automatically grant a successful claimant the title to the lands holding the mineral deposits, claims under that law can be patented to grant rights to the land surrounding the mineral deposits.[95] In other words, the General Mining Act allows individuals to obtain ownership of both the minerals and the lands on which they are found, while the Leasing Act allows only the ownership of the minerals themselves.[96] This shift in mining policy was largely due to the concerns that the federal government was granting away its rights to potentially valuable mineral deposits.[97]

B. Federal Administration of Mining Laws on Federal Lands

Today, the federal government maintains ownership of nearly 640 million acres of land and subsurface mineral rights within the U.S.[98] Such an extensive expanse of property cannot be managed by the federal government alone, or even by any one branch or agency. For this reason, the federal government has enacted enabling legislation for a number of agencies to regulate and manage mining on federal lands. The most prominent of these agencies are the BLM and the U.S. Forest Service.[99]

1. BLM Management of Mining Laws on Federal Lands

The BLM manages 248.3 million acres of federally owned lands in the U.S., approximately 39 percent of all the land held by the federal government.[100] The BLM's management authority includes both surface and subsurface resources of these federally held lands.[101] The Federal Land Policy and Management Act (FLPMA) grants the power of regulation and enforcement of those lands to the BLM.[102] FLPMA instructs the BLM to

95. COGGINS ET AL., *supra* note 3, at 510–11. However, the federal government placed a moratorium on new patent applications in 1994. *Id.* at 510.

96. 1 ROCKY MOUNTAIN MINERAL LAW FOUND., *supra* note 9, § 4.15.

97. *See id.* § 4.12 (explaining the sentiment in the 1970s around federal reservation of public lands); SAMUEL HAYS, CONSERVATION AND THE GOSPEL OF EFFICIENCY: THE PROGRESSIVE CONSERVATION MOVEMENT, 1890-1920 at 89–90 (1959, reprt. 1968).

98. CAROL H. VINCENT ET AL., CONG. RESEARCH SERV., R42346, FEDERAL LAND OWNERSHIP: OVERVIEW AND DATA 1 (2017).

99. MALEY, *supra* note 10, at 31–32 (showing additional agencies with mining authority include the Bureau of Indian Affairs (BIA), the Office of Surface Mining Reclamation and Enforcement (OSM), the National Park Service, and the U.S. Geological Survey); *Mining Sector Information* https://www.epa.gov/smartsectors/mining-sector-information (last updated Nov. 19, 2018) (highlighting other agencies with authority to regulate the mining industry including the EPA, the Mine Safety and Health Administration (MSHA), and the Nuclear Regulatory Commission (NRC).

100. VINCENT, *supra* note 98, at 1.

101. 5 ROCKY MOUNTAIN MINERAL LAW FOUND., AMERICAN LAW OF MINING § 185.02[3] (2nd ed. 1991).

102. 43 U.S.C. § 1701(a)(5) (2018).

retain the character of the public lands unless their use would benefit the national interest.[103] The statute defines this balancing act as "multiple use."[104] Among the factors the BLM should consider when determining appropriate multiple uses of public lands are:

> [T]he long-term needs of future generations for renewable and nonrenewable resources, including, but not limited to, recreation, range, timber, minerals, watershed, wildlife and fish, natural scenic, scientific and historical values; and harmonious and coordinated management of the various resources without permanent impairment of the productivity of the land and the quality of the environment with consideration being given to the relative values of the resources and not necessarily to the combination of uses that will give the greatest economic return of the greatest unit output.[105]

Thus, FLMPA requires the BLM to consider many factors when administering the mining laws on public lands. The BLM cannot grant leases or title to mineral lands for purely economic reasons, nor can it deny such permits and ownership based solely on the environmental impact mining operations may have on the land in question.[106] However, under FLMPA, the BLM can overcome these restrictions if doing so would be in the nation's best interest to meet present and future needs.[107]

2. Forest Service Management of Mining Laws on Federal Lands

The U.S. Forest Service (the Service) manages a smaller portion of federal land than the BLM—approximately 192.9 acres.[108] The Service also differs from the BLM in that the Service manages only the surface resources of national forest system lands.[109] Created in 1897, the Service was originally charged with managing the National Forest lands in order to protect the forest and the waterflows therein and to ensure the continuous production of timber.[110] In 1960, however, Congress passed the Multiple and Sustained

103. *Id.* § 1701(a)(1).
104. *Id.* §§ 1701(a)(7), 1702(c).
105. *Id.* § 1702(c).
106. *Id.*
107. *Id.* § 1701(a)(1).
108. VINCENT, *supra* note 98, at 1.
109. 5 ROCKY MOUNTAIN MINERAL LAW FOUND., *supra* note 101, § 185.05.
110. 16 U.S.C. § 475 (2018).

Yield Act (MUSYA), which shifted the Service's management policy to one of "multiple use."[111] Such a management strategy was enacted to:

> [P]romote the stability of forest industries, of employment, of communities, and of taxable forest wealth, through continuous supplies of timber; in order to provide for a continuous and ample supply of forest products; and in order to secure the benefits of forest in maintenance of water supply, regulation of stream flow, prevention of soil erosion, amelioration of climate, and preservation of wildlife.[112]

MUSYA requires the Service to conduct a careful balancing act between the extraction of necessary forest products and the preservation of essential forest features, such as water flow and wildlife populations. Such considerations may at times conflict, as when an endangered species resides in an area of forestland which is rich in timber.[113] Thus, where the Service manages surficial aspects of mineral deposits, all of the considerations listed in MUSYA are at play, resulting in a varied system of mineral acquisition based on the balancing of multiple and sustained yields of the forest.[114]

In traditional public land states, the General Mining Act and the Mineral Leasing Act of 1920 are the controlling regulations for mineral activity.[115] The BLM manages both the surface and subsurface rights of some of those public lands in accordance with FLPMA.[116] The Service manages only the surface rights of lands within the National Forest system according to MUSYA.[117] While both the BLM and the Service manage their respective lands according to a "multiple use" model, each agency obtains its authority to do so from separate statutes.[118] Yet, Minnesota is not a traditional public land state. Minnesota's Superior National Forest has an exceptional variety of ownership types, applicable laws, and administering agencies managing the three million acres of forested land.

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111. *Id.* § 529.

112. *Id.* § 583.

113. *See generally* Babbitt v. Sweet Home Chapter of Cmtys. for a Great Or., 515 U.S. 687, 707 (1995) (finding that the Secretary of the Interior had the authority to determine the meaning of "harm" within the ESA's "take" provision).

114. 16 U.S.C. § 583(a).

115. COGGINS ET AL., *supra* note 3, at 98–100.

116. 5 ROCKY MOUNTAIN MINERAL LAW FOUND., *supra* note 101, § 185.02; 43 U.S.C. § 1701(a)(5) (2018).

117. 5 ROCKY MOUNTAIN MINERAL LAW FOUND., *supra* note 101, § 185.05; 16 U.S.C. § 583(a).

118. 43 U.S.C. § 1701(a)(5); 16 U.S.C. § 583.

C. Application of Federal Mining Laws to Federal Lands in Minnesota

Minnesota's history has created a patchwork of ownership within the state, but especially within Superior National Forest. This diversity of ownership has resulted in an equally diverse set of laws relating to the regulation of mining within the Forest. However, it is not feasible to discuss the applicability of every federal mining law and its exception to the federal lands in Minnesota in this Note. Therefore, only the applicability of the General Mining Act and the Mineral Lands Leasing Act will be discussed below.

1. Inapplicability of the General Mining Act of 1872 and the Mineral Lands Leasing Act of 1920

From the beginning of the nation's attempt to manage mining, it was clear that Minnesota would be different. In 1873, just one year after the passage of the General Mining Act, Congress passed legislation that explicitly exempted all federal mineral lands in Minnesota from the General Mining Act.[119] Instead, Congress allowed for the sale of mineral lands in Minnesota in a manner equal to that of all other public lands.[120] Thus, from 1857 onwards, federally owned public lands within Minnesota were free and open for discovery and purchase by any U.S. citizen, and not restricted by the means of attainment outlined in the General Mining Act.[121]

By the late 1800s, the government was grappling with the early conservation movement.[122] In 1891, Congress passed the Forest Reserve Act, authorizing the President to establish National Forests via Presidential Proclamation.[123] Six years later, Congress passed the Organic Administration Act of 1897, which clarified the management and administration of National Forests in the U.S.[124] The Act allowed for three purposes of reserving land under the National Forest System: to protect the forest, secure "favorable conditions for water flows," and to ensure a continuous supply of timber.[125] Yet the Act also recognized the importance of minerals, stating that "it is not the purpose or intent of these provisions . . . to authorize the inclusion therein

119. 30 U.S.C. § 48 (2018).
120. *Id.*
121. *Id.*
122. 1 ROCKY MOUNTAIN MINERAL LAW FOUND., *supra* note 9, § 4.12.
123. *Id.*
124. MALEY, *supra* note 10, at 95.
125. 16 U.S.C. § 475.

of lands more valuable for the mineral therein . . . ."[126] From the start of the National Forest System, Congress was cognizant of the potential presence of valuable minerals beneath the land they were attempting to reserve and sought to retain their availability for extraction.[127]

It is into this political climate that Superior National Forest was born. Prior to establishment as a National Forest, the land was held in federal ownership.[128] Within and amongst those forestlands were some private and state claims, such as the public school lands in each township.[129] With President Roosevelt's proclamation in 1909, the Forest was incorporated into the Forest System, which recognized as a basic tenet the importance of maintaining access to mineral rights beneath federal lands in Minnesota.[130] What the Proclamation created was a National Forest, "reserved from settlement or entry and set apart as a public reservation, for the use and benefit of the people . . . ."[131] However, the Proclamation also recognized existing rights, stating that the withdrawal remained subject to previously appropriated lands.[132] Because the Proclamation did not explicitly speak to the nature of mineral rights within the newly recognized National Forest, the existing rulings remained in full force.[133] Thus, mining in the original one million acres of Superior National Forest remained free and open to the public.[134]

In 1950, Congress decided to clarify the applicability of the general mining laws to federally owned lands in Northern Minnesota.[135] The Act of 1950 specifically permitted the "prospecting, development, mining, removal, and utilization of the mineral resources within the national forests in Minnesota . . . ."[136] The Act also recognized and reaffirmed the original 1873 rule removing those lands from the purview of the general mining and leasing laws.[137] Lands obtained through withdrawal or reservation were "not subject

126. *Id.*

127. MALEY, *supra* note 10, at 63, 95 ("Vacant unappropriated public lands within the National Forest System are generally open to entry under the mining and mineral leasing laws.").

128. MINN. DEP'T OF NAT. RES., *supra* note 18, at 16–17.

129. *Id.* at 17.

130. 16 U.S.C. § 475.

131. Proclamation No. 848, 35 Stat. 2223 (Feb. 13, 1909).

132. *Id.*

133. COGGINS ET AL., *supra* note 3, at 480.

134. *See* 30 U.S.C. § 48 (exempting mineral lands in Minnesota, Wisconsin, and Michigan from most extraction-restricting statutes); Proclamation No. 848, 35 Stat. 2223 (Feb. 13, 1909) (identifying existing mining rights lands within original Forest land are not affected by appropriations).

135. Act of June 30, 1950, ch. 430, 64 Stat. 311 (codified in amended at 16 U.S.C. § 508b (2018)).

136. *Id.*

137. *Id.*

to development or utilization under the mining laws of the United States or the mineral leasing laws . . . ."[138]

Because much of the federally owned land in Superior National Forest was included under the foregoing Acts, a majority of the land remains outside the purview of the General Mining Act of 1872 and the Mineral Lands Leasing Act. However, untangling the applicability of the general mining laws and their exceptions is only half of the picture. It is also essential to consider the agencies that have authority over the administration of those laws.

D. Federal Management of Superior National Forest and the BWCAW

Minnesota is similar to other public lands states in that the BLM and the Forest Service manage a majority of its public lands.[139] Two important executive and legislative documents provide exceptions to the general delegation of administrative authority between the two agencies. The Reorganization Plan of 1946 and the Act of 1950 both restructure the administrative authority of the agencies over federal land in Minnesota.

1. Reorganization of Administrative Authority

President Truman introduced Reorganization Plan No. 3 of 1946 pursuant to the Reorganization Act of 1945 to "increase the efficiency of the operations of the Government."[140] Of specific importance to Superior National Forest is Part IV: the reorganization of the Department of the Interior's duties.[141] Under the Reorganization Plan, the Secretary of Agriculture's authority to oversee the "uses of mineral deposits" on certain federal lands was transferred to the Secretary of the Interior.[142] While a portion of the lands in Superior National Forest were already under the purview of the Secretary of the Interior, a portion remained under the authority of the Department of Agriculture (USDA).[143] Thus, the Reorganization Plan consolidated control of the federal lands with mining

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138. *Id.*

139. VINCENT, *supra* note 98, at 8–9. (noting that, in Minnesota, BLM and the Forest Service manage 2,845,898 acres of the 3,495,893 acres of total federal land within the state).

140. Reorganization Plan No. 3 of 1946, 60 Stat. 1099; Reorganization Act of 1945, 50 Stat. 613 (enabling statute for the reorganization plan).

141. Reorganization Plan No. 3 of 1946, 60 Stat. 1099.

142. *Id.* (limiting the reorganization plan to lands obtained by the federal government via the Weeks Act, the National Industrial Recovery Act, the Emergency Relief Appropriation Act, the 1935 Agricultural Adjustment Act Amendment, and the authority of the Secretary of Agriculture).

143. *Id.*

interests into one agency—the Department of the Interior.[144] However, the Reorganization Plan left a piece of administrative power in the hands of the Secretary of Agriculture. The Secretary of the Interior may only authorize the mineral development of land "when he [or she] is advised by the Secretary of Agriculture that such development will not interfere with the primary purposes for which the land was acquired and only in accordance with such conditions as may be specified by the Secretary of Agriculture in order to protect such purposes."[145] Therefore, the power of the Secretary of the Interior to manage and regulate mineral lands is limited, if only in writing, by the consent of the Secretary of Agriculture.

Four years after the enactment of the Reorganization Plan, Congress enacted 16 U.S.C. § 508b.[146] In addition to exempting any withdrawn or reserved land in Minnesota from the mining laws and mineral leasing laws of the U.S., the statute also granted authority over those lands to the Secretary of the Interior.[147] Specifically, the statute provides the Secretary with the power to "permit the prospecting for and the development and utilization of such mineral resources . . . ."[148] However, as with the Reorganization Plan, the Secretary of the Interior's power is constrained by the statute as well.[149] The Secretary of the Interior may not develop and utilize the mineral lands without the consent of the Secretary of Agriculture. [150] Together, Reorganization Plan No. 3 of 1946 and 16 U.S.C. § 508b ensure that federally owned land in Minnesota, either withdrawn or acquired under a handful of additional acts, is regulated by the Secretary of the Interior with the consent of the Secretary of Agriculture.[151] The impacts of these delegations of administrative authority are discussed below for the two largest parcels of federally owned land in the Northeast corner of Minnesota—Superior National Forest and the Boundary Waters Canoe Area Wilderness.

2. Administration of Mining Laws in Superior National Forest

The Secretary of the Interior oversees mining in Superior National Forest with the consent of the Secretary of Agriculture, per Reorganization Plan No. 3 and 16 U.S.C. § 508b. [152] The Department of Interior is therefore

144. *Id*.
145. *Id.*
146. 16 U.S.C. § 508b (2018).
147. *Id.*
148. *Id.*
149. *Id.*
150. *Id.*
151. *Id.*; Reorganization Plan No. 3 of 1946, 60 Stat. 1099.
152. 16 U.S.C. § 508b; Reorganization Plan No. 3 of 1946, 60 Stat. 1099.

responsible for ensuring that any mineral activities undertaken in the Forest comply with MUSYA, and to some extent, the Forest Service Organic Act and the Superior National Forest Management Plan. As discussed, the Organic Act and MUSYA require the Service to manage any National Forest via a multiple-use system. What this means for Minnesota is that, depending on the Secretary of the Interior's balancing of the extraction of forest products versus conservation of the Forest, any given plot of federal land may be used for economic purposes, preserved, or some combination of the two.[153] But this general principle becomes more nuanced when considering the additional Forest Management Plan tailored to the specific resources and ecosystems found within Superior National Forest.

Established in 2004, the Superior National Forest Management Plan provides an extensive description of the goals of the Service in managing the Forest.[154] Included in its Forest-wide goals are: (1) the promotion of ecosystem health and conservation; (2) the protection, and where applicable, the restoration of soil, air, and water resources; (3) the management of biologically diverse ecosystems to provide for a variety of life; (4) the use of forest products in an environmentally acceptable manner; (5) the provision of forest settings and natural resources that "enhance social and economic benefits at local, regional, and national levels"; (6) the management of sustainable ecosystems to provide for a variety of uses, values, products, and services for present and future generations; and (7) the management of the forest in a way that enhances social and economic benefits for both individuals and communities.[155] The Management Plan also provides goals specific to the natural resources found within Superior National Forest, including minerals.

The Forest Management Plan provides two "desired conditions" for the Forest regarding mining. First, the Plan explicitly allows for the "[e]xploration and development of mineral and mineral material resources . . . on National Forest System Land . . . ."[156] The only exceptions to this goal are federally owned lands within the BWCAW and the Mining Protected Area (MPA).[157] The second goal of the Forest Management Plan is to ensure that such exploration, development, and production of minerals is "conducted in an environmentally sound manner so that they may contribute to economic growth and national defense."[158] Mining that does occur within

153. *Id.*
154. U.S. FOREST SERV., SUPERIOR NATIONAL FOREST MANAGEMENT PLAN 2–5 (2004).
155. *Id.*
156. *Id.* at 2–9.
157. *Id.*
158. *Id.*

Superior National Forest is subsequently limited by the language of the Forest Plan only in terms of the quantity of material removed. If more than 5,000 cubic yards of minerals are extracted per year, the entity extracting the minerals must also have an approved development and reclamation plan.[159] Despite trying to ensure the "environmentally sound" extraction and production of minerals, the fact remains that Superior National Forest is open to mining with little in the way of statutory restrictions.

There are many discretionary restrictions that may apply once a mineral claim or mineral lease is obtained from the government. At that time, it is up to the discretion of the Secretary of the Interior to permit prospecting, extraction, and use of the mineral resource.[160] The parameters of these permits and leases are left primarily to the Secretary of the Interior to determine (with the consent of the Secretary of Agriculture), though he or she must follow the basic mission of the department.[161] The current mission statement of the Department of Interior is to "conserve[] and manage[] the Nation's natural resources and cultural heritage for the benefit and enjoyment of the American people . . . ."[162] Yet the focus of each Secretary's tenure varies and can contradict the overall mission of the Department of Interior. For example, under previous Secretary Ryan Zinke, the Department of Interior had as one of its main "visions" for 2018–2022 the promotion of "energy dominance and critical minerals development."[163] The overall result is that mining in Superior National Forest on federally owned lands is not subject to the general mining and leasing laws, but rather subject to the discretion of the Secretary of Interior.[164]

3. Federal Management of BWCAW

As hinted at in the Superior National Forest Management Plan, the BWCAW has a different set of regulations relating to mining within its boundaries. Established in 1978, though withdrawn in small portions over the history of the Superior National Forest, the BWCAW is roughly one million acres of federally recognized Wilderness.[165] Under the Wilderness Act of 1964, lands classified as Wilderness between the enactment of the Act and December 31, 1983 are subject to the mineral leasing and mining laws.[166]

159. *Id.*
160. 16 U.S.C. § 508b (2018).
161. *Id.*
162. *About,* U.S. DEP'T OF INTERIOR, https://www.doi.gov/whoweare (last visited Nov 15, 2019).
163. U.S. DEP'T OF INTERIOR, STRATEGIC PLAN FOR FISCAL YEARS 2018-2022 3.
164. 16 U.S.C. § 508b.
165. MINN. DEP'T OF NAT. RES., *supra* note 18, at 18–19.
166. 16 U.S.C. § 1133(d)(3).

However, the BWCAW was explicitly exempt from these generally applicable provisions in the Wilderness Act. The Wilderness Act specifically maintained the authority of three key Acts—the Shipstead-Nolon Act, the Thye-Blatnik Act, and the Humphrey-Thye-Blatnik-Andersen Act. [167] Together, these Acts established that the lands acquired under the Acts were subject to existing mining regulations in Minnesota and were to be administered by the Secretary of Agriculture.[168] As such, the lands were not subject to the General Mining Act or the Mineral Lands Leasing Act, but instead, were either free and open to claims via a purchasing system or reserved by the government.

Mining in the BWCAW is also subject to restrictions outlined in the Wilderness's enacting statute.[169] In 1978, Congress established the BWCAW as a designated Wilderness Area, which included a section of 222,000 acres set aside as a "mining protection area."[170] Mineral deposits in this area were subject to the administration of the applicable mineral laws by the Secretary of Agriculture.[171] The purpose of establishing these protected areas was to

> (1) provide for the protection and management of the fish and wildlife of the wilderness . . . ; (2) protect and enhance the natural values and environmental quality of the lakes, streams, shorelines and associated forest areas . . .; (3) maintain high water quality in such areas; (4) minimize to the maximum extent possible, the environmental impacts associated with mineral development affecting such areas; (5) prevent further road and commercial development . . . and; (6) provide for the orderly and equitable transition from motorized recreational uses to nonmotorized recreational uses . . . .[172]

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167. *Id.*

168. Shipstead-Nolon Act, 46 Stat. 1020 (1930) (codified at 16 U.S.C. § 577–577b (2018)) (withdrawing public lands in northern Minnesota for the purpose of "conserving the natural beauty of shorelines for recreational use . . . ."); Thye-Blatnik Act, 62 Stat. 568 (1948) (codified at 16 U.S.C. § 577c–h (2018)) (identifying additional lands in northern Minnesota to be protected in accordance with the Shipstead-Nolon Act) ; Humphrey-Thye-Batnik-Andresen Act, 70 Stat. 326 (1956) (codified at 16 U.S.C. § 577d–1 (2018)) (identifying additional lands in northern Minnesota subject to the Shipstead-Nolon Act).

169. *See* 16 U.S.C. § 1133(a) (stating that the purpose of the Wilderness Act is "within and supplemental to the purposes for which national forests . . . are established and administered . . . ."); Boundary Waters Canoe Area Wilderness Act, Pub. L. No. 95-495, 92 Stat. 1649 (1978).

170. Boundary Waters Canoe Area Wilderness Act, Pub. L. No. 95–49, § 11, 92 Stat. 1649, 1655 (1978).

171. *Id.* §§ 3, 4, 92 Stat. at 1649–50.

172. *Id.* § 2, 92 Stat. at 1649.

In order to accomplish these goals, Congress stipulated that "no permit, lease, or other authorization may be issued" for the exploration or mining of minerals within the BWCAW and the Mining Protection Area, if such exploration and mining would affect navigable waters, or if the use of the land for mining or exploration would "impair the wilderness qualities" of the area.[173] Yet, the statute also created two exceptions to this rule. First, exploration and mining may take place "pursuant to a national emergency" as declared by the President.[174] Second, the Secretary of Agriculture may allow a permit, lease, or other authorization to mine if the individual or company seeking to mine submits a plan detailing the means of extraction and restoration, has posted bond for performance, and obtained all necessary permits and licenses.[175] The contradictory nature of the second exception throws into question whether mining may occur in the BWCAW. Per the Act, mining is prohibited in general but allowed in a specific set of circumstances.[176] Again, the determination is left up to the administering agency—the Secretary of Agriculture.[177]

Federal mining laws are complex in themselves but become even less intelligible when applied to federal lands within Superior National Forest. Not only are there explicit exceptions to the laws themselves, but the management of the lands within the Forest are also delegated differently from other public lands and unartfully split between two powerful land management agencies. One theme appears consistent through all the confusion: the federal lands in Superior National Forest are generally open to mining, though the final decision on the sale or lease of the mineral rights will always lie with the agency charged with administering those laws. Mining in Superior National Forest, then, lies in the hands of both the Secretary of the Interior and the Secretary of Agriculture. But their power only extends to the lands over which the federal government has sole ownership. A number of parcels in Superior National Forest remain under state and private ownership, requiring adequate consideration of the laws relevant to each.

173. *Id.* § 11(a)(3), 92 Stat. at 1655.
174. *Id.* § 11, 92 Stat. at 1655.
175. *Id.* § 11(b)(1), 92 Stat. at 1655–56.
176. *Id.* § 11, 92 Stat. at 1655–56.
177. *Id.* §§ 4(a), 11(b), 92 Stat. at 1650, 1655–57.

E. State Mining Laws on State Lands in Minnesota

The State of Minnesota currently owns the rights to 5.6 million acres of land within the state.[178] Counties manage an additional 2.8 million acres of land the State owns.[179] Of those, 1.55 million acres have been reserved from certain uses as State Forests, Parks, and other entities.[180] The Minnesota legislature enacted a suite of laws with general applicability to regulate the acquisition, disposal, taxation, and management of mineral deposits and their corresponding mining activities.[181] Because these laws can be as complex as their federal counterparts, this Note only considers those related to the rights of access to mineral deposits.

1. State Laws

The State of Minnesota has established a general policy of mineral reservation in the disposition of state land.[182] Accordingly, mineral deposits on state-owned lands are restricted to leasing activities only.[183] The prevailing authority for the leasing of mineral deposits located on state-owned land is Minnesota Statute 93.25. The Statute allows the issuance of leases "to prospect for, mine, and remove minerals other than iron ore upon any lands owned by the state . . . ."[184] The statute is sufficiently broad to include all mineral ores besides iron, on "trust fund lands, lands forfeited for nonpayment of taxes[,] . . . lands otherwise acquired, and the beds of any waters belonging to the state."[185] Thus, all state-owned lands in Minnesota have the potential to be leased for mineral prospecting, mining, and extraction. As with its federal counterparts, however, the Minnesota leasing statute leaves the final decision to grant leases with the head of a state agency.[186]

178. MINN. DEP'T OF NAT. RES., PUBLIC LANDS SUMMARY 1 (2019).
179. *Id.*
180. MINN. DEP'T OF NAT. RES., *supra* note 18, at 25
181. MINN. DEP'T OF NAT. RES., MINNESOTA'S MINING LAWS 1 (2016).
182. *Id.* at 3.
183. *Id.* at 2.
184. MINN. STAT. § 93.25 (2019).
185. *Id.*
186. *Id.*

2. State Administration of the Mining Laws

In Minnesota, all mineral leases are issued by the Commissioner of the Minnesota Department of Natural Resources.[187] No individual may mine without the Commissioner issuing them a permit.[188] The Commissioner requires the permit applicant to include in their application:

> (1) a proposed plan for the reclamation or restoration of any mining areas affected by the mining operations . . . (2) a certificate issued by an insurance company authorized to do business in the United States . . . (3) an application fee . . . and (5) a copy of the applicant's advertisement of the ownership, location, and boundaries of the proposed mining area . . . .[189]

Then, the Commissioner has 120 days to review the petition, after which he or she may grant the permit, with or without modifications or conditions, or deny the permit.[190] The Commissioner also sets the terms of the permit as deemed necessary "for the completion of the mining operation, including reclamation or restoration."[191] As with the corresponding federal agencies administering federal law in Minnesota, the Commissioner acts as the final decision-maker for the management of mineral leasing in the state.

F. Private Ownership

Though the federal government has placed a moratorium on the practice of patenting mineral claims, some parcels within the boundaries of Superior National Forest remain in control of private individuals with mineral patents. Because of this, it is necessary to conclude the discussion of the application of federal and state laws to mining in Minnesota with an aside about private rights. The General Mining Act of 1872 granted individuals the "exclusive right of possession and enjoyment of all surface included within the lines of their locations . . . ."[192] While a patented claim provided for the exclusive use of the minerals on the located deposit against a third party, including the federal government, the property rights accompanying the patent were not

187. *Id.*; *see also* MINN. STAT. § 93.0015 (2019) (explaining that the Commissioner of Natural Resources is the chair of the Mineral Coordinating Committee).

188. MINN. STAT. § 93.25.

189. MINN. STAT. § 93.481, subd. 1 (2019).

190. *Id.* at subd. 2.

191. *Id.* at subd. 3.

192. 30 U.S.C. § 26 (2018).

limitless.[193] In fact, the property rights granted with a patent were limited to "the rights of possession and enjoyment of the minerals as well as the surface ground," so long as the patentholder abided by the requirements outlined in the General Mining Act (discovery, acquisition, and payment).[194] In addition, once patented, a claim became private property (containing only the property rights mentioned above), subject to laws of the state in which the claim was located.[195] Even in instances where a private individual has patented a mineral claim, the rights of possession and extraction are not limitless and remain regulated by federal and state government.

G. Current Mining Issues in Minnesota

Legal analysis of federal and state mining laws and their application to Superior National Forest would be incomplete without a discussion of some of the prominent issues surrounding the topic today. It is these issues that take the theoretical discussion out of the sphere of academia and into the real world for application and resolution. Two proposed actions in Superior National Forest have recently captured the attention of environmentalists across the U.S.[196] The first is the renewal of two mineral leases on lands within Superior National Forest and adjacent to the BWCAW.[197] The second is the Service's request for a withdrawal of 234,328 acres from mineral and geothermal leasing.[198] In each instance, the government's actions hinge on the determination of ownership of surface and mineral rights administration of relevant mineral laws.

1. Friends of the Boundary Waters v. BLM

Twin Metals Minnesota (Twin Metals), a subsidiary of Antofagasta, PLC, a Chilean copper-mining company, seeks to renew two mining leases on land adjacent to the BWCAW and within Superior National Forest.[199]

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193. COGGINS ET AL., *supra* note 3, at 512.

194. 1 ROCKY MOUNTAIN MINERAL LAW FOUND., *supra* note 9, § 30.04.

195. COGGINS ET AL., *supra* note 3, at 511.

196. Ari Natter & Jennifer Jacobs, *Trump Vows to Open Minnesota's Superior National Forest to Mines* (June 21, 2018), http://www.bloomberg.com/news/articles/2019-6-21/trump-vows-to-open-minnesota-s-superior-national-forest-to-mines.

197. *Twin Metals Lease Renewal*, U.S. FOREST SERV., https://www.fs.usda.gov/detail/superior/landmanagement/resourcemanagement/?cid=fseprd507250 (last visited Nov 15, 2019).

198. APPLICATION FOR WITHDRAWAL, U.S. FOREST SERV. (January 12, 2017), https://www.fs.usda.gov/nfs/11558/www/nepa/105871_FSPLT3_3924868.pdf.

199. *Who We Are*, TWIN METALS MINN., LLC, http://www.twin-metals.com/who-we-are/ (last visited Nov. 6, 2019); *About the Project*, TWIN METALS MINN., LLC, http://www.twin-metals.com/about-the-project/ (last visited Dec. 19, 2019).

These proposed renewals lie at the top of the Rainy River watershed, which flows down into more than one million acres of wilderness within Superior National Forest and the BWCAW.[200] Twin Metals has held these leases since 1966 but has yet to build any mining operations.[201] In 2012, Twin Metals applied for lease renewal and indicated their intent to begin building mining operations on those sites.[202] The BLM rejected Twin Metals' renewal in 2016 based on memoranda from the Solicitor for the Department of the Interior and the Chief of the Forest Service.[203] Yet one year later, and after the change in administration, BLM revived the inquiry into Twin Metals's lease renewal and reversed their earlier decision, granting Twin Metals their renewal.[204] At issue is whether BLM has the authority to reconsider a lease-renewal application which has already been rejected.[205]

In 1966, the International Nickel Company, Inc. (INCO), Twin Metals's predecessor-in-interest, received two mineral leases.[206] Each lease had an initial term of 20 years to be followed by no more than three ten-year lease renewals.[207] BLM granted two renewals in 1989 and 2004.[208] In 2012, Twin Metals applied for its third lease renewal with BLM.[209] Before making its final decision, the BLM sought the legal opinion of the Solicitor of the Department of the Interior.[210] In her memorandum, Solicitor Hilary Tompkins found that the BLM was not required to renew Twin Metals' lease a third and final time.[211] According to Tompkins, the language of the 2004 lease renewal governed, meaning that there was no automatic right of renewal.[212] Instead, the 2004 lease terms gave Twin Metals "the legal right to be preferred against other parties, should the Secretary . . . decide to continue leasing."[213]

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200. *See* Compl. Friends of the Boundary Waters v. Bureau of Land Mgmt., ¶¶ 43, 47, No. 1:18-cv-01499 (D.D.C. filed June 25, 2018).

201. *Id.* ¶¶ 67, 69–70.

202. *Id.* ¶ 53.

203. *Id.* ¶ 2.

204. *Id.* ¶ 3.

205. *Id.*

206. *Id.* ¶ 55; *see also* BUREAU OF LAND MGMT., INT'L NICKEL CO., INC. MINERAL LEASE 01352 (1966) (lease issued); BUREAU OF LAND MGMT., INT'L NICKEL CO., INC., MINERAL LEASE 01353 (1966) (lease issued).

207. Compl., *supra* note 200, ¶ 67.

208. *Id.* ¶¶ 71–72.

209. *Id.* ¶¶ 74–75.

210. *Id.* ¶¶ 76–77.

211. Memorandum from Hilary C. Tompkins, Solicitor, Dep't of the Interior to Dir., Bureau of Land Mgmt. 1 (Mar. 8, 2016) (M-37036) [hereinafter Memorandum].

212. *Id.* at 5.

213. *Id.* (quotations omitted).

BLM also sought consent to renew Twin Metals's lease from the Service.[214] The Chief of the Service, Thomas Tidwell, responded with a clear denial of consent to renew the leases.[215] The memorandum was specifically concerned with the "serious and irreplaceable harm" copper-nickel mining could have on the BWCAW's "unique, iconic, and irreplaceable wilderness . . . ."[216] Based on the feedback from both the Solicitor for the Department of the Interior and the Chief of the Forest Service, BLM denied Twin Metals's request for lease renewal on December 15, 2016.[217]

A year later, the Principal Deputy Solicitor of the Department of the Interior, Daniel Jorjani, wrote a memorandum concerning BLM's ability to renew Twin Metals's lease for a third time.[218] This memorandum stated that the 2016 memorandum was incorrect in its understanding of the original 1966 leases.[219] Not only did the language of the 1966 lease govern the ability for BLM to deny the 2004 renewal, it also guaranteed a non-discretionary right to lease renewal.[220] BLM relied on the new memorandum to reinstate Twin Metals's leases.[221] In doing so, the agency explicitly told the Forest Service that its previous non-consent determination was "not legally operative."[222]

In light of these contradictory orders, the Friends of the Boundary Waters, a non-profit dedicated to the protection and restoration of the BWCAW, brought a claim against the BLM and the Department of the Interior.[223] Friends of the Boundary Waters claimed that BLM was in violation of the Administrative Procedure Act (APA) and the Declaratory Judgment Act.[224] The group argued that BLM violated the APA because its decision to renew the leases was arbitrary, capricious, and contrary to law.[225] In addition, the complaint alleged that BLM's decision to renew was also a violation of the Declaratory Judgment Act because the government does not have the authority to revisit a final agency decision made 16 months prior.[226]

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214. Compl., *supra* note 200, ¶ 83 ("BLM made this request to the USFS because the USFS is the agency with supervisory jurisdiction over surface rights and surface management of the lands that are the subject of the leases.").

215. U.S. Forest Serv., Opinion Letter on Renewal of Two Leases Within Superior National Forest 1 (Dec. 14, 2016).

216. *Id.* at 1.

217. Compl., *supra* note 200, ¶ 96.

218. Memorandum from Daniel H. Jorjani, Principal Deputy Solicitor, Dep't of the Interior to Dir., Bureau of Land Mgmt. 1 (Dec. 22, 2017) (M-37049).

219. *Id.*

220. *Id.* at 8.

221. Compl., *supra* note 200, ¶¶ 105–109.

222. *Id.*

223. *Id.* ¶¶ 1, 9.

224. *Id.* ¶ 1.

225. *Id.* ¶ 4.

226. *Id.* ¶¶ 1, 4.

The case was consolidated in July 2018 under *Voyageur Outward Bound School v. United States*, which is currently pending in the U.S. District Court for the District of Columbia.[227]

One of the primary concerns of the Friends of the Boundary Waters and like-minded groups is the potential damage copper-nickel-sulfide mining may cause to the environment.[228] Sulfide mining typically entails extracting the desired minerals—here, copper—from the surrounding rock.[229] The minerals sought often appear in small quantities compared to the rocks they are found within, resulting in a substantial amount of waste materials after the extraction process.[230] Refining the obtained ores after extraction creates further waste material.[231] Two common problems resulting from this process are oxidization of waste rock and tailings and emissions of sulphur dioxide.[232] Oxidation of the waste materials creates the potential for acid leaching.[233] The leached material will contain the remaining minerals—here, iron and sulfuric acid, which may enter the ground or surface water systems nearby.[234] The fear with the proposed mines in Superior National Forest is that any acid leaching from waste rocks could potentially spread through the highly connected waterways in the watershed and contaminate all three million acres of protected forest.[235] These environmental concerns lead to the Service's application for withdrawal of over 200,000 acres from mineral and geothermal leasing in northern Minnesota.[236]

2. Rainy River Watershed Withdrawal

On January 12, 2017, the Service submitted an application for withdrawal of 234, 328 acres in Superior National Forest from mineral and geothermal leasing to the BLM.[237] As stated, the purpose of the withdrawal is to "protect National Forest System Lands (and waters) located in the Rainy River Watershed, the BWCAW, and the MPA from the adverse environmental impacts arising from exploration and development of fully

227. *Id.* at 1; Voyageur Outward Bound School v. United States, No. 1:18-cv-01463, 2018 WL 3091073 (D. D.C. June 21, 2018).

228. Compl., *supra* note 200, ¶ 10.

229. EARLE A. RIPLEY ET AL., ENVIRONMENTAL EFFECTS OF MINING 145 (1996).

230. *Id.*

231. *Id.*

232. *Id.* at 145–46.

233. *Id.* at 146.

234. *Id.*

235. APPLICATION FOR WITHDRAWAL, *supra* note 198, at 2–3.

236. *Id.* at 1.

237. *Northern Minnesota Federal Withdrawal*, U.S. FOREST SERV., https://www.fs.usda.gov/project/?project=50938 (last visited Dec. 19, 2019).

Federally-owned minerals conducted pursuant to the mineral leasing laws."[238] The application requested the maximum term limit—20 years—and also asked the BLM to allow for a two-year segregation period during which the notice of withdrawal would be published in the Federal Register and would receive public comment.[239] BLM originally granted the Forest Service's request for a segregation period of up to two years in their published notice of the withdrawal application.[240] However, in early September 2018, the Department of Agriculture cancelled the Service's withdrawal application several months short of the two-year deadline.[241] The decision, while disappointing to many in favor of protecting the ecosystems in Superior National Forest, is unsurprising given the structure of the federal administration of mining laws on federal lands. In most instances, decisions regarding the sale or leasing of mineral deposits and surface lands lie in the hands of the heads of the agencies. Thus, the Department of Agriculture's decision to cancel its own request for withdrawal, while apparently contradictory, is likely well within the scope of what the agency can do with regard to federal land and the administration of federal mining laws.

At this time, the outcomes of each action are uncertain. Though the current administration cancelled the withdrawal, it could be renewed under future administrations. The Friends of the Boundary Waters case is far from over, and it is unclear whether the court will find the plaintiffs' APA claims persuasive against the tried-and-true reliance on agency discretion. Hopefully, whatever the outcome of these individual actions, the Superior National Forest's future will remain bright.

CONCLUSION

Superior National Forest encompasses over three million acres of wilderness in the Minnesota Northwoods.[242] It is home to three endangered species, miles of interconnected waterways, and several cultural heritage sites.[243] Yet it is the minerals beneath these lands and waterways that have proved to be one of the largest influences on the Forest. Federal mining law,

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238. APPLICATION FOR WITHDRAWAL, *supra* note 198, at 3.

239. *Id.* at 5.

240. Notice of Application for Withdrawal, 82 Fed. Reg. 6,639 (Jan. 19, 2017).

241. Press Release, U.S. Dep't of Agric., USDA Removes Roadblock to Mineral Exploration in Rainy River Watershed (Sept. 6, 2018).

242. *About the Forest*, *supra* note 51.

243. *Wildlife of the Superior National Forest*, U.S. FOREST SERV., https://www.fs.usda.gov/detail/superior/about-forest/?cid=fsm91_049837 (last visited Nov. 8, 2019); *Introduction,* U.S. FOREST SERV., https://www.fs.usda.gov/detail/superior/landmanagement/resourcemanagement/?cid=fsm91_049826 (last visited Dec. 19, 2019).

while complex in its own right, becomes nearly inscrutable when applied to the federally owned lands in Minnesota. Adding state- and privately owned lands into the mix creates even greater confusion over who owns what land, to what degree, and for what purpose. However, understanding the relationships between and among these laws and actors is critical. Issues over mineral access are at the forefront of Minnesota politics, with a pending case challenging the renewal of a previously rejected mineral lease and the cancelled application for withdrawal of federal lands from mineral leasing. The outcome of each action, while uncertain, will without doubt be based on the understanding and interpretation of the interplay between federal, state, and individual mineral rights, federal and state mining laws, and the administration of those laws by federal and state agencies. Untangling the web of ownership, access, and management is essential for the successful litigation of issues like those facing Minnesota today.

ZOMBIE CHEMICALS – LEARNING FROM OUR PAST TO PREVENT HAUNTING IN THE FUTURE: WHY THE EPA SHOULD REGULATE PFAS CHEMICAL COMPOUNDS

Hannah Levine*

PFAS are commonly used chemicals now found throughout the environment. The chemical properties that make PFAS popular (they are resistant to oil, fire, and water) also make them hazardous because they accumulate in the environment and biodegrade very slowly. PFAS are particularly mobile in aquatic environments, and thus create a significant public health risk when they are present in drinking water. The EPA has stated its intention to use the Safe Drinking Water Act to set a legally enforceable limit for PFAS in drinking water. To do this, the EPA would need to go through a lengthy rulemaking process. This note argues that to bypass a full rulemaking process and set a legally enforceable limit quickly, the EPA should either use the Safe Drinking Water Act "Urgent Threat" provision or "Emergency Powers" provision.

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I. INTRODUCTION: PFAS IN DRINKING WATER, A SERIOUS PUBLIC HEALTH CONCERN

In 2014, the city of Flint, Michigan decided to change the source of its drinking water from Lake Huron to the Flint River.[1] Residents of Flint were soon afflicted with lead poisoning and a myriad of other health issues caused by *E. Coli* and byproducts of disinfectants found in the water.[2] The water crisis in Flint received national attention when President Obama and the Environmental Protection Agency (EPA) declared a state of emergency in 2016.[3] While the national attention regarding Flint's water crisis revolved around the calamity of lead in the drinking water, tests of the river from years earlier revealed high levels of contaminants of a different kind—chemicals known as PFAS.[4] "PFAS" is the blanket term for Per-and Polyfluoroalkyl Substances, a group of chemicals thought to include thousands of different synthetic compounds.[5] The two best-known PFAS are Perfluorooctanoic Acid ("PFOA") & Perfluorooctyl Sulfonate ("PFOS").[6]

One Michigan resident, with a history of breast cancer and arthritis, referred to PFAS as "zombie chemicals": "You don't see them. You don't smell them. They just slowly affect you."[7] In the industry context, PFAS are sometimes referred to as "forever chemicals" because they never fully degrade and accumulate both in the environment and in the bloodstreams of

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1. Merrit Kennedy, *Lead-Laced Water in Flint: A Step-by-Step Look at the Makings of a Crisis* (Apr. 20, 2016), https://www.npr.org/sections/thetwo-way/2016/04/20/465545378/lead-laced-water-in-flint-a-step-by-step-look-at-the-makings-of-a-crisis.

2. *Flint Water Crisis Fast Facts* (Apr. 8, 2018), https://www.cnn.com/2016/03/04/us/flint-water-crisis-fast-facts/index.html.

3. Kennedy, *supra* note 1.

4. *See* Ron Fonger, *State Knew of PFAS in Flint River Before Switch, but City May Not Have Been Told*, https://www.mlive.com/news/flint/index.ssf/2018/08/state_health_official.html (last updated Jan. 30, 2019) (reporting that tests of the water in the Flint River before 2014 show a level of PFAS higher than the current federal advisory for drinking water).

5. Jeff B. Kray & Sarah J. Wightman, *Contaminants of Emerging Concern: A New Frontier for Hazardous Waste and Drinking Water Regulation*, 32 NAT. RES. & ENV'T 36, 36 (Spring 2018), https://www.americanbar.org/groups/environment_energy_resources/publications/natural_resources_environment/2017-18/spring/contaminants-emerging-concern-new-frontier-hazardous-waste-and-drinking-water-regulation/; *Basic Information on PFAS*, https://www.epa.gov/pfas/basic-information-pfas (last visited Nov. 18, 2019).

6. *See, e.g.*, Jeffery S. Longsworth, *AFF at Commercial Airports – the Blessings and the Curse of PFAS* (Jan. 10, 2019), https://www.natlawreview.com/article/afff-commercial-airports-blessings-and-curse-pfas (noting PFOA and PFOS as most common PFAS). Even though PFAS is a blanket term for almost 5,000 compounds, when referring to PFAS this Note is only referring to PFOA and PFOS. *Per and Polyfluoroalkyl Substances (PFAS)*, https://www.fda.gov/food/chemicals/and-polyfluoroalkyl-substances-pfas (last visited Nov. 18, 2019) ("There are nearly 5,000 types of PFAS.").

7. Paula Gardner & Garret Ellison, *Michigan's Next* Water *Crisis is PFAS—And You May Already be Affected* (July 10, 2018), https://www.mlive.com/news/index.ssf/page/michigans_water_crisis_pfas.html.

humans and animals.[8] In total, there are 172 known PFAS contamination sites in 40 states across the country.[9] This statistic leaves out likely 1500 drinking water systems that are affected.[10] Residents in these areas complain of an increased prevalence of cancer and other illnesses like thyroid problems, elevated cholesterol, and effects on the immune system.[11] The chemicals are estimated to be so widespread that they can be found in the bloodstream of nearly every American.[12] As a New York Times Magazine article put it:

> [I]f you are a sentient being reading this article in 2016, you already have PFOA in your blood. It is in your parents' blood, your children's blood, your lover's blood. How did it get there? Through the air, through your diet, through your use of nonstick cookware, through your umbilical cord. Or you might have drunk tainted water.[13]

PFAS have been on the EPA's "emerging contaminant" list since 2012.[14] Emerging contaminants are "previously unknown, unrecognized, unanticipated, unsuspected, or unregulated chemical pollutants."[15] PFAS are not necessarily emerging. There is a vast array of documents indicating that manufacturers of PFAS have been aware of the hazards associated with PFAS exposure since the creation of PFOA.[16] There is also evidence that the EPA may have known about the danger of these chemicals for almost as

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8. *See* Joseph G. Allen, *These Toxic Chemicals are Everywhere – Even in Your Body. And They Won't Ever Go Awa*y (Jan. 2, 2018), https://www.washingtonpost.com/opinions/these-toxic-chemicals-are-everywhere-and-they-wont-ever-go-away/2018/01/02/82e7e48a-e4ee-11e7-a65d-1ac0fd7f097e_story.html (discussing PFAS as "forever chemicals").

9. *See* Bill Walker, *Update: Mapping the Expanding PFAS Crisis* (Dec. 6, 2018), https://www.ewg.org/research/update-mapping-expanding-pfas-crisis#.Wti8AW4vyUn (tracking PFAS in the U.S., particularly PFOA and PFOS).

10. *Id.*

11. *See, e.g.*, Jeff Brady, *Decades-Old Chemicals, New Angst Over Drinking Water* (Oct. 2, 2018), https://www.npr.org/2018/10/02/651180024/decades-old-chemicals-new-angst-over-drinking-water.

12. Bill Walker & David Andrews, *Drinking Water for 5.2 Million People Tainted by Unsafe Levels of PFCs* (May 23, 2016), https://www.ewg.org/enviroblog/2016/05/drinking-water-52-million-people-tainted-unsafe-levels-pfcs.

13. Nathaniel Rich, *The Lawyer Who Became DuPont's Worst Nightmare* (Jan. 26, 2016), https://www.nytimes.com/2016/01/10/magazine/the-lawyer-who-became-duponts-worst-nightmare.html.

14. Kray & Wightman, *supra* note 5, at 36.

15. *Id.*

16. Rich, *supra n*ote 13.

long,[17] but at least since the late 1990s.[18] Although the EPA has taken some steps to mitigate the impacts of PFAS, such as issuing a health advisory[19] and releasing a PFAS Action Plan in 2019,[20] the contaminant does not have a legally-enforceable limit in drinking water at the federal level.[21]

Congress has authorized the EPA to protect public health and the environment through a variety of laws and regulations such as the Clean Air Act, the Clean Water Act, the Toxic Substances Control Act, the Comprehensive Environmental Response, Compensation, and Liability Act, and the Safe Drinking Water Act (SDWA).[22] The SDWA protects the public drinking water systems as a means of safeguarding public health and provides the statutory authority to regulate PFAS contamination in drinking water.[23] The EPA has failed to utilize two provisions in the SDWA to regulate PFAS: 1) the Section 300g-1 (b)(1)(D) "Urgent Threats to Public Health" provision and 2) the Section 300i "Emergency Powers" provision.[24] Congress constructed these provisions to allow the EPA to pass regulations without rulemaking procedures when there are widespread public health problems.[25] This Note focuses on why the EPA should use the statutory authority granted

17. DuPont claims they volunteered health information to the EPA and produced proof in letters from 1982 and 1992. *Id.*

18. Kray & Wightman, *supra* note 5, at 37.

19. *See* U.S. ENVTL. PROTECTION AGENCY, TECH. FACT SHEET: PFOS & PFOA (2016) (identifying drinking water health advisories and what legally enforceable limits for PFOS and PFOA should be); *see infra* Part IV.

20. *See generally* U.S. ENVTL. PROTECTION AGENCY, NO. 823R18004, EPA'S PER-AND POLYFLURoROALKYL SUBSTANCES (PFAS) ACTION PLAN (2019) [Hereinafter EPA 2019 ACTION PLAN]; *see also infra* Part IV.

21. *See generally PFAS Laws and Regulations*, https://www.epa.gov/pfas/pfas-laws-and-regulations (last visited Oct. 20, 2019) (describing that PFAS are not federally regulated under the Clean Air Act, the Clean Water Act, the Toxic Substances Control Act, or the Comprehensive Environmental Response, Compensation, and Liability Act)

22. *See id.* (discussing the Clean Air Act, Toxic Substances Control Act, and Comprehensive Environmental Response, Compensation, and Liability Act); *Summary of the Clean Water Act*, https://www.epa.gov/laws-regulations/summary-clean-water-act (last visited Nov. 18, 2019) (discussing EPA's authority under the Clean Water Act). PFAS are known to be more soluble in water and thus accumulate in aquatic environments. *See* CHAD FURL & CALLIE MEREDITH, WASH DEP'T OF ECOLOGY NO. 10-03-034, PERFLOURATED COMPOUNDS IN WASH. RIVERS AND LAKES 9–10 (Aug. 2010) (illustrating that environmental monitoring and scientific studies have primarily focused on how PFAS acts in water). This Note focuses on regulating the chemical in drinking water. EPA regulations under the Clean Air Act, the Toxic Substances Control Act, and the Comprehensive Environmental Response, Compensation, and Liability Act, though relevant, will not be the focus of this Note.

23. *See generally* The Safe Drinking Water Act (SDWA), 42 U.S.C. §§ 300f-300j-26 (2018) (governing designated contaminants that may have adverse health effects).

24. *Id.* §§ 300g-1, 300i; *infra* Part V.

25. *See id.* §§ 300g-1(b)(1)(D) (noting the Administrator may promulgate an emergency regulation for a contaminant without making a determination); *id.* § 300i(a) (allowing Administrator to act if a contaminant is likely to enter a public water system and pose an imminent and substantial endangerment to human health).

by Congress to regulate PFAS under the SDWA, specifically using the Urgent Threats provision or the Emergency Powers provision.

First, this Note discusses why PFAS are a serious public health problem, especially due to their prevalence in the country's drinking water supply. Second, this Note discusses the SDWA as a means of safeguarding public health and providing the statutory authority to regulate PFAS contamination in drinking water. Third, this Note discusses the ineffective measures taken by Congress and the EPA to address PFAS in drinking water. Lastly, this Note proposes that the EPA should use the SDWA to regulate PFAS either through the Urgent Threat or Emergency Powers provisions.

II. BACKGROUND ON PFAS

A. The Development of PFAS

PFAS were developed in the 1940s and were integrated into a wide array of industries such as aerospace, automotive, construction, electronic, pharmaceutical, oil, and gas.[26] They are in everyday items such as cleaning products, textiles, paper, carpet, paints, non-stick pans, and food wrappers.[27] PFAS are also in a fire fighting foam called aqueous film-forming foams (AFFFs).[28] The use of AFFFs is popular on military bases, former military installations, and commercial airports.[29] The Department of Defense has identified over 400 military sites throughout the country with significant PFAS contamination.[30] The two most common forms of PFAS are known as PFOA—initially manufactured by 3M and DuPont and used to make Teflon—and PFOS—manufactured by 3M and used to make Scotchgard.[31]

PFAS are popular in a vast array of industries because they are so persistent and hard to break down.[32] PFAS share fire-resistant, oil-resistant, and water-repellant properties.[33] PFAS compounds are made up of fluorocarbon chains,[34] all relatively similar but with varying lengths of

25. *See* Nikki Delude Roy et al., *Regulatory Challenges Posed by Emerging Contaminants*, AM. BAR ASS'N WATER RES. COMM. NEWSL., Mar. 2018, at 8; *Basic Information on PFAS*, *supra* note 5.

27. *Basic Information on PFAS*, *supra* note 5.

28. *See* Longsworth, *supra* note 6.

29. *Id.*

30. *Id.*

31. *See, e.g.*, Rich, *supra* note 13 (noting DuPont initially purchased PFOA from 3M); *Statement on PFOA*, DUPONT, dupont.com/position-statements/pfoa.html (last visited Nov. 20, 2019) (noting DuPont manufactured PFOA); Walker, *supra* note 9 (noting PFOA's use in Teflon).

32. *See, e.g.*, Rich, *supra* note 13 (noting 3M used PFOS in Scotchguard).

33. *See, e.g.*, Kray & Wightman, *supra* note 5, at 36.

34. *See* Stephen Zemba & Russell Abell, *Emergence of PFAS: A Public Health Concern?,* AM. BAR ASS'N ENVTL. LITIG. & TOXIC TORTS COMMITTEE NEWSL., Aug. 2017, at 23 (describing that PFAS are "two-part molecules consist[ing] of an alkyl chain in which fluorine atoms fully or partially

carbon atoms.[35] The carbon bonds in PFAS are "among the strongest in organic chemistry and render the acids practically non-biodegradable."[36] Therefore, PFAS tend to accumulate in the environment, specifically in soil and groundwater.[37]

B. Routes to Human Exposure

Humans are exposed to PFAS through the use of products manufactured with PFAS, occupational exposure, and the consumption of contaminated food and drinking water.[38] PFAS migrate through air[39] and food,[40] but they are particularly mobile in water.[41] PFAS are "mobile in soil and leach into groundwater . . . and atmospheric deposition can lead to contamination of soils and leaching into groundwater away from point sources."[42] As proof of PFAS's ability to move efficiently in water, studies have found PFAS contamination in the Arctic.[43]

PFAS contamination in drinking water is widespread across the country: "at least 15 million Americans in 27 states have PFAS in their tap water."[44] Communities located near manufacturing plants or military bases have particularly high concentrations of PFAS in their drinking water due to the

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replace hydrogen and a functional group at one end (usually carboxylate or sulfonate) that provides beneficial properties.").

35. *See* Christine Lepisto, *What You Need to Know about PFOA and PFOS, the EPA Scandal Chemicals* (May 22, 2018), treehugger.com/environmental-policy/what-you-need-know-about-pfoa-and-pfos-chemicals-behind-pruitts-recent-epa-scandal.html (describing that PFAS compounds consist of chains of carbon atoms that vary in length). PFOA is also known as C8 for its eight carbon atoms. The variance in length of the carbon chains also helps predict how persistent and toxic the chemical is in the environment. *Id.*

36. FURL & MEREDITH, *supra* note 22, at 9.

37. *See* Rebecca Hersher, *Scientists Dig into Hard Questions about the Fluorinated Pollutants Known as PFAS* (Apr. 22, 2019), npr.org/sections/health-shots/2019/04/22/708863848/scientists-dig-into-hard-questions-about-the-fluorinated-pollutants-known-as-pfa (noting PFAS contaminate soil and water).

38. EPA 2019 ACTION PLAN, *supra* note 20, at 12.

39. *See* Zemba & Abell, *supra* note 34, at 24 (detailing that several communities, including Hoosick Falls, N.Y., Bennington Vt., and Merrimack N.H., and all located near textile factories that emitted PFAS into the air, have detected PFAS in their water).

40. *Basic Information on PFAS*, *supra* note 26 (describing that exposure through food happens when produce is grown with contaminated soil and water, through food packaging and wrappers containing PFAS, and manufacturing equipment that used PFAS during food processing).

41. *Per- and Polyfluoroalkyl Substances (PFAS)*, https://portal.ct.gov/DPH/Drinking-Water/DWS/Per--and-Polyfluoroalkyl-Substances (last updated Oct. 28, 2019).

42. AGENCY FOR TOXIC SUBSTANCES & DISEASE REGISTRY, TOXICOLOGICAL PROFILE FOR PERFLUOROALKYLS: DRAFT FOR PUBLIC COMMENT 2 (2018).

43. *Id.*

44. Sharon Lerner, *States Are Doing What Scott Pruitt Won't* (Apr. 21, 2018), https://www.nytimes.com/2018/04/21/opinion/sunday/states-are-doing-what-scott-pruitt-wont.html.

unfortunate practice of dumping byproducts of manufacturing or military use into water sources.[45]

C. Health Concerns and Ramifications from Exposure to PFAS

Once exposed to PFAS, the contaminant bioaccumulates in the bloodstream and liver.[46] "Bioaccumulation" describes the phenomenon of chemicals building up and persisting over time in a living organism.[47] Studies of the effects of PFAS in the bloodstream of animals have revealed "reproductive and developmental, liver and kidney immunological effects," as well as tumors.[48] The Agency for Toxic Substances and Disease Registry (ATSDR) published a profile summarizing the "key literature" on PFAS's toxicological effects.[49] The ATSDR report linked PFAS to causing several poor health outcomes.[50] The ATSDR report concluded that the results of epidemiological studies of PFAS suggest a link between hepatic effects (liver disease), cardiovascular effects, endocrine effects (increased risk of thyroid problems), immune effects (risk of asthma), reproductive effects (a decrease in fertility), and developmental effects.[51]

Conclusive scientific evidence of the health effects from exposure to PFAS is hard to ascertain.[52] For instance, studies investigating the effects of PFAS exposure in animals have frequently failed to find the same or similar effects in humans.[53] Due to variations in anatomical structure and biological processes, PFAS accumulate in the human body for long periods but only a few days in rodents.[54] While one epidemiological study may reveal a correlation between exposure to PFAS and human disease, a different study may not reproduce the same results.[55] To further illustrate this problem, a survey of residents in Hoosick Falls, New York, a town with contaminated

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45. Kray & Wightman, *supra* note 5, at 36–37.
46. *Id*. at 36, 38.
47. *Bioaccumulation*, https://www.merriam-webster.com/dictionary/bioaccumulation (last visited Dec. 19, 2019).
48. *Basic Information on PFAS*, *supra* note 26.
49. *See generally* AGENCY FOR TOXIC SUBSTANCES & DISEASE REGISTRY, *supra* note 42 (detailing the toxicological profile on 14 PFAS).
50. *See id.* at 4–6 (discussing human health effects).
51. *Id.* at 25, 24.
52. *See* Matthew Thurlow et al., *INSIGHT: PFAS Challenges Remain at EPA for Wheeler* (Oct. 3, 2018), https://news.bloombergenvironment.com/environment-and-energy/insight-pfas-challenges-remain-at-epa-for-wheeler/ (noting many studies have been inconclusive).
53. *Id.*
54. *See* Linn Salto Mamsen et al., *Concentrations of Perfluoroalkyl Substances (PFAS) in Human Embryonic and Fetal Organs from First, Second, and Third Trimester Pregnancies*, 124 ENVTL. INT'L 482, 487 (2019) (noting faster elimination of PFAS in rats compared to humans).
55. Thurlow, *supra* note 51.

water, "found 31 incidences of kidney cancer, 11 cases of testicular cancer, 231 people with thyroid disease, 71 incidents of ulcerative colitis, and 35 cases of pregnancy-induced hypertension."[56] This level of cancer, in general, is higher than average.[57] However, a survey of the same town by the New York State Department of Health revealed that there were "no statistically significant elevations of cancer [rates] . . . for any of the cancer types associated with PFOA."[58]

Nevertheless, earlier studies have revealed that there are serious risks associated with PFAS. Residents in contaminated areas complain of an increased prevalence of cancer, specifically testicular and kidney cancer, and other illnesses like thyroid disease, elevated cholesterol, ulcerative colitis, and pregnancy-induced hypertension.[59] The number of citizen-suit and tort claims against PFAS manufacturers are further illustrations of the medical harm caused by PFAS.[60] Medical monitoring, a provision of settlements with PFAS manufacturers, reveals that people with high exposures to PFAS have poor health outcomes and a higher prevalence of the diseases mentioned above.[61]

Data from Minnesota's Washington County, an area where 3M manufactured Scotchguard and dumped PFOS byproducts, has a 28% higher cancer rate from 1999 to 2013 than other parts of the state.[62] The resulting lawsuit between 3M and Minnesota settled for $850 million and without 3M admitting fault, but there is evidence from leaked internal company documents that 3M knew that PFAS were likely cancer-causing chemicals.[63]

Approximately 200 scientists have signed a joint statement stating their concern about PFAS and its health effects.[64] As one official explained:

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56. Karen Dewitt, *Hoosick Falls Study Finds More Illnesses Linked to PFOA Exposure*, WAMC NORTHEAST PUB. RADIO (Aug. 21, 2018), https://www.wamc.org/post/hoosick-falls-study-finds-more-illnesses-linked-pfoa-exposure.

57. *Id.*

58. N.Y. STATE DEP'T OF HEALTH, CANCER INCIDENCE INVESTIGATION: VILLAGE OF HOOSICK FALLS, RENSSELAER COUNTY, at 1 (2017).

59. *Id*.; AGENCY FOR TOXIC SUBSTANCES & DISEASE REGISTRY, *supra* note 42, at 4–6.

60. *See* Jeanine L.G. Grachuk, *Water Contamination: Recent PFAS Case Law – RCRA, CERCLA, and Toxic Tort Claims* (Mar. 29, 2017), https://www.natlawreview.com/article/water-contamination-recent-pfas-case-law-rcra-cercla-and-toxic-tort-claims (noting significant PFAS litigation).

61. *See generally* Bindu Panikkar et al., *Making the Invisible Visible: Results of a Community-Led Health Survey Following PFAS Contamination of Drinking Water in Merrimack, New Hampshire*, ENVTL. HEALTH, Aug. 2019, at 5–6, 13 (tracking health outcomes after PFAS exposure and noting more medical monitoring is needed).

62. Tiffany Kary & Christopher Cannon, *Cancer-Linked Chemicals Manufactured by 3M are Turning Up in Drinking Water* (Nov. 2, 2018), https://www.bloomberg.com/graphics/2018-3M-groundwater-pollution-problem/.

63. *Id*.

64. *Id*.

> You are never going to have 100 Percent certainty on anything . . . but when you have a chemical that evidence points to is causing fatalities, you err more on the side of taking some action, as opposed to 'Let's wait and spend some more time and try to get the science entirely certain,' which it hardly ever gets to be.[65]

PFAS's presence in drinking water leaves many people vulnerable to the adverse health risks associated with it.[66] Creating a legally-enforceable limit dictating an established safe level of PFAS in drinking water is critical to ensuring public health.[67] The SDWA protects public drinking water systems and provides the statutory authority to regulate PFAS contamination in drinking water.[68]

III. LEGAL BACKGROUND

A. The Safe Drinking Water Act

The SDWA[69] was passed in 1974 due to a heightened awareness surrounding human exposure to suspected and known cancer-causing contaminants, as well as a response to several disease outbreaks caused by contaminants in drinking water.[70] The SDWA directs the Administrator of the EPA to promulgate regulations that protect public drinking water in the United States from contaminants[71] that pose health risks.[72] The SDWA works by setting standards for contaminants, establishing treatment

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65. Eric Lipton, *Why Has the EPA Shifted on Toxic Chemicals? An Industry Insider Helps Call the Shots* (Oct. 21, 2017), https://www.nytimes.com/2017/10/21/us/trump-epa-chemicals-regulations.html.

66. *See* Walker, *supra* note 9 (describing individuals affected by PFAS in well water).

67. *See* Olga Naidenko, *PFAS in Drinking Water: Hazardous at Ever-Lower Levels*, ENVTL. WORKING GRP. (Feb. 19, 2019), https://www.ewg.org/news-and-analysis/2019/02/pfas-drinking-water-hazardous-ever-lower-levels (detailing how the EPA's health advisory limit for PFAS remains too high, at 70 parts per trillion, compared to the lowest recommended levels of 0.3 parts per trillion, creating public health concerns).

68. *See generally* 42 U.S.C. §§ 300f–300j-26 (2018) (governing contaminants that may have adverse health effects).

69. *Id.* The original SDWA passed in 1974 was amended in 1977 and substantially amended in 1986, 1996 and 2016.

70. Richard Weinmeyer et al., *The Safe Drinking Water Act of 1974 and Its Role in Providing Access to Safe Drinking Water in the United States*, 19 AMA J. ETHICS 1018, 1018–20.

71. 42 U.S.C. § 300f(4)(C)(6) (defining a contaminant as any "physical, chemical, biological, or radiological substance or matter in water.").

72. MARY TIEMANN, CONG. RESEARCH SERV., RL31243, SAFE DRINKING WATER ACT (SDWA): A SUMMARY OF THE ACT AND ITS MAJOR REQUIREMENTS 5 (2017) (defining three criteria that must be met to promulgate safe drinking water regulation for a contaminant).

requirements, promoting compliance for states and local authorities, financing infrastructure projects, and protecting sources of drinking water.[73]

In order to regulate drinking water standards, the EPA must follow the process laid out in Section 300g-1of the SDWA, titled "National drinking water regulations."[74] If the EPA determines that a contaminant should be regulated it establishes a national primary drinking water regulation (NPDWR).[75] An NPDWR sets a legally enforceable limit on the amount of contaminants existing in public water systems—otherwise known as a Maximum Contaminant Level (MCL).[76] The EPA looks to three factors when determining to regulate a contaminant in drinking water: (1) whether the contaminant may have an adverse health effect; (2) whether the contaminant is known to occur, will occur, is substantially likely to occur, or that the contaminant is known to occur in public water systems at a frequency level of a public health concern; and (3) whether regulating the contaminant presents a meaningful opportunity for a health risk reduction.[77]

The EPA monitors a list of unregulated contaminants that may require regulation based on the criteria presented above, known as the Contaminant Candidate List (CCL).[78] Every five years the EPA publishes a list of no more than 30 unregulated contaminants to be monitored in public water systems, known as Unregulated Contaminant Monitoring Rule (UCMR).[79] Also, the EPA makes a regulatory determination every five years for at least five of the contaminants on the CCL.[80] A regulatory determination consists of evaluating the contaminant against the SDWA criteria.[81] A contaminant published on the CCL does not impose any regulatory requirements on public water systems.[82]

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73. *Id*. at 1.

74. 42 U.S.C. § 300g-1; *How EPA Regulates Drinking Water Contaminants*, https://www.epa.gov/dwregdev/how-epa-regulates-drinking-water-contaminants#decide (last visited Dec. 19, 2019).

75. TIEMANN, *supra* note 72, at 4–5 (currently, the EPA regulates more than 90 contaminants in drinking water, including lead, arsenic, certain disinfectants and their byproducts, benzene, and pesticides); *How EPA Regulates Drinking Water Contaminants*, *supra* note 74.

76. 42 U.S.C. § 300g-1(b)(1)(A); *How EPA Regulates Drinking Water Contaminants*, *supra* note 74.

77. 42 U.S.C. § 300g-1(b)(1)(A)(i)–(iii).

78. *Contaminant Candidate List (CCL) and Regulatory Determination: Basic Information on the CCL and Regulatory Determination*, https://www.epa.gov/ccl/basic-information-ccl-and-regulatory-determination (last visited Dec. 19, 2019).

79. *See* TIEMANN, *supra* note 72, at 5 (determining the URCM by referencing the CCL, as well as other data).

80. *Id.*

81. *Contaminant Candidate List (CCL) and Regulatory Determination: Basic Information on the CCL and Regulatory Determination*, *supra* note 78.

82. *Id.*

When the EPA determines that a contaminant requires regulation, the EPA then sets an enforceable Maximum Contaminant Level Goal (MCLG).[83] An MCLG represents the level at which a contaminant can exist in a public water supply without any adverse known or anticipated health effects.[84] When calculating an MCLG, the EPA accounts for specific health concerns of sensitive subpopulations, such as those with compromised immune systems, chronic disease, infants, children, and the elderly.[85] For instance, when a chemical contaminant is known to cause cancer, and there is no known safe level where it exists in water without causing cancer, the EPA sets the contaminant's MCLG at zero.[86] For other contaminants that are known to cause adverse health effects, but are non-carcinogenic, the EPA calculates an estimated MCLG by determining the lowest concentration in water the human body may be exposed to without causing any adverse health effects.[87] The EPA then is required to set a Maximum Contaminant Level ("MCL") as close to the MCLG as feasibly possible, which means a level that takes into account the cost of implementation and what sort of technology is available to remove and treat the contaminated water supplies.[88]

If the EPA decides to regulate a contaminant, it must propose the MCL and the NPDWR within 24 months[89] and publish a preliminary regulatory determination in the Federal Register, providing an opportunity for public comment.[90] After the notice and comment period is over, the EPA publishes a final rule within 18 months after the first proposal.[91] When coming up with both the MCL and the NPDWR, the EPA undergoes a cost-benefit analysis and a health risk assessment that takes into account the best available peer-reviewed science and data.[92] The NPDWR must weigh the health benefits and costs to states, local agencies, and public water systems when complying with the proposed standard.[93] By passing an economically feasible NPDWR,

83. *How EPA Regulates Drinking Water Contaminants*, *supra* note 74.
84. TIEMANN, *supra* note 72, at 5.
85. *How EPA Regulates Drinking Water Contaminants*, *supra* note 74.
86. *Id.*
87. *Id.* (describing that, when calculating an MCLG, the EPA considers the results of epidemiology or toxicology studies divided by uncertainty factors such as population effects, then multiplied by body weight and divided by the daily water consumption to provide a Drinking Water Equivalent Level (DWEL). After looking at other routes of exposure like food intake or inhalation, the DWEL is then multiplied by the percentage of total drinking water exposure for the general population).
88. *See* TIEMANN, *supra* note 72, at 5.
89. 42 U.S.C. § 300g-1(b)(2) (2018).
90. *How EPA Regulates Drinking Water Contaminants*, *supra* note 74.
91. TIEMANN, *supra* note 72, at 6.
92. *Id.*
93. *How EPA Regulates Drinking Water Contaminants*, *supra* note 72.

the SDWA attempts to minimize the burdens and costs placed on local administrators when implementing a drinking water standard.[94]

B. SDWA Regulations for Emergency & Urgent Situations

1. Urgent Threat to Public Health Provision

The SDWA's "Urgent Threat" provision authorizes the EPA to promulgate an "interim NPDWR."[95] Interim NPDWRs are legally enforceable like NPDWRs, but, under this provision, the EPA does not need to decide whether the benefits of regulating the contaminant would justify the costs, nor does the EPA need to publish any sort of health risk reduction report.[96] The only criterion that the EPA needs to meet is that, after consulting with either the Secretary of Health and Human Services, the director of the Centers for Disease Control and Prevention, or the director of the National Institutes of Health, the contaminant presents an urgent threat to public health.[97] Within three years after promulgating the interim NPDWR, a full risk assessment and cost-benefit analysis should be published, and the EPA should revise the interim NPDWR to account for the full analysis.[98]

2. Emergency Powers Provision

The SDWA also contains an "Emergency Powers" provision that grants the EPA "broad authority" to address public health endangerments.[99] The Emergency Powers provision authorizes the EPA Administrator to declare a state of emergency, issue orders, and commence civil actions if: (1) a contaminant that is likely to enter a public drinking water system poses an imminent and substantial threat to public health; and (2) state and local officials have not taken adequate action.[100] This provision is intended to prevent or eliminate potentially dangerous situations that may jeopardize human health.[101]

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94. *See* Bronwen O'Herin, Note, *The Costs of Clean Water in Hoosick Falls: Private Civil Litigation and the Regulation of Drinking Water Quality*, 93 N.Y.U. L.R. 1743, 1748-49 (2018).

94. 42 U.S.C. § 300g-1(b)(D) (2018).

96. *See* TIEMANN, *supra* note 72, at 6.

97. 42 U.S.C. § 300g-1(b)(D).

98. *Id.*

99. 42 U.S.C. § 300i(a); *see also* U.S. ENVTL. PROT. AGENCY, UPDATED GUIDANCE ON INVOKING EMERGENCY AUTHORITY UNDER SECTION 1431 OF THE SAFE DRINKING WATER ACT 3 (2018).

100. 42 U.S.C. § 300i(a).

101. UPDATED GUIDANCE ON INVOKING EMERGENCY AUTHORITY, *supra* note 99, at 4.

IV. ANALYSIS

A. Current Actions by the EPA to Regulate PFAS

The SDWA protects public drinking water systems and provides the statutory authority to regulate PFAS contamination in drinking water. However, the EPA has not used its authority under the SDWA to set a legally enforceable limit for PFAS.[102] PFAS were listed on the third UCMR, published in 2012.[103] The EPA collected data to evaluate the need for an MCL for PFAS, but have not set an enforceable MCL.[104] Instead, in 2016, the EPA established a health advisory for PFAS, setting an MCL at 70 parts per trillion.[105] Health advisories serve as "informal technical guidance" to assist federal, state, and local officials in determining what level of PFAS may occur without adverse health effects.[106] A health advisory is "non-enforceable and non-regulatory," meaning the limit set under the health advisory is merely informative, and public drinking water systems do not have to comply.[107] Even the EPA states that a health advisory only offers a "margin of protection . . . from adverse health effects."[108]

The PFAS health advisory is not the only "non-regulatory" measure the EPA initiated regarding PFAS. In 2006, the EPA started a PFOA Stewardship Program in which they invited the eight leading manufacturers of PFOA to voluntarily agree to: (1) commit to reducing all forms of PFOA emissions by 95%; and (2) to work toward eliminating PFOA from emissions and products by 2015[109]. While all eight participating companies cooperated and met the PFOA Stewardship Program goals, there is no regulation to prevent other manufacturing companies from producing these chemicals. Moreover, the prior impacts these eight companies had on the environment

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102. *See generally PFOA, PFOS, and Other PFASs: EPA Actions to Address PFAS*, https://www.epa.gov/pfas/epa-actions-address-pfas (last visited Dec. 19, 2019) (explaining the steps EPA has taken to address PFAS, which does not include setting a legally enforceable limit on the chemical).

103. *PFAS Laws and Regulations*, *supra* note 21.

104. *Monitoring Unregulated Drinking Water Contaminants: Third Unregulated Contaminant Monitoring Rule*, https://www.epa.gov/dwucmr/third-unregulated-contaminant-monitoring-rule (last visited Dec. 19, 2019).

105. ENVTL. PROT. AGENCY, FACT SHEET: PFOA & PFOS DRINKING WATER HEALTH ADVISORIES 2 (2016).

106. *Id.*

107. *Drinking Water Health Advisories for PFOA and PFOS,* https://www.epa.gov/ground-water-and-drinking-water/drinking-water-health-advisories-pfoa-and-pfos (last visited Dec. 19, 2019).

108. *Id.*

109. *Fact Sheet: 2010/2015 PFOA Stewardship Program*, https://www.epa.gov/assessing-and-managing-chemicals-under-tsca/fact-sheet-20102015-pfoa-stewardship-program (last visited Dec. 19, 2019).

remain a problem because their byproducts biodegrade very slowly and continue to pollute the air, soil, and water.[110]

Recently, the EPA released a PFAS Action Plan detailing short- and long-term goals for how it plans to address PFAS in the future.[111] The Action Plan considers public input developed during the PFAS National Leadership Summit in 2018.[112] The key actions relevant to PFAS drinking water contamination include: (1) the EPA moving forward with setting a legally enforceable MCL through the process described in the SDWA;[113] (2) establishing a nationwide drinking water monitoring program to help improve the frequency and concentration of PFAS in drinking water; and (3) expanding scientific research to improve detection, measurement, and a general understanding of PFAS in the environment and drinking water.[114]

It is a definite improvement that the EPA declared its future intentions for a PFAS NPDWR, but intentions do not definitively lead to action, and there is no guarantee that the EPA will follow through with this decision.[115] The EPA has been discussing regulating PFAS since 2009, and if it were to follow through with its intentions, PFAS would be the first contaminant in nearly 20 years to have an enforceable NPDWR set under the SDWA.[116]

B. Current Actions by Congress to Push for PFAS Regulation

Various congressional leaders have expressed concern over how the EPA is handling PFAS, especially in response to the EPA's PFAS Action Plan.[117] Some members of Congress have expressed that the Action Plan merely "kicks the can even further down the road."[118] In a press release responding

110. *See* Jon Hurdle & Susan Phillips, *EPA Says It Plans To Limit Toxic PFAS Chemicals, But Not Soon Enough For Critics* (Feb. 14, 2019), https://www.npr.org/2019/02/14/694660716/epa-says-it-will-regulate-toxic-pfas-chemicals-but-not-soon-enough-for-critics (explaining how PFAS chemicals have been used in manufacturing for decades).

111. EPA'S PFAS ACTION PLAN: SUMMARY OF KEY ACTIONS, https://www.epa.gov/sites/production/files/2019-02/documents/pfas_action_factsheet_021319_final_508compliant.pdf.

112. *PFAS National Leadership Summit and Engagement*, https://www.epa.gov/pfas/pfas-national-leadership-summit-and-engagement (last visited Dec. 19, 2019).

113. EPA'S PFAS ACTION PLAN, *supra* note 111.

114. *Id.* (describing how other actions include strengthening cleanup strategies by listing PFAS as hazardous substances under CERCLA, considering adding PFAS to the Toxic Release Inventory, strengthening enforcement tools to address PFAS in the environment, and establishing a risk communication toolbox to help ensure consistent messages to the public).

115. *See* EPA 2019 ACTION PLAN, *supra* note 20, at 22 (describing that there is additional information needed to determine if an NPDWR will be set at all).

116. Laurel Schaider, *EPA's Plan to Regulate Chemical Contaminants in Drinking Water is a Drop in the Bucket* (Mar. 2, 2019), https://www.pennlive.com/opinion/2019/03/epas-plan-to-regulate-chemical-contaminants-in-drinking-water-is-a-drop-in-the-bucket-opinion.html.

117. *See* Hurdle & Phillips, *supra* note 110.

118. *See id.* (quoting U.S. Senator Tom Carper).

to the Action Plan, two Congressmen, Dan Kildee and Brian Fitzpatrick issued a joint statement: "PFAS chemical contamination is a public health crisis and the EPA must act with an urgency that matches the scale of the problem . . . [F]urther aggressive and impactful actions must be taken by the Administration to protect Americans' communities."[119]

On January 23, 2019, members of Congress announced they were forming a bipartisan task force in the House of Representatives to address the "urgent" PFAS contamination crisis in drinking water.[120] The task force's mission was to "collectively put pressure" on the EPA to designate PFAS as a hazardous substance and set a national drinking water standard. [121]

However, the EPA already contains the power to act swiftly and address the PFAS contamination crisis if it effectively utilizes the SDWA.[122] The SDWA contains two provisions—the Urgent Threats to Public Health and the Emergency Powers provisions, respectively—that allow the EPA to pass regulations quickly in response to urgent public health problems.[123]

V. SOLUTIONS

A. The EPA Needs to Exercise its Authority to Regulate PFAS Under the SDWA

PFAS meet the standards for creating a legally-enforceable NPDWR under the SDWA because they meet the criteria set out in the statute

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119. Press Release, Congressman Dan Kildee, Joint Statement by Reps. Kildee and Fitzpatrick, Co-Chairs of Congressional PFAS Task Force, on EPA's PFAS Plan, (Feb. 14, 2019), https://dankildee.house.gov/media/press-releases/joint-statement-reps-kildee-and-fitzpatrick-co-chairs-congressional-pfas-task.

120. Monica Amarelo, *PFAS Contamination Transcends Partisan Politics*, ENVTL. WORKING GRP. (Jan. 23, 2019), https://www.ewg.org/release/bipartisan-congressional-task-force-take-growing-pfas-contamination-crisis.

121. Justine McDaniel & Laura McCrystal, *Members of Congress Will 'Put Pressure on the EPA' to Address PFAS-Contaminated Water*, PHILA. INQUIRER (Jan. 23, 2019), http://www.philly.com/news/pfoa-pfos-pfas-water-contamination-congress-task-force-bucks-montgomery-20190123.html. Another example of how Congress is responding to the lack of EPA action are the bills being introduced in Congress. These bills have not passed: The "PFAS Registry Act," aimed at establishing a registry of any veterans or members of the armed forces who have been exposed to PFAS; "The PFAS Accountability Act" that encourages Federal agencies to enter into agreements with states to aid in the removal and remedial actions of contamination in drinking, surface and groundwater; and lastly "The PFAS Action Act," which would require the EPA to classify all PFAS as "hazardous substances" under section 102(a) of CERCLA. *PFAS Federal Legislation*, https://www.law.nyu.edu/centers/state-impact/press-publications/research-reports/pfas-federal-legislation (last updated Dec. 18, 2019).

122. *See* 42 U.S.C. §§ 300g-1(b)(1)(D), 300i(a) (2018) (outlining the EPA's power to regulate contaminants in water).

123. *Id.*

explained above.[124] First, they are contaminants with proven adverse health effects, linked to several illnesses.[125] PFAS are also suspected of being carcinogenic; strong evidence links a higher prevalence of cancer to residents living in areas with increased contamination.[126]

Second, the discovery of PFAS in public water systems is widespread at a level that raises a public health concern.[127] An estimated 16 million Americans in 33 states have PFAS in their drinking water, and there are 172 known PFAS contamination sites in 40 states.[128] The extent of exposure to the contaminant the population is already facing, coupled with the known adverse health effects related to PFAS, paint a frightening public health crisis.[129]

Lastly, regulating PFAS presents a meaningful opportunity for a health risk reduction.[130] For instance, the ATSDR suggested in their toxicity study that the level of PFOA in drinking water should be 11 parts per trillion and seven parts per trillion for PFOS.[131] The non-enforceable national health advisory guideline currently sets the drinking level for PFAS at 70 parts per trillion in drinking water, which is much higher than the ATSDR.[132] The part per trillion in drinking water at most contaminated sites exceeds the EPA's health advisory.[133] For instance, the levels tested around 126 military installations have all revealed that the water level tested higher than the EPA's health advisory, both in drinking water wells and in groundwater sources.[134] Additionally, blood tests around contamination sites also reveal a higher part per trillion of PFAS.[135] The blood of one particular resident living near a contamination site revealed a level of 3.2 million parts per trillion of PFAS, compared to the national average at 4,300 parts per trillion for PFOA and 1,100 parts per trillion for PFAS.[136]

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124. 42 U.S.C. § 300g-1(b)(1)(i-iii); *see also supra* Part III.

125. TOXICOLOGICAL PROFILE FOR PERFLUOROALKYLS, *supra* note 42, at 25.

126. *See* Kary & Cannon, *supra* note 62; Thurlow et al., *supra* note 52.

127. *See* Walker, *supra* note 9.

128. *Id.*

129. *See* Kary & Cannon, *supra* note 62; Thurlow, et al., *supra* note 52; Walker, *supra* note 9.

130. *See* 42 U.S.C. § 300g-1(b)(1)(A)(i-iii) (2018).

131. *See* Garret Ellison, *Blocked Report Drops PFAS Safety Level into Single Digits*, https://www.mlive.com/news/2018/06/atsdr_pfas_toxprofiles_study.html (last updated Jan. 30, 2019) (describing proposed ATSDR minimum risk levels).

132. *Drinking Water Health Advisories for PFOA and PFOS*, *supra* note 107.

133. Tara Copp, *DoD: At Least 126 Bases Report Water Contaminants Linked to Cancer, Congenital Disabilities* (Apr. 26, 2018), https://www.militarytimes.com/news/your-military/2018/04/26/dod-126-bases-report-water-contaminants-harmful-to-infant-development-tied-to-cancers/.

134. *Id.*

135. *See* Walker, *supra* note 9.

136. *Id.*

In the absence of federal action, many states have set local enforceable safe drinking water levels of PFAS at much lower parts per trillion, ranging anywhere from 14 in New Jersey to 35 in Minnesota.[137] Passing a federal NPDWR is necessary. The SDWA provides examples of specific remedies already in place, such as monetary damages and providing alternative sources of drinking water.[138]

PFAS travel efficiently through water, thus, having a NPDWR that is enforceable at a federal level also offers a consistent level of protection to all people.[139] For example, people may live near neighboring states with different MCLs or no MCLs at all.[140] A state like New Jersey, with the strictest MCL, shares water supplies with a neighboring state, Delaware, which has no MCL set for PFAS.[141] Regulating PFAS under the SDWA would mean removing PFAS off of the CCL and setting an MCL at a level that represents scientific recommendations (an approach that some states are already taking), or even at the level the ATSDR suggests.[142]

The 2019 EPA Action Plan includes a proposal to set an NPDWR for PFAS by the end of 2019.[143] This proposal initiates a full rulemaking procedure that allows time for the public to comment and contribute information for the EPA's consideration.[144] Presumably, if the EPA were to follow through with what is laid out in the Action Plan and issue a NPDWR by December 31, 2019, at least another 36 more months may pass before the regulation is enforceable.[145] However, to protect public health, the SDWA's "Urgent Threat" provision and "Emergency Power" provision can immediately set an MCL to regulate PFAS without a public comment proceeding.[146]

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137. Kray & Wightman, *supra* note 5, at 37.

138. TIEMANN, *supra* note 72, at 19.

139. *See* Walker, *supra* note 9.

140. *Id.*

141. *Id.*

142. *See* Kary & Cannon, *supra* note 62; Kray & Wightman, *supra* note 5, at 39.

143. EPA 2019 ACTION PLAN, *supra* note 20, at 3.

144. *Id.*

145. 42 U.S.C. § 300g-1(b)(1)(E) (2018) (providing a 36-month time-frame that takes into account the 24 months allowed for notice and comment once a rule is published in the Federal Registrar and an additional 18 months for a final rule to be published; *see* David Schultz, *EPA Throws Cold Water on Hopes for Bold Nonstick Chemical Plan* (Feb. 14, 2019), https://news.bloombergenvironment.com/environment-and-energy/epa-throws-cold-water-on-hopes-for-bold-nonstick-chemical-plan (explaining that the decision to promulgate a rulemaking is only the beginning of the third step in a long four-step process to establish a new regulation).

146. H.R. REP. 104-632, pt. 1, at 9-10 (1996) (detailing that the legislative history of the 1996 Amendment's speak to Congress's intent to amend the SDWA so it focuses on protecting the public from contaminants in drinking water that pose the most significant health risks).

B. Utilizing the Urgent Threat Provision

The Urgent Threat provision provides the most efficient means for the EPA to pass a NPDWR because it allows the EPA to regulate immediately.[147] The Urgent Threat provision's location within the SDWA, under the "national drinking water regulations" section, the same section detailing the routine process for passing an NPDWR, reflects its purpose to provide an alternative to the standard regulation process.[148] The Urgent Threat provision should be used when a contaminant's presence in drinking water deserves immediate attention, allowing the EPA to bypass the formal process of passing a NPDWR without conducting a full rulemaking procedure or a risk reduction or health analysis. [149] In the 2019 Action Plan, the EPA affirmed its commitment to following the SDWA process for evaluating drinking water standards for PFAS and going through formal rulemaking.[150] The EPA's decision to partake in formal rulemaking process means it is not adequately using the Urgent Threat provision to protect public health.

The legislative history shows that the congressional intent behind including the Urgent Threat provision within the SDWA was to grant the EPA power to pass interim drinking water regulations quickly.[151] The only determination the EPA makes before using the Urgent Threat provision is whether there is an urgent threat.[152] There is no clear definition for what constitutes an urgent threat, but the legislative history reveals that it should require immediate or near-immediate action, likely under "exceptional circumstances."[153]

There is little evidence on when, if ever, the EPA has used the Urgent Threat provision. Therefore, it is hard to determine what sort of situations might trigger the provision.[154] Nevertheless, it seems clear in the case of PFAS that some immediate action may be required, and that these may be exceptional circumstances.[155] The chemical qualities of PFAS that make

147. 42 U.S.C. § 300g-1.

148. *Id.*

149. *See* H.R. REP. 104- 632, pt. 1, at 33 (1996) (describing the purpose of the Urgent Threat provision).

150. EPA 2019 ACTION PLAN, *supra* note 20, at 21.

151. H.R. REP. 93-1185 pt. 2, at 17 (1974).

152. 42 U.S.C. §§ 300g-1(b)(1)(D).

153. H.R. REP. NO. 104-632, pt. 1, at 33 (1996).

154. *See*, *e.g.*, National Interim Primary Drinking Water Regulations; Control of Trihalomethanes in Drinking Water, 44 Fed. Reg. 68,624 (Nov. 29, 1979) (codified at 40 C.F.R. pt. 141) (describing an instance in which the EPA set an MCL for a group of chemicals associated with chlorine and referred to the regulation as an "interim" measure, but not promulgating it under the Urgent Threat provision, demonstrating the uncertainty of what triggers the provision).

155. *See* H.R. REP. NO. 104-632, pt. 1, at 33-34 (1996) (showing that the legislative history referred to both "interim" and "revised" regulations but did not have an "Urgent Threat provision,"

them so persistent and pervasive in the environment create a unique public health problem that should qualify as "exceptional."[156] Traces of PFAS are found not only in the blood of nearly all Americans but also in the blood of almost every person in the world.[157]

Although the widespread impact of PFAS favors prompt and immediate action, over-regulating does have the potential to impose significant long-term costs on states, industries, and local agencies working to enforce a NPDWR.[158] Nevertheless, waiting for conclusive research and scientific evidence that overwhelmingly points to PFAS causing adverse health effects should not be at the expense of the people and communities who are experiencing health problems now.[159] The Urgent Threat provision maintains that once the EPA passes an interim NPDWR, further research and health assessments must be published within three years.[160] The EPA can use this three-year time period provided for by the SDWA to gather additional research to reach a better understanding of the "sources, pathways, [and] populations exposed" to PFAS.[161] If, during this period, the EPA determines that the research suggests setting the interim NPDWR at an even lower level—such as zero parts per trillion—it is allowed to issue revisions.[162]

A "regulate first, conduct research later" approach minimizes the harms of PFAS while still allowing for scientific evidence and research to inform the interim NPDWR.[163] Further, this research is eventually published in the Federal Register and available for stakeholders to comment.[164]

C. Utilizing the Emergency Powers Provision

The Urgent Threat provision is the ideal route for the EPA to pass a PFAS regulation quickly. However, because little is known about the scope of the Urgent Threat provision, the SDWA also provides another means of circumventing a rulemaking process and creating quick regulations through

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which was added during the 1996 Amendments. Instead the house report stated that "[t]his section amends Section 1412(b) for the purpose of addressing urgent public health threats.").

156. *See e.g.*, Kray & Wightman, *supra* note 5, at 36 (discussing the fire-, oil-, and water-resistant properties of PFAS).

157. *See* Rhea Suh, *We Can't Assume Our Water is Safe to Drink. But We Can Fix It* (March 2019), https://www.nationalgeographic.com/magazine/2019/03/drinking-water-safety-in-united-sates-can-be-fixed/ ("Toxic chemicals such as those in Teflon are so ubiquitous they're found in the blood of 98 percent of people in the United States and nearly every country in the world.").

158. *See* Thurlow et al., *supra* note 52.

159. Lipton, *supra* note 65.

160. 42 U.S.C. § 300g-1(b)(1)(D) (2018).

161. *Id.*; EPA 2019 ACTION PLAN, *supra* note 20, at 10.

162. 42 U.S.C. § 300g-1(b)(1)(D).

163. H.R. REP. NO. 104-632, pt. 1, at 33–34 (1996).

164. 42 U.S.C. § 300g-1(b)(1)(D).

the Emergency Powers provision.[165] The Emergency Powers provision states that the EPA has "broad" authority to "deal promptly and effectively" in situations that affect public health.[166] For the EPA to utilize the Emergency Powers provision, there must be (1) information that a contaminant is, or is likely, to enter into the water system, and may present "imminent and substantial" adverse health effects, and (2) a failure of state and local authorities to protect human health.[167]

To fit the criteria of the Emergency Powers provision, a contaminant does not need to have a NPDWR already, be on the CCL or the UCMR, or even have a health advisory.[168] Imminent endangerments do not have to be instantaneous, and in fact, the actual harm may not be present for years.[169] For instance, carcinogens count as warranting emergency action even though their health effects are latent.[170] Although, the harm should not be so remote that the risk of harm is speculative.[171] Additionally, "[n]o actual injury need ever occur." [172]

In its 2019 Action Plan, the EPA insisted that the Emergency Powers provision cannot be used to set a NPDWR.[173] Perhaps the EPA is referring to the fact that the statutory text of the Emergency Powers provision requires that it only be utilized when other provisions within the SDWA cannot be used to adequately protect public health.[174] As mentioned above, the EPA has failed to utilize an adequate means of protecting public health through the Urgent Threat provision.

The assertion by the EPA that the Emergency Powers provision would not apply to setting a NPDWR seems to go against Congress's intent in creating broad emergency powers. [175] The legislative history and congressional intent in enacting the Emergency Powers provision reflect Congress's desire to vest the EPA with an effective means of handling public health emergencies.[176] The provision states that the EPA administrator can take actions that he deems necessary and types of remedial actions may

165. *Id.* § 300i(a).
166. H.R. REP. NO. 93-1185, at 31 (1974).
167. 42 U.S.C. § 300i(a).
168. UPDATED GUIDANCE ON INVOKING EMERGENCY AUTHORITY, *supra* note 99, at 7.
169. *Id.* at 8.
170. *Id.* at 9.
171. *Id*. at 10.
172. *Id.* at 8.
173. EPA 2019 ACTION PLAN, *supra* note 20, at 15.
174. H.R. REP. NO. 93-1185, pt. 2, at 35–36 (1974).
175. H.R. REP. NO. 93-1185, pt. 2, at 35 (1974).
176. Eric Moorman, *"A Greater Sense of Urgency": EPA's Emergency Authority Under the SDWA and Lessons from Flint Michigan*, 47 ENVTL. LAW REPORTER 10786, 10786–87 (2017) ("Congress clearly intended EPA to use its emergency powers to respond promptly to potential threats to public drinking water sources long before such threats have materialized.").

include but are not limited to issuing orders, monitoring of regulated or unregulated potential or identified contaminants, and controlling the source of contaminants.[177] There is no reason why an NPDWR for PFAS could not fit into these broad types of remedies.

In October 2015, during the Flint water crisis, many community groups and the National Resource Defense Council urged the EPA to use its Emergency Powers provision.[178] During this time the EPA had the knowledge it needed to meet the criteria of enacting an emergency order under the Emergency Powers provision.[179] The EPA knew that lead was present in the water system and that at least four homes had lead in their drinking water above action level.[180] Almost a year later the EPA finally issued an emergency order.[181] The EPA has acknowledged that its delay in utilizing its authority under the Emergency Powers provision contributed to serious harm in Flint.[182] The Office of Inspector General recognized the EPA's failure to use the Emergency Powers in Flint and urged the EPA to revise its Emergency Powers guidelines, stating that "[t]he EPA must be better prepared and able to timely intercede in public health emergencies like that which occurred in Flint."[183]

While the drinking water crisis in Flint is different from the PFAS crisis in terms of the widespread pollution of PFAS[184] and the concrete harms stemming from lead in drinking water,[185] the EPA's delayed actions in Flint inform why the EPA must act swiftly to mitigate the harms of PFAS. The EPA is aware of how severe and widespread the PFAS crisis is and still is reluctant to act with that knowledge.[186] The EPA's decision not to take urgent action in the PFAS crisis goes against the primary purpose of the Emergency

177. 42 U.S.C. § 300i(a) (2018); *see e.g.* UPDATED GUIDANCE ON INVOKING EMERGENCY AUTHORITY, *supra* note 99, at 14. Other examples of remedial actions include providing alternative water supplies at no cost to consumers; providing information about actual or impending emergencies; providing public notification of hazards; and commencing civil actions for injunctive relief and conducting investigations and research studies. *Id.*

178. Moorman, *supra* note 176, at 10,796.

179. U.S. ENVTL. PROT. AGENCY OFFICE OF INSPECTOR GEN., MANAGEMENT ALERT: DRINKING WATER CONTAMINATION IN FLINT, MICHIGAN, DEMONSTRATES A NEED TO CLARIFY EPA AUTHORITY TO ISSUE EMERGENCY ORDERS TO PROTECT THE PUBLIC 5 (Oct. 20, 2016).

180. *Id.*

181. Moorman, *supra* note 176, at 10,796.

182. *Id.*

183. MANAGEMENT ALERT, *supra* note 179, at 8.

184. Walker & Andrews, *supra* note 12.

185. *Ground Water and Drinking Water: Basic Information about Lead in Drinking Water*, https://www.epa.gov/ground-water-and-drinking-water/basic-information-about-lead-drinking-water#health (last visited Dec. 19, 2019).

186. *See* EPA 2019 ACTION PLAN, *supra* note 20, at 10 ("The EPA has heard about the many challenges communities are facing with PFAS . . . . Stakeholders and decision makers have emphasized the need to accelerate the understanding of PFAS toxicity and the impacts of PFAS to ecosystems.").

Powers provision—for the EPA to act early enough to prevent hazards from materializing.[187] During the delay between the EPA acting in Flint nearly 100,000 Flint residents became exposed to the harmful level of lead in their drinking water.[188] To stop the widespread pollution of PFAS and prevent thousands more people from becoming sick, the EPA should act swiftly so as not to repeat the same mistake.

CONCLUSION

PFAS create a proven public health problem, particularly with drinking water. While the EPA stated an intention to begin a rulemaking process for PFAS, even if this process were to begin at the end of 2019, the regulation would not be promulgated for years to come. Congress has given the EPA the authority to issue quick and immediate responses and to circumvent the lengthy regulatory requirements through the Urgent Threat and Emergency Powers provisions of the SDWA. The EPA should use those provisions as Congress intended and set PFAS thresholds immediately.

187. *See generally* Moorman, *supra* note 176, at 10,786 (summarizing legislative history, internal EPA guidance, and judicial opinions to conclude that the Emergency Authority is broad and contains few definite limits).

188. *Id.* at 10,796.

THE WAIVERING RENEWABLE FUEL STANDARD AND HOW TO FIX IT

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I. INTRODUCTION

In October of 2018, Bruce Buchanan etched a message into 60 acres of corn fields on his farm in Fowler, Indiana. From the air, the message read: "Thanks Mr. Trump for E15."[2] An aerial photo capturing the message quickly spread on social media, and the U.S. Agriculture Secretary and the White House Press Secretary eventually shared the photo as well.[3] Buchanan and his son created the corn maze message to show gratitude for the President's decision to lift a ban on the summertime sale of a higher-percentage ethanol blend called E15 in many warmer regions of the country. E15 is a higher-percentage ethanol/gasoline blend containing 15% ethanol.[4] In the United States, ethanol is produced primarily from corn.

"[W]e know for a fact that, for the ag economy, income is down . . . [but Trump's E15 decision] is good for corn farmers . . ." Buchanan said in an

2. Amie Simpson, *Indiana Farmer Cuts Thank You Message to Trump in Corn Field* (Oct. 23, 2018), https://brownfieldagnews.com/news/indiana-farmer-cuts-thank-you-message-to-trump-in-corn-field/.

3. Sarah Sanders (@PressSec) TWITTER (Oct. 18, 2018, 5:17 PM), https://twitter.com/PressSec/status/1053077662426718209.

4. *E15,* ALTERNATIVE FUELS DATA CTR., https://afdc.energy.gov/fuels/ethanol_e15.html (last visited Nov. 22, 2019).

interview about his stunt.[5] Unfortunately for him and many other farmers, U.S. ethanol policies since that time haven't been as favorable as Buchanan expected. By January 2019, three months after Buchanan had created his celebratory corn maze message, the President signaled he might change his mind about the summer ethanol ban.[6] Meanwhile, a fresh trade war with China combined with the longest government shutdown in U.S. history hastened the decline of farm income.[7] And growing pushback from the oil industry had created uncertainty as to whether the Environmental Protection Agency (EPA) would ever actually promulgate the new E15 rule Trump had announced months earlier.[8]

Trump's proposed E15 rule change was certainly not the first federal policy proposal to pit oil interests against the interests of American corn farmers. The petroleum-refining and corn-ethanol industries have continually sparred over the Renewable Fuel Standard (RFS)—a federal mandate requiring refiners to blend ethanol with gasoline—ever since Congress first enacted the standard in 2007.[9] Trump's 2018 promise of year-round sales of E15 was in direct response to concerns raised by Iowa Senator Chuck Grassley about the EPA's growing practice of liberally waiving oil refiners' compliance under the RFS.[10] During Scott Pruitt's short stint as head of the EPA, the new willingness to frequently grant waivers was so dramatic that it weakened market demand for corn.[11] Prior to 2016, when Pruitt took the helm, the EPA had never granted more than 8 waivers in any prior year; after Pruitt's appointment, the Agency granted 35 waivers in 2017 and 31 in

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5. Dave Bangert, *Benton Co. Farmers Harvest a 60-acre Thanks to Donald Trump After E15decision, Brownfield* (Oct. 19, 2018), https://www.jconline.com/story/opinion/columnists/dave-bangert/2018/10/19/indiana-farmers-cut-60-acre-thanks-donald-trump-after-e-15-decision/1694206002/.

6. *See* Mario Parker & Jennifer A Dlouhy, *Farmers Fear Another Hit as Trump Shutdown Threatens Ethanol Vow* (Jan. 4, 2019), https://www.bloomberg.com/news/articles/2019-01-04/farmers-fear-another-hit-as-trump-shutdown-threatens-ethanol-vow (noting the President's border-wall holdout delayed the rule change).

7. *Id.*

8. *Id.*

9. *See EPA Adds Transparency to Soften Feud Between Oil and Farmers Re Ethanol Mandate* (Sept. 25, 2018), https://www.oilandgas360.com/epa-adds-transparency-to-soften-feud-between-oil-and-farmers-re-ethanol-mandate/ (discussing efforts to reduce controversy surrounding RFS).

10. *See* Ethan Stoetzer, *Senators to Pruitt: Cease Issuing Refinery Waivers* (Apr. 17, 2018), https://www.insidesources.com/senators-pruitt-cease-rfs-waivers/ (discussing Senators' request to cease issuing waivers); Lisa Friedman, *Trump Will Loosen Ethanol Rules, Aiding Anxious Farmers Ahead of Midterm Elections* (Oct. 8, 2018), https://www.nytimes.com/2018/10/08/climate/trump-ethanol-farmers-midterm-election.html ("Steffen Schmidt, a professor of political science at Iowa State University, said he doesn't see Mr. Trump's ethanol announcement as a direct reward for Mr. Grassley's support, but rather as a sign of the mutually beneficial relationship that has emerged between the president and the powerful seven-term senator…'[W]hy not do it for the guy who helped keep the pillars from crumbling in the coliseum on the nomination process of the Supreme Court?'").

11. Jacqui Fatka, *EPA's RFS Waivers Cut Corn Demand by 900m bu* (Mar. 18, 2019), https://www.feedstuffs.com/news/epas-rfs-waivers-cut-corn-demand-900m-bu.

2018.[12] Angry about the impacts of these changes on corn growers in his state, Senator Grassley accused Pruitt of breaking the law and "hiding behind bureaucracy" in the EPA's granting of waivers.[13] However, even though Pruitt has since left the EPA, it has continued to grant waivers in a similar fashion.[14]

The EPA's sudden and dramatic increase of RFS waivers has had major impacts on petroleum and corn interests in the United States.[15] Although the language of the RFS requires the EPA to grant compliance wavers only to smaller refiners experiencing economic hardship in compliance, Andeavor, one of the nation's largest refining companies, has secured several exemptions for its refineries since Trump took office.[16] Andeavor's waivers marked the first time the EPA had provided this type of "relief" to a large and highly profitable corporation.[17] Andeavor posted $515 million in profits for just the second quarter of 2018 alone—a 1000% increase from the previous year.[18] Other similarly situated refiners, such as HollyFrontier and CVR Energy, have also received several waivers.[19] These waivers have prompted the National Corn Growers Association, National Farmers Union, Renewable Fuels Association, and American Coalition for Ethanol to file lawsuits against the EPA.[20] Meanwhile, the EPA's interpretation of its waiver authority is arguably undermining its congressional mandate and calling into question whether there remains any functioning RFS standard at all.

The recent controversies surrounding compliance waivers and exemptions under the RFS have prompted a re-examination of the policy, its purposes, and its impacts on the environment, and the broader economy. This

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12. *RFS Small Refinery Exemptions*, https://www.epa.gov/fuels-registration-reporting-and-compliance-help/rfs-small-refinery-exemptions (last visited Nov. 22, 2019).

13. *Grassley Statement on EPA's Proposed 2019 RFS Biofuels Levels* (June 26, 2018), https://www.grassley.senate.gov/news/news-releases/grassley-statement-epa-s-proposed-2019-rfs-biofuels-levels.

14. Rebecca Hersher & Brett Neely, *Scott Pruitt Out at EPA* (July 5, 2018), https://www.npr.org/2018/07/05/594078923/scott-pruitt-out-at-epa; *see RFS Small Refinery Exemption*, *supra* note 12 (granting 31 waivers in compliance year 2018).

15. *See* Jarrett Renshaw & Chris Prentice, *U.S. Ethanol Groups Bristle as EPA Frees Refiners from Biofuels Law* (Apr. 4, 2018), https://www.reuters.com/article/us-usa-biofuels-epa-refineries/u-s-ethanol-groups-bristle-as-epa-frees-refiners-from-biofuels-law-idUSKCN1HB2AH (explaining that increase of fuel waivers has "plunged" the price of renewable fuel credits, which refiners may purchase instead of blending fuel with biofuels like corn-based ethanol).

16. *Id.*

17. *Id.*

18. Rye Druzin, *Andeavor Earnings Skyrocket in Second Quarter* (Aug. 6, 2018), https://www.mysanantonio.com/business/eagle-ford-energy/article/Andeavor-earnings-skyrocket-in-second-quarter-13135971.php.

19. Chris Prentice & Jarrett Renshaw, *Ethanol, Farm Groups Sue EPA Over Refineries' Biofuels Exemptions* (May 29, 2018), https://www.reuters.com/article/us-usa-biofuels-lawsuit/ethanol-farm-groups-sue-epa-over-refineries-biofuels-exemptions-idUSKCN1IV02V.

20. *Id.*

article highlights recent events surrounding the RFS and proposes strategies for improving the standard to more effectively fulfill its objectives. Among other things, this article advocates for new constraints on the EPA's discretion to waive RFS compliance. This article also advocates for clearer provisions within the RFS promoting greater private investment in other types of renewable transportation energy sources that are more sustainable and environmentally friendly than corn-based ethanol. By integrating the proposed changes into the existing legislation, policymakers could finally equip the RFS to further its important economic, environmental, and security goals.

Part I of this Article provides an overview of the American ethanol industry and the RFS. Part II highlights difficulties the EPA has encountered over the last decade in its efforts to implement the RFS and the alleged abuses of the agency's waiver authority. Part III identifies specific strategies for reforming the RFS so that it better drives the nation's transition to a cleaner and more sustainable domestic fuel system.

II. BACKGROUND

The RFS is a federal policy aimed at reducing the American transportation system's heavy dependence on petroleum for transportation, requiring that a portion of the nation's fuel be derived from renewable energy sources.[21] In 2018, the United States consumed about 392 million gallons of gasoline per day resulting in 1,142 metric tons of carbon dioxide emissions for the year.[22] Burning a single gallon of gasoline, without any ethanol blended in, produces roughly 19.6 pounds of carbon dioxide.[23] Gasoline combustion also produces other harmful emissions that reduce air quality;[24] and petroleum is a finite, nonrenewable energy source. Ethanol produced from corn is unquestionably a more renewable and cleaner energy source than petroleum.[25] For decades, the U.S. government has cited that distinction to justify providing billions of dollars in subsidies to the nation's corn-based ethanol industry. However, decades of experience have shown that corn-based ethanol is neither as environmentally friendly nor cost effective as the

21. *See Renewable Fuel Standard*, https://www.epa.gov/renewable-fuel-standard-program (last updated Mar. 28, 2019) (describing the RFS's purpose).

22. *Gasoline Explained – Gasoline and the Environment* (Oct. 4, 2019), https://www.eia.gov/energyexplained/gasoline/gasoline-and-the-environment.php.

23. *Id.*

24. *How Much Carbon Dioxide is Produced from U.S. Gasoline and Diesel Fuel Consumption?*, U.S. ENERGY INFO. ADMIN., (May 15, 2019), https://www.eia.gov/tools/faqs/faq.php?id=307&t=10.

25. *See* U.S. DEP'T OF AGRIC., LIFE-CYCLE ANALYSIS OF THE GREENHOUSE GAS EMISSIONS OF CORN-BASED ETHANOL 1 (2017) (noting ethanol's GHG emissions are 39% lower than gasoline's).

corn industry has suggested.[26] The following materials compare petroleum and corn-based ethanol and highlight how federal laws have impacted the nation's use of these two competing energy strategies.

A. A Brief History of Ethanol as a Transportation Fuel

Ethanol is a colorless, flammable liquid distilled from a wide range of organic sources.[27] In the United States, ethanol produced for vehicle fuel is primarily derived from corn.[28] Although there have been debates for decades over whether ethanol or other biofuels should be used to power our vehicles, ethanol has long been statutorily mandated for that purpose. This flows naturally from its rich and colorful history in the U.S. Ethanol is used in automotive fuels in two ways: to substitute for petroleum entirely or to serve as an octane booster that reduces emissions and increases an engine's power.[29]

For nearly a century, scientists have been suggesting that ethanol is a better automotive fuel than gasoline.[30] In 1925, M.C. Whitaker, a then prominent fuel researcher, stated that "the superiority of alcohol [over pure] gasoline fuels is now safely established."[31] The current science generally agrees with this past appraisal. If the issues of feedstock monoculture and land use changes could be adequately addressed, ethanol could be a far more environmentally friendly transportation fuel than petroleum.[32] Ethanol can be made from almost any biogenic material, including ordinary yard trimmings.[33] Because ethanol is made from plants, a sustainably designed transportation energy system built around ethanol would theoretically slow

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26. *See* C. Ford Runge, *The Case Against More Ethanol: It's Simply Bad for Environment*, YALE ENV'T 360 (May 25, 2016), https://e360.yale.edu/features/the_case_against_ethanol_bad_for_environment (discussing environmental and economic downsides of ethanol).

27. *See Ethanol*, ALTERNATIVE FUELS DATA CTR., https://afdc.energy.gov/fuels/ethanol.html (last visited Nov. 23, 2019) (explaining that ethanol is made from corn and other plant materials).

28. *U.S. Fuel Ethanol Production Continues to Grow in 2017*, U.S. ENERGY INFO. ADMIN. (July 21, 2017) https://www.eia.gov/todayinenergy/detail.php?id=32152.

29. Bill Kovarik, *Henry Ford, Charles Kettering and the Fuel of the Future*, http://www.environmentalhistory.org/billkovarik/about-bk/research/henry-ford-charles-kettering-and-the-fuel-of-the-future/ (last visited October 25, 2019) (noting that ethanol can be used as an octane booster and has replaced several other boosters like lead).

30. *See id.* (noting that Henry Ford and Charles Kettering believed ethanol was "the fuel of the future").

31. *Id.*

32. *See* Jonathan Foley, *It's Time to Rethink America's Corn System* (Mar. 5, 2013), https://www.scientificamerican.com/article/time-to-rethink-corn/?print=true (describing a reimagined agricultural system for corn using innovative farming and conservation practices).

33. Kovarik, *supra* note 29.

the greenhouse gas effect.[34] In one test comparing a 6% ethanol-fuel blend with a 50% blend, the 50% blend had dramatically lower emission results.[35] Switching to pure ethanol over gasoline would result in a significant drop in vehicle tailpipe emissions.[36] Pure ethanol fuel has an octane of 100, burns cooler, and deposits less so engines last longer.[37] Engines designed to run ethanol also get significantly better miles per gallon with around a 20% increase in MPG.[38] The byproducts of ethanol production can be used as fertilizer or as animal feed, decreasing environmental impacts.[39]

Ethanol feedstock can also be sourced entirely domestically. This benefits American farmers and provides greater energy security for the U.S. than a strategy of relying on solely petroleum for transportation energy.[40] Ethanol's unique capacity to curb the nation's dependence on oil while simultaneously supporting the grain belt has helped garner political support, even during periods of waning voter interest for other progressive energy strategies.[41] As such, federal ethanol subsidies and other incentives have been mainstays in the U.S. for a long time.

1. Ethanol in America

Ethanol's history as an alternative to petroleum in the U.S. is longer than many might think, easily predating invention of the automobile.[42] Indeed, prior to the electrification of most of the U.S., millions of Americans used ethanol to light homes and businesses across the country.[43] However, a tax on alcohol originally imposed to help cover the costs of the Civil War

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34. David Blume, ALCOHOL CAN BE A GAS!: FUELING AN ETHANOL REVOLUTION FOR THE 21ST CENTURY! 35 (2007).

35. *Id.* at 330-31.

36 . *See Biofuels Explained: Ethanol and the Environment*, U.S. ENERGY INFO. ADMIN., https://www.eia.gov/energyexplained/index.php?page=biofuel_ethanol_environment (last visited Oct. 18, 2019) (explaining shift to ethanol and impact on tailpipe emissions).

37. *Fuel Ethanol: Hero or Villain?*, PENN STATE EXTENSION, https://extension.psu.edu/fuel-ethanol-hero-or-villain (last updated May 8, 2014).

38. Mark Drajem, *Mileage Gains Using Ethanol Seen 20% Higher than EPA Says* (Sept. 6, 2013), https://www.bloomberg.com/news/articles/2013-09-06/mileage-gains-using-ethanol-seen-20-higher-than-epa-says?cmpid=yhoo.

39. *See Feed Value of Ethanol By-Products Long Underestimated*, https://www.farmprogress.com/livestock/feed-value-ethanol-products-long-underestimated (last visited Nov. 9, 2019) (discussing the use of ethanol byproducts).

40. Jim Talent, *Ethanol's Crucial Role in Protecting the Farm Economy from China* (July 3, 2018), https://www.governing.com/gov-institute/voices/col-trump-china-ethanol-crucial-role-protecting-farm-economy.html.

41. *See* Tristan R. Brown, *Corn Ethanol: The Rise and Fall of a Political Force* (Feb. 2, 2016), https://theconversation.com/corn-ethanol-the-rise-and-fall-of-a-political-force-54030 (discussing politics of ethanol).

42. *See Biofuels Explained Ethanol*, *supra* note 36 (discussing history of ethanol use).

43. Kovarik, s*upra* note 29.

ultimately led to the decline of the nation's alcohol fuel market, and stoked the growth of the American petroleum industry.[44] In 1906 the farm lobby, supported by then-president Theodore Roosevelt, pushed to get the federal alcohol tax repealed, and a new push to make ethanol fuel began anew.[45] Even Henry Ford was an early proponent of ethanol, and his first vehicle ran on pure ethanol.[46] Ford was also quoted as saying, "The fuel of the future is going to come from fruit like that sumach (sic) out by the road, or from apples, weeds, sawdust (sic) — almost anything."[47] However, such efforts to make ethanol the nation's fuel of choice ultimately floundered.[48] By that point, petroleum had already become too well-established to be supplanted by a re-emerging alcohol fuel industry.[49]

From 1919 until 1933, the Prohibition in the U.S. further hampered ethanol's usage.[50] Then, at the height of the Great Depression, corn prices drastically dropped.[51] This pushed American farmers to rely on alternative uses for the crop.[52] Promoting corn-based automobile fuels soon became a primary strategy for farmers, marking the creation of the century-old rivalry between oil interests and corn interests that continues today. Not surprisingly, the dominant oil industry responded to this new competitive threat by quickly and aggressively acting to suppress the rise of ethanol fuels.[53]

In 1933, the American Petroleum Institute created a " 'coordinated program . . . throughout the industry' . . . to combat alcohol gasoline blending."[54] These oil industry efforts paid off, as the group effectively blocked 19 federal bills and 31 state bills that proposed creating ethanol incentives and blending programs from 1933 to 1939.[55] Such aggressive oil industry opposition still continues to this day, and the industry is notorious for wielding its gargantuan financial resources to influence American energy

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44. Mimi Abebe, *History of Ethanol*, JOURNALISM & MASS COMM.: STUDENT MEDIA, June 2008, at 24, 26.

45. *See Ethanol Timeline*, HISTORIC VEHICLE ASS'N (Jan. 19, 2011), https://www.historicvehicle.org/ethanol-timeline/ (noting that Congress repealed the alcohol tax in 1906).

46. *Id.*

47. Kovarik, *supra* note 29.

48. *See id.* (describing the history of the use ethanol and alcohol-based fuels).

49. *See id.* (noting that support for alcohol-based fuel surged in the early 1900s and again in the 1930s, at which point the oil industry had claimed ethanol was inferior).

50. *See id.* (noting Prohibition's role in disadvantaging ethanol).

51. Daryll Ray, *How Did Prices Fare Following Other Golden Eras in Agriculture?*, SUCCESSFUL FARMING (Mar. 25, 2015), https://www.agriculture.com/markets/analysis/corn/how-did-prices-fare-following-or-golden_9-ar48090.

52. HAL BERNTON ET AL., THE FORBIDDEN FUEL: POWER ALCOHOL IN THE TWENTIETH CENTURY 16-17 (B. Griffin ed. 1982).

53. See Kovarik, *supra* note 29 (discussing the oil industry's response to renewed interest in alcohol).

54. *Id.* (citing to the American Petroleum Institute's 1933 memo).

55. *Id.*

policy. One modern example is the industrial support of Jim Inhofe, an Oklahoma senator and key critic of the RFS. Inhofe received $255,471 in campaign contributions from the oil and gas industries in 2000, and once defended his opposition to ethanol legislation on the grounds that "Refiners will have to pay more."[56] Over his career, Senator Inhofe has received roughly $2 million in traceable contributions from oil and gas interests.[57]

During World War II, nearly all industrial alcohol production in the U.S. was allocated to war supplies.[58] After the war, the ethanol industry was largely dormant for decades.[59] Then, the Arab Embargo and resulting oil market volatility pushed ethanol back into the spotlight in the 1970s, eventually leading to the current RFS.[60]

2. Ethanol Usage outside the U.S.

Most other developed countries make some limited use of ethanol as a transportation fuel. The U.S. is an outlier in two regards: it produces and consumes a large quantity of ethanol, but due to the tumultuous history of its ethanol industry, ethanol is utilized at sub-optimal levels.[61] As of 1925, every industrialized nation in the world, other than the U.S., was blending ethanol with at least some of its gasoline.[62] Around that time, France, Germany, Italy, and Brazil instituted mandatory blending programs.[63]

Brazil has a particularly rich history of ethanol fuel for its automobiles. Because of various petroleum supply issues facing the country, Brazil's government had begun requiring automakers to sell cars that ran on pure ethanol and shifted a significant proportion of Brazil's sugarcane crops from food to ethanol stocks.[64] As a result, Brazil has an unusually robust ethanol fuel market, with 90% of cars on the road in 1988 able to run on pure

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56. S. REP. NO. 106-426, at 81 (2000); *Sen. James M. Inhofe – Oklahoma*, https://www.opensecrets.org/members-of-congress/summary?cid=N00005582&cycle=2000 (last visited Nov. 24, 2019).

57. *Sen. James M Inhofe – Oklahoma*, *supra* note 56.

58. Kovarik, *supra* note 29.

59. *See History of Ethanol Production*, N.D. STATE UNIV., https://www.ag.ndsu.edu/energy/biofuels/energy-briefs/history-of-ethanol-production-and-policy ("Today's ethanol industry began in the 1970s.").

60. *See id.* (noting ethanol industry boomed when gasoline became more expensive in the 1970s).

61. *See* RENEWABLE FUELS ASS'N, 2019 ETHANOL INDUSTRY OUTLOOK 6-7 (2019) (showing the U.S. produces over half of the global ethanol but is not a top ethanol user).

62. Kovarik, *supra* note 29.

63. *Id.*

64. *See Brazil's Ethanol Industry – Part Two*, IOWA STATE UNIV., https://www.extension.iastate.edu/agdm/articles/hof/HofFeb09.html (last visited Nov. 24, 2019) (noting history of Brazil's ethanol use).

ethanol.[65] This shift has allowed Brazilian sugarcane farms to stay in business, despite the global decline in sugarcane's economic viability as a food crop.[66] In contrast, sugarcane's decline has resulted in the disappearance of sugarcane production in Hawaii.[67] Brazil's use of sugarcane as its ethanol feedstock is a semi-closed loop, meaning that the byproducts of Brazil's ethanol production are used to power the ethanol refineries and fertilize the cane crops rather than going to waste.[68] This semi-closed-loop system makes Brazil's ethanol distillation significantly greener than American distillation of corn-based fuel ethanol.[69] Arguably, Brazil's reliance on ethanol as a primary fuel has benefited Brazilian farmers, stabilized that country's energy supply, and worked better overall as a transportation fuel in that country than has corn-based ethanol in the U.S.

B. The Origins and Intent of the RFS

The current Renewable Fuel Standard (RFS) has its roots in several statutory sources. According to the EPA, which administers the RFS, the standard comes primarily from the Clean Air Act of 1970, 1977, and 1990 (CAA); the Energy Policy Acts of 1992 and 2005 (EP Acts); and the Energy Independence and Security Act of 2007 (EISA).[70] The declared overarching goals of these statutes have always been related to environmental sustainability, although the factors actually driving the evolution of the RFS have changed over time.[71]

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65. *Id.*

66. *See* Josè Roberto Gomes, *UPDATE1-Brazil Sugarcane Crush Seen Stable Next Season After 2018-19 Dip* (Dec. 20, 2018), https://www.reuters.com/article/brazil-sugarcane/update-1-brazil-sugarcane-crush-seen-stable-next-season-after-2018-19-dip-idUSL1N1YP17R (noting demand for sugarcane in Brazil's ethanol industry).

67. *See* Audrey Mcavoy, *AP Explains: Why Hawaii's Sugar Plantations Have Disappeared* (Jan. 7, 2016), https://www.sandiegouniontribune.com/sdut-ap-explains-why-hawaiis-sugar-plantations-have-2016jan07-story.html (discussing sugarcane's disappearance in Hawaii).

68. Larry Rohter, *With Big Boost From Sugar Cane, Brazil is Satisfying Its Fuel Needs* (Apr. 10, 2006), https://www.nytimes.com/2006/04/10/world/americas/10brazil.html?pagewanted=1&sq=Bush%20Brazil%20ethanol&st=nyt&scp=5.

69. *See* David Roberts, *What's the Most Energy-Efficient Crop Source for Ethanol?* (Feb. 8, 2006), https://grist.org/article/biofuel-some-numbers/ (noting Brazil is "in a class all by itself" when it comes to net energy yield since it utilizes waste effectively).

70. *Overview for Renewable Fuel Standard*, https://www.epa.gov/renewable-fuel-standard-program/overview-renewable-fuel-standard (last updated June 7, 2017); *see also* Renewable Fuel Standard Program: Standards for 2019 and Biomass-based Diesel Volume for 2020, 83 Fed. Reg. 32,024 (proposed Jul. 10, 2018) (summarizing the development of the RFS).

71. *Renewable Fuel Standard Program*, https://www.epa.gov/renewable-fuel-standard-program (last updated Mar. 28, 2019); *see Final Renewable Fuel Standards for 2014, 2015, and 2016, and the Biomass-Based Diesel Volume for 2017*, https://www.epa.gov/renewable-fuel-standard-program/final-

Congress enacted the CAA of 1970 in the same year it enacted the National Environmental Protection Act (NEPA) and formed the EPA.[72] Through these collective actions, Congress combined various departments and streamlined the federal administration of environmental regulation.[73] The CAA amendments of 1990 included various initiatives aimed at reducing mobile sources of pollution and was followed by similar initiatives in subsequent years.[74] Among them was the Alternative Motor Fuels Act of 1988 (AMFA), which incentivized automakers to produce motor vehicles capable of using ethanol and was a stepping stone to the EP Acts.[75] The CAA of 1990 heavily influenced the RFS, creating the Reformulated Gasoline Program, which became the primary forerunner to the current standard.[76] The program imposed strict guidelines on the formulation of gasoline in urban areas in an effort to reduce the impacts of tailpipe emissions on air quality.[77] Although the drafters of the Reformulated Gasoline Program had expected ethanol to be the main additive used in compliance, 80% of reformulated fuel at the time used the cheaper methyl-tertiary-butyl-ether (MTBE) instead.[78] MTBE blending effectively reduced visible air pollution, but also proved to have problematic consequences, as highlighted below.[79] The CAA of 1990 also included a waiver provision for the blending requirement. The provision allowed the EPA to waive the requirement if it would interfere with other standards, was unworkable in a specific location, or if a location could reduce

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renewable-fuel-standards-2014-2015-and-2016-and-biomass-based (Dec. 11, 2017) (discussing changes to RFS regulations).

72. Robinson Meyer, *How the U.S. Protects the Environment, from Nixon to Trump* (Mar. 29, 2017), https://www.theatlantic.com/science/archive/2017/03/how-the-epa-and-us-environmental-law-works-a-civics-guide-pruitt-trump/521001/.

73. *Id.*; *see also* H.R. DOC. NO. 91-366 (responding to a direct request from Richard Nixon, Congress formed the EPA).

74. *Key Federal Legislation*, U.S. DEP'T. OF ENERGY, https://afdc.energy.gov/laws/key_legislation (last visited Nov. 24, 2019).

75. *Id.*

76 . *See* S. REP. NO. 106-246, at 2 (2000) (explaining that the Reformulated Gasoline Program was established to "reduce the growing impact of mobile source emissions on air quality in urban areas."); *Evolution of the Clean Air Act*, https://www.epa.gov/clean-air-act-overview/evolution-clean-air-act (last visited Dec. 19, 2019) ("The legal authority for federal programs regarding air pollution is based on the 1990 Clean Air Act Amendments . . . ."). The 1977 and 1990 amendments to the CAA greatly expanded the enforcement power of the EPA and its regulatory scope. *See id.* (describing major amendments added in 1977 and 1990 that "substantially increased the authority and responsibility of the federal government.").

77. *See* S. REP. NO. 106-246, at 2, 43 (2000) (explaining that the CAAA was established to reduce mobile source emissions through stricter gasoline standards).

78. *Id.* at 4.

79. *See id.* at 4, 43 (explaining that the blending of oxygenates, including MTBE, into gasoline reduces smog-forming emissions); *id.* at 1 (describing MTBE contamination of more than half of the city of Santa Monica's water supply); *id.* at 5 (explaining that MTBE moves easily into groundwater reservoirs, and even small amounts are thought to render water supplies undrinkable).

emissions in a more cost-effective way.[80] The EPA could also be petitioned to waive the requirement delaying the effective date of the requirement for up to two years if there was inadequate domestic supply.[81] To prevent the abuse of these waivers, Congress acted carefully by clearly defining the conditions for the waivers and their limits in the statutory language.[82]

Unlike the CAA and its amendments, which primarily responded to growing popular concerns about smog and acid rain,[83] the EP Acts sought to promote greater energy security in the U.S. and to reduce greenhouse gas emissions. A major oil embargo involving Iraq and Kuwait preceding operation Desert Storm led to surging oil prices during the summer of 1990,[84] which catalyzed the EP Act of 1992: "The purpose of H.R. 776 [was] to enact a comprehensive national energy policy that gradually and steadily increases U.S. energy security in cost-effective and environmentally beneficial ways."[85] In his signing statement for the EP Act of 1992, President Bush stated that the chief highlight of the bill was its market-based approach to regulation, declaring that "[g]overnment will serve as a partner of private enterprise, not as its master."[86] Most notably, this new legislation seemed to mark a shift in the nation's primary legislative goals in energy regulation, from mere pollution control toward energy independence.

The EP Act of 2005 is similarly self-described as "an act to ensure jobs for our future with secure, affordable, and reliable energy."[87] The EP Acts created the most direct precursor to the current RFS, implementing a national ethanol blending mandate commonly known as RFS1.[88] The primary impetus of this program was to stop the MTBE blending, which moves easily into groundwater reservoirs. Even small amounts are thought to render water supplies undrinkable[89] However, the EP Acts' statutory language creating the Renewable Fuel Program also included provisions allowing oil refiners and gasoline suppliers to seek waivers that excused noncompliance and gave

80. H. R. REP. NO. 101-490, at 6 (1990).

81. Clean Air Act Amendments of 1990, 104 Pub. L. No. 101-549, Stat. 2399, 2499 (1990).

82. *Id.*; H.R. REP. NO. 101-490, pt. 1 (1990).

83. *Clean Air Act Requirements and History*, https://www.epa.gov/clean-air-act-overview/clean-air-act-requirements-and-history (last updated Jan. 10, 2017).

84. David Henderson, *Who Caused the August 1990 Spike in Oil Prices?*, ECONLOG (Jun. 30, 2014), https://www.econlib.org/archives/2014/06/who_caused_the.html.

85. H.R. REP. NO. 102-474, pt. 1, at 132 (1992).

86. Presidential Statement on Signing the Energy Policy Act of 1992, 28 WEEKLY COMP. PRES. DOC. 1780, 2095 (Oct. 24, 1992).

87. Energy Policy Act of 2005, Pub. L. No. 109-58, 119 Stat. 594 (codified as amended in scattered sections of 42 U.S.C. and 26 U.S.C.)

88. *Id.*

89. S. REP. NO. 106-246, at 5 (2000).

relatively broad discretion to the EPA in granting them.[90] The driving force behind the inclusion of the waivers appeared to be pressure from the oil industry, which surely understood that an ethanol-blending requirement could reduce its profits and market power.[91]

C. The Energy Independence and Security Act: Cornerstone to the Current RFS

In 2007, Congress finally created the nation's current RFS through changes enacted in the Energy Independence and Security Act (EISA). EISA revamped the Renewable Fuel Program and re-labeled it as a "standard."[92] The legislative intent of these changes was clear:

> To move the United States toward greater energy independence and security, to increase the production of clean renewable fuels, to protect consumers, to increase the efficiency of products, buildings, and vehicles, to promote research on and deploy greenhouse gas capture and storage options, and to improve the energy performance of the Federal Government, and for other purposes.[93]

Unfortunately, oil industry lobbying significantly shaped the final version of the RFS in ways that continue to limit its effectiveness. President Bush's "Twenty in Ten" initiative drove Congress's enactment of the EISA.[94] President Bush directly asked Congress to "pursu[e his] goal of reducing U.S. gasoline usage by 20 percent in the next ten years."[95] The Bush White House stated that a critical element of reaching this goal was "setting a mandatory fuels standard . . . displac[ing] 15 percent of [the] projected annual gasoline

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90. *Compare* S. REP. NO. 106-246 (2000) (recommending passage of the Federal Reformulated Fuels Act), *with* Energy Policy Act of 2005, *supra* note 87, at § 1501(o)(7). The first legislative step towards the EP Act of 2005 was the Senate proposed, Federal Reformulated Fuels Act of 2000. This proposal supplanted the mandatory blending of MTBE in fuels, with ethanol. *See* S. REP. NO. 106-246, at 8 (2000) (eliminating use of MTBE in gasoline and giving refiners option to blend ethanol into fuel). The proposed legislation contained a waiver section to the ethanol mandate which stayed largely intact into the final EP Act of 2005. Energy Policy Act of 2005, supra note 87, at § 1501(o)(7).

91. *See* S. REP. NO. 106-246, at 74 (2000) (stating that the oil industry "warned" senators about ethanol).

92. Energy Independence and Security Act of 2007, Pub. L. No. 110-140, § 202, 121 Stat. 1492, 1521 (renaming the Renewable Fuel Program as the RFS).

93. *Id.* at 1492.

94. *See Twenty in Ten: Strengthening America's Energy Security*, https://georgewbush-whitehouse.archives.gov/stateoftheunion/2007/initiatives/energy.html (last visited Oct. 19, 2019) (calling upon "Congress and America's Scientists, Farmers, Industry Leaders, And Entrepreneurs" to assist in this ambitious goal).

95. *Id.*

use."[96] The EISA found bipartisan support in both the House and the Senate.[97] The oil and gas industry, worried by the competitive threat of ethanol and a potential loss of subsidies, contributed $9.3 million to the House and $10.28 million to the Senate from 2007 to 2008.[98] Exxon alone spent $16.9 million on lobbying in 2007.[99] These efforts proved successful, as Congress ultimately failed to repeal the oil subsidies despite that repeal initially being central to the legislation.[100] Red Cavaney, then-President of the American Petroleum Institute, further urged the Senate to increase the EPA's authority to grant waivers and keep the authority vested in the EPA Administrator.[101] Congress also delivered on this request in the EISA, both expanding the EPA Administrator's authority to grant waivers and lowering the mandatory fuel volumes in the RFS.[102]

1. RIN Credits and Market Flexibility

To help provide some flexibility in compliance, the RFS legislation establishes a credits system that incentivizes refiners to trade among themselves to reduce aggregate compliance costs.[103] For every volume of renewable fuel that is created, a unique "renewable identification number" (RIN) accompanies it.[104] The legislation gives the EPA the power to regulate

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96. *Id.* (seeking to promote increases in supply by stimulating an increase the quantity demanded through a requirement that 35 billion gallons be used in 2017).

97. LOWELL UNGAR ET AL., AM. COUNCIL FOR AN ENERGY-EFFICIENT ECON., BENDING THE CURVE: IMPLEMENTATION OF THE ENERGY INDEPENDENCE AND SECURITY ACT OF 2007 1 (2015).

98. *Oil & Gas: Money to Congress*, CTR. FOR RESPONSIVE POLITICS, https://www.opensecrets.org/industries/summary.php?ind=E01&recipdetail=A&sortorder=U&mem=Y&cycle=2008 (last visited Oct. 19, 2019).

99. Ctr. for Responsive Politics, *Industry Profile: Oil & Gas*, https://www.opensecrets.org/federal-lobbying/industries/summary?cycle=2007&id=e01 (last visited Nov. 8, 2019).

100. *See* Steven Mufson, *Senate Passes Energy Bill Without House Tax Package* (Dec. 14, 2007), www.washingtonpost.com/wp-dyn/content/article/2007/12/13/AR2007121301847_pf.html (stating tax package that would reduce tax breaks for big oil and gas companies was left out of Senate energy bill).

101. *Biofuels for Energy Security and Transp. Act of 2007: Hearing on S.987 Before the S. Comm. on Energy and Nat. Res.*, 110th Cong. 35-37, (2007).

102. *See* Energy Independence and Security Act of 2007, Pub. L. No. 110-140, § 202, 121 Stat. 1492, 1521, 1526-27 (allowing the Administrator to reduce the required volume of cellulosic biofuel and biomass-based diesel under specified market conditions). *But see id.* at 1524 ("[T]he applicable volume of advanced biofuel shall be at least the same percentage of the applicable volume of renewable fuel as in calendar year 2022.").

103. Specifically, this language reads: ''(E) CREDITS FOR ADDITIONAL RENEWABLE FUEL.—The Administrator may issue regulations providing: (i) for the generation of an appropriate amount of credits by any person that refines, blends, or imports additional renewable fuels specified by the Administrator; and (ii) for the use of such credits by the generator, or the transfer of all or a portion of the credits to another person, for the purpose of complying with paragraph (2).'' 42 U.S.C. § 7545(e) (2018).

104. 40 C.F.R. § 80.1401 (2019).

RIN credits. Oil refiners and other obligated parties can comply with the RFS by either buying fuel to blend with their petroleum or by purchasing credits on the open market.[105] As a result, oil refiners that produce pure petroleum products can still comply with the standard by relying on other retailers, who generate credits.[106]

The RFS credits-based system provides significant flexibility and helps to lighten compliance burdens, though these burdens are often overstated.[107] There is little or no evidence that RFS compliance costs have caused major financial harms to any refiners.[108] Moreover, since the standard is imposed relatively uniformly across all parties, it does not create competitive advantages in favor of certain refiners or suppliers.[109] On the whole, the RIN market system under the RFS has been relatively successful at adding market flexibility to compliance, though the need for flexibility in the market is unclear.[110]

D. Waivers Related to Applicable Volumes

The RFS legislation has multiple provisions authorizing the EPA to issue waivers exempting regulated parties from compliance.[111] Some of these waiver provisions are specific, temporary, and narrowly tailored.[112] Others give the EPA broad discretion to effectively rewrite or ignore the legislated standards of the RFS. The waiver provisions for the RFS are codified in 42 U.S.C. § 7545 and include powers to issue general waivers, fuel-specific waivers, and small refinery waivers.[113]

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105. *AEC Sends "RIN Credits for Dummies" to Wall Street Journal Editorial Board*, RENEWABLE FUEL ASS'N (Mar. 12, 2013), https://ethanolrfa.org/2013/03/aec-sends-rin-credits-for-dummies-to-wall-street-journal-editorial-board/.

106. AM. COAL. FOR ETHANOL, A PRIMER ON RINS AND WHY THE RFS IS WORKING 1-2 (Mar. 13, 2018) (generating blenders offer blends as high as 85% ethanol of E85).

107. *See id.* at 1 (explaining RNS can be stockpiled for compliance at a later date or sold to other refiners who find it cheaper to purchase RINs than blend ethanol).

108. *See id.* at 4 ("EPA said its review of data on refinery closures from 2013 to 2017, a period of elevated RIN prices, failed to show a threat to merchant refiners."); *see also Oldest East Coast Refiner Blames RFS for Its Woes*, BLOOMBERG (Jan. 23, 2018), https://www.agweb.com/article/oldest-east-coast-refiner-blames-rfs-for-its-woes-blmg/ (suggesting removal of U.S. ban on crude oil exports and fundamental business issues caused Philadelphia refiner's bankruptcy, rather than the RFS).

109. *See* AM. COAL. FOR ETHANOL, *supra* note 106, at 2 ("[B]oth standalone (merchant) refiners and integrated refiners with downstream assets have annual RFS obligations and both recover compliance costs through the market price of petroleum products.").

110. *See id.* at 1 ("RINS give RFS compliance flexibility to refiners.").

111. 42 U.S.C. § 7545(o)(7)(A-C) (2018).

112. *See generally* CONG. RESEARCH SERV., R44045, THE RENEWABLE FUEL STANDARD (RFS): WAIVER AUTHORITY AND MODIFICATION OF VOLUMES 5-6 (2019) (noting that there are several types of waivers that can be used).

113. *See* 42 U.S.C. § 7545 (noting that there are multiple types of waivers).

1. The General Waiver

The RFS general waiver provision gives the EPA Administrator expansive discretionary power to waive fuel-blending requirements.[114] These powers potentially allow for waivers in whole or in part by petition from a state, person, or by "the Administrator on his own motion."[115] If a an independent petition seeks a waiver, the Administrator must consult with the Secretaries of Agriculture and Energy for input.[116] If the Administrator makes a petition for waiver through his own motion, there must be a finding that enforcement would "severely harm the economy or environment of a State, a region, or the United States" or there is an "inadequate domestic supply" of renewable fuel.[117]

In 2014, the EPA by its own motion sought to issue a general waiver to reduce the total RFS supply requirements from 18.15 to 15.21 billion gallons of renewable fuel.[118] The EPA argued that it was reasonable for it to liberally interpret the term "inadequate supply" to authorize the making of waiver decisions based on consumer demand for fuel, rather than on the supply of renewable fuel available for purchase by obligated parties.[119] However, a D.C. Circuit court found this argument unconvincing and ordered the EPA to consider the question based on the amount of renewable fuel physically available to refiners, blenders, and importers in the marketplace.[120] The court also delineated a non-exhaustive list of legitimate factors for the EPA to consider when determining the availability of fuel.[121] The court excluded any factors focused on "market actors downstream from refiners, importers, and blenders," such as distribution infrastructure or gas stations that offer blended fuel.[122]

2. Cellulosic Biofuel and Biomass-Based Diesel Waivers

The RFS also contains special provisions authorizing compliance waivers for its cellulosic biofuel requirements. Specifically, if the "projected

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114. *Id.* § 7545(o)(7)(A).
115. *Id.*
116. *Id.* § 7545(o)(7)(B).
117. *Id.* § 7545(o)(7)(A).
118. Renewable Fuel Standard Program: Standards for 2014, 2015, and 2016 and Biomass-Based Diesel Volume for 2017, 80 Fed. Reg. 77,420, 77,424 (Dec. 14, 2015) (to be codified at 40 C.F.R. pt. 80); *see also* U.S. ENVTL. PROT. AGENCY, EPA PROPOSES 2014 RENEWABLE FUEL STANDARDS, 2015 BIOMASS-BASED DIESEL 2 (2013) (stating the proposed reduced 2014 volume mandates).
119. Ams. for Clean Energy v. Envtl. Prot. Agency, 864 F.3d 691, 711 (D.C. Cir. 2017).
120. *Id.* at 696.
121. *Id.* at 709.
122. *Id.*

volume of cellulosic biofuel production is less than" the minimum requirements of the standard, then the Administrator can waive those requirements.[123] Again this waiver gives the EPA administrator significant discretion in the application.

The biomass-based diesel RFS requirements feature a similar waiver provision. If an EPA Administrator determines that there is a "significant renewable feedstock disruption" or "other market circumstances" that would make the price of biomass-based diesel fuel "increase significantly," then applicable volumes may be waived after consulting with the Secretaries of Energy and Agriculture.[124] Initially, such a waiver is granted for no more than 60 days.[125] An extension provision exists if the initial circumstances under which the waiver was granted persist, but it is limited strictly to 120 days.[126]

Presumably, each of these specific waiver provisions were meant to build in flexibility for the development of the fledgling cellulosic and biodiesel industries. [127] Advancements in the development of these new green industries have been slowed due to the use of this waiver. Because the requirements have been waived each year since 2010, it has created a vicious cycle hampering the development of these fuels.[128] The goal has not been met, so the standard continues to be waived, meaning the guaranteed market demand for the waived product is weaker and more uncertain. Investors are thus more wary to invest in these industries and access to financing is limited, which makes innovation and market growth even more difficult.

3. The Small Refinery Exemption and Waiver

Recently, alleged abuses of an industry-specific waiver provision in the RFS related to "small refineries" have drawn significant attention.[129] A "small refinery" is defined in the RFS as a refinery that produces less than 75,000 gallons per day.[130] The EP Act of 2005 had a blanket exemption for

123. 42 U.S.C. § 7545(o)(7)(D) (2018).

124. *Id.* at (7)(E).

125. *Id.* at (7)(E)(ii).

126. *Id.*

127. KELSI BRACMORT, CONG. RESEARCH SERV., CRS REPORT R44045, THE RENEWABLE FUEL STANDARD (RFS): WAIVER AUTHORITY AND MODIFICATION OF VOLUMES (2018-2019, version 24).

128. *Id.* at 6-7.

129. *See generally* Sinclair Wyo. Ref. Co. v. U.S. Envtl. Prot. Agency, 874 F.3d 1159 (10th Cir. 2017) (finding that the EPA exceeded its statutory authority in applying the "disproportionate economic hardship" exemption to Sinclair's small refinery waiver petitions); Ergon-W. Va., Inc. v. Envtl. Prot. Agency, 896 F.3d 600 (4th Cir. 2018) (finding that the EPA's decision to deny the small refinery waiver was arbitrary and capricious because it did not adequately consider the RIN costs to the refinery in making its final determination).

130. 42 U.S.C. § 7545(o)(9).

"small refineries" until 2011.[131] After 2011, a small refiner became subject to fuel blending requirements but could petition the Administrator for an extension of the exemption for "a period not less than 2 years."[132] To qualify for an exemption, a refiner must show that compliance would "impose a disproportionate economic hardship" on the refinery.[133] If a showing is made, the Secretary of Energy must conduct a study on the refiner. The Administrator then considers the findings of that study in conjunction with "other economic factors" to make a decision.[134]

There is some evidence that Congress included this exemption in response to a rapid decline of oil refineries, particularly small refiners. From 1982 to 2011, the number of operating refineries in the U.S. decreased from 254 to 137.[135] However, this trend has not continued in recent years and the refining industry has actually become more profitable. As of January 2018, there were 135 operating refiners in the U.S.[136] Refiners have consistently increased their aggregate refining volume over that time, and 2018 saw record numbers reaching as high as 18 million barrels/day.[137] Meanwhile, in 2018, the top five oil refining companies accounted for over half of the total volume representative of industry consolidation.[138] Researchers have found little evidence that the EPA's environmental or permitting regulations have had any negative effect on the profitability and consolidation of the industry.[139] Most refineries have continued to increase refining capacity to stay competitive, putting them above the 75,000 barrel per day eligibility requirement, further evidencing the lack of need for this waiver.[140]

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131. *Id.* § 7545(o)(9)(A)(i).

132. *Id.* § 7545(o)(9).

133. *Id.*

134. *Id.*

135. Patrick DeHaan, *No New Oil Refineries Since the 1970s, But Capacity Has Grown* (July 29, 2011) https://www.usnews.com/opinion/blogs/on-energy/2011/07/29/no-new-oil-refineries-since-the-1970s-but-capacity-has-grown.

136. *When was the Last Refinery Built in the United States*, U.S. ENERGY INFO. ADMIN., https://www.eia.gov/tools/faqs/faq.php?id=29&t=6 (last visited Nov. 8, 2019).

137. *U.S. Refineries Running at Near-Record Highs*, U.S. ENERGY INFO. ADMIN., (Aug. 13, 2018) https://www.eia.gov/todayinenergy/detail.php?id=36872&src=email.

138. U.S. ENERGY INFO. ADMIN., REFINERY CAPACITY REPORT, TABLE 5. REFINERS' TOTAL OPERABLE ATMOSPHERIC CRUDE OIL DISTILLATION CAPACITY AS OF JANUARY 1, 2018 (June 25, 2018).

139. ANTHONY ANDREWS ET AL., CONG. RESEARCH SERV., R43682, SMALL REFINERIES AND OIL FIELD PROCESSORS: OPPORTUNITIES AND CHALLENGES (Aug. 11, 2014).

140. *Id.*

E. Deficiencies in the Current RFS

In the years since 2016, several vulnerabilities and weakness in the current RFS have grown increasingly apparent. The EPA has interpreted the waiver provisions to afford the EPA very broad discretion that effectively eliminates any predictable, workable standard. Some oil industry stakeholders seem to be exploiting waiver provisions in the RFS in ways that are stifling the advancement of cleaner advanced ethanol technologies. Accordingly, until Congress makes significant changes to the statutory language governing the RFS, it will be unable to drive the type of innovation that the RFS aspires to.

The EPA's controversially broad interpretation of its waiver power is merely the latest in a long string of legal questions related to judicial review of agency actions.[141] The foundational case law in this area applies an analysis under the Administrative Procedure Act and *Chevron v. Natural Resources Defense Council.*[142] Under *Chevron*, a reviewing court must consider whether a provision in the text is ambiguous and then determine whether the agency's interpretation is reasonable.[143] This familiar standard of review, which is relatively deferential to agency determination, has arguably emboldened RFS regulated parties to exploit ambiguities to their own advantage.

In *Americans for Clean Energy v. Envtl. Prot. Agency*, several interest groups challenged the EPA's Final Rule promulgation for 2015 General Waiver requirements.[144] At issue was the EPA's interpretation of the requirements for the exercise of its authority to generally waive RFS compliance based on a finding of "inadequate domestic supply." The EPA was seeking to soften the RFS requirements by interpreting the term "supply" in the statute to be broad enough to include consumer demand.[145] The court ultimately determined that the term "supply" meant the EPA could only consider "supply-side factors" in determining the use of its waiver authority.

Similar gaps in the applicability of the standard and the EPA's ability to waive its requirements were highlighted in *American Petroleum Institute v.*

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141. Bob Neufeld & Rebecca Lynne Fey, *Winners and Losers: The EPA's Unfair Implementation of Renewable Fuel Standards*, 60 S.D. L. REV. 258, 297–299 (2015).

142. *See* 5 U.S.C. § 706 (2018) (referring to the Administrative Procedure Act); Chevron, U.S.A., Inc. v. Nat. Res. Def. Council, Inc., 467 U.S. 837 (1984) (setting forth the deferential test for reviewing agency statutory interpretation, which can yield inconsistent results). *Chevron* deference endangers the efficacy of the standard, by not imposing reasonable constraints on the agency use of their waiver authority.

143. *Chevron, U.S.A., Inc.,* 467 U.S. at 843.

144. Ams for Clean Energy v. Envtl. Prot. Agency, 864 F.3d 691, 696 (D.C. Cir. 2017).

145. *Id.*

Envtl. Prot. Agency.[146] Here, the EPA had issued its waiver for cellulosic biofuel to reduce the applicable volumes based on a determination that "projected volumes" would fall short of the requirements.[147] The court held the EPA's methodology did not take a "neutral aim at accuracy" and was an "unreasonable exercise of agency discretion."[148]

Multiple cases have likewise examined the reasonableness of the EPA's discretion in granting or denying small refinery exemptions. The EPA's justification for granting so many of the waivers in 2017 and 2018 was due to several rulings that the EPA's process for finding "disproportionate economic hardship" was arbitrary and capricious. The Tenth and Fourth Circuits did not necessarily indicate the EPA should or should not grant more waivers. Rather, they recognized that the manner for determining whether to give a waiver had not been reasonable. In *Sinclair v. Envtl. Prot. Agency*, the Fourth Circuit found that requiring "a threat to a refinery's survival as an ongoing operation" exceeded statutory authority.[149] Both *Sinclair* and *Ergon v. Envtl. Prot. Agency* criticized the EPA's abuse of discretion and reiterated the need for a more transparent process by which waivers should be granted.[150]

Acting head of the EPA, Andrew Wheeler, has justified the agency's recent liberal granting of RFS waivers, stating:

> Part of the original intent of Congress was also to grant the waivers . . . .We are taking a look at that issue, but we're trying to be much more clear and transparent as we grant any small refinery waivers. As you are aware, we have been sued twice on this for not granting enough, and we've lost both times.[151]

Of course, simply granting more waivers doesn't address the root problem plaguing enforcement of the RFS. The problem arguably centers on the EPA's seemingly arbitrary approach to determining "economic hardship" or other necessary findings to grant waivers. This arbitrariness creates uncertainty, deters private investment in renewable fuel technologies, and undermines the basic goal of the RFS to promote the long-term sustainability of the nation's transportation energy system.

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146. Ams Petroleum Inst. v. Envtl. Prot. Agency, 706 F.3d 474, 481 (D.C. Cir. 2013).

147. *Id.* at 476.

148. *Id.*

149. Sinclair Wyo. Ref. Co. v. U.S. Envtl. Prot. Agency, 874 F.3d 1159, 1161 (10th Cir. 2017).

150. *Id.* at 986; Ergon-W. Va., Inc. v. Envtl. Prot. Agency, 896 F.3d 600, 613 (4th Cir. 2018)

151. Erin Voegele, *Wheeler: EPA to Create Public 'Dashboard' on RFS Waivers* (Aug. 02, 2018), http://www.biodieselmagazine.com/articles/2516423/wheeler-epa-to-create-public-dashboard-on-rfs-waivers.

III. ANALYSIS OF THE CURRENT RFS

As described above, ambiguous statutory language and overbroad waiver authority interferes with the EPA's effective enforcement of the RFS in ways that undermines the primary purposes of this important policy. The Trump Administration's actions have made it increasingly apparent that the RFS will be unable to reliably and efficiently further its purposes until Congress addresses deficiencies in its RFS legislation. Specifically, statutory amendments are needed to better insulate the RFS from industry influence and to ensure that it is enforced more consistently and predictably across presidential administrations. Part III draws from basic microeconomic and public choice theory principles to clarify and shed new light on the problems plaguing the RFS.

A. Rent Seeking and Regulatory Capture

In recent years, hopes of spurring innovation in the development of cellulosic and advanced biofuels through the RFS have waned as politically powerful industry stakeholders have influenced the EPA's enforcement of provisions of those technologies.[152] Oil industry advocates have consistently opposed congressional actions, promoting the development of renewable fuels as a threat to their fuel monopoly.[153] Increases in amounts of non-petroleum fuel blended into gasoline or diesel consequently decrease the market shares and profits of oil companies.[154] The corn lobby recognizes the threat from non-corn ethanol technologies and has incentives to slow the growth of those technologies, to continue receiving favored policy treatment under the RFS.[155]

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152. *Free-Marketers, Environmentalists Both Have Reasons to Hate the RFS* (Aug. 7, 2017), https://www.rstreet.org/2017/08/07/free-marketers-environmentalists-both-have-reasons-to-hate-the-rfs/ ("[T]he EPA should work with Congress to correct what is a fundamentally flawed statute, with the goal of creating an environment where market innovation is encouraged, rather than creating fake markets for industries with powerful lobbyists.").

153. *See* Marin Katusa, *Big Oil Hates Ethanol* (Mar. 3, 2015), https://www.caseyresearch.com/big-oil-hates-ethanol/ (explaining that oil lobbyists have orchestrated campaigns of misinformation, questionable scientific research, lawsuits, restrictive franchising agreements for gas retailers, etc. in order to maintain the idea that ethanol is bad for the air, bad for cars, and bad for consumers).

154. *Id.*

155. Russ Choma, *Ethanol Takes on Big Oil* (Aug. 26, 2013), https://www.opensecrets.org/news/2013/08/ethanol-vs-big-oil/. The Obama administration was also favorable to the petroleum industry. *See* Alex Guillen, *Obama Curbs Ethanol in Blow to Corn Growers* (Nov. 30, 2015), https://www.politico.com/story/2015/11/breaking-news-epa-scales-back-ethanol-mandate-in-gasoline-216270. The Obama administration had actually rolled back some of the renewable fuel standards in 2015 as a response to what the oil industry's long touted artificial 10% "blend wall". At the time, there had been antagonism toward the RFS and corn-based ethanol coming from the

Although the Obama Administration's enforcement of the RFS favored the petroleum industry in some ways, the Trump Administration exponentially increased its concessions to the industry shortly after Scott Pruitt took the reins at the EPA.[156] Under Pruitt, the dramatic increase in small refinery waivers and the major re-staffing of positions within the EPA suggest that the EPA quickly became "captured" by the industries it is meant to regulate.[157] After granting an unprecedented 53 small refinery exemptions in 2016 and 2017, the EPA received a record number of 39 exemption petitions for 2018 from small refiners who were evidently emboldened by the EPA's new liberal interpretation of "hardship."[158] It is unclear what eligibility for "disproportionate economic hardship" these dozens of exemption petitions are claiming, given that 2018 was among the most profitable years on record for the petroleum industry.[159]

Of course, the oil industry is not the only industry exerting significant influence on the EPA's enforcement of the RFS. Over the years, numerous scholars have criticized the high degree of influence the corn industry has had on American energy policy.[160] In the past quarter century, U.S. taxpayers have spent billions of dollars subsidizing the production of corn through

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environmental lobby. Furthermore, due to the expansion of offshore drilling under Obama and the decreased dependence on foreign oil, the petroleum industry renewed its efforts to discredit the RFS. *Id.*

156. Pruitt resigned from the EPA in July 2018 amid various ethics scandals, but his policies have experienced full continuity under the new administrator and former coal lobbyist, Andrew Wheeler. *See* Ledyard King, *Andrew Wheeler, Who's Been Leading Trump Deregulatory Charge, Confirmed by Senate as EPA Chief* (Feb. 28, 2019), https://www.usatoday.com/story/news/politics/2019/02/28/trumps-new-epa-chief-andrew-wheeler-who-replaced-scott-pruitt/3014406002/ (discussing Andrew Wheeler's efforts).

157. Erin Voegele, *Representatives of the Biofuel Industry Testify at RFS Hearing* (July 18, 2018), biomassmagazine.com/articles/15468/representatives-of-the-biofuel-industry-testify-at-rfs-hearing. The 2016 and 2017 waivers resulted in an estimated 2.25 billion gallons of renewable fuel not being blended. Lindsey Dillon et al., *The Environmental Protection Agency in the Early Trump Administration: Prelude to Regulatory Capture*, 108 AM. J. PUB. HEALTH S89, S91-S93. The enforcement capability of the EPA has also been severely restricted. The agency suffered a 31% budget cut for 2018, a 25% staffing reduction, and there was a 60% drop in civil penalties during Pruitt's first six months. Science advisory boards have also been packed with industry lobbyists in positions previously held by publicly funded scientists; Pruitt's own agenda of meetings were primarily with company and trade organizations. *Id.*

158. *RFS Small Refinery Exemptions*, https://www.epa.gov/fuels-registration-reporting-and-compliance-help/rfs-small-refinery-exemptions (last updated Sept. 20, 2018); *see* Spencer Chase, *EPA Grants Five More Small Refinery Exemptions* (Mar. 14, 2019), https://www.agri-pulse.com/articles/12008-epa-grants-five-more-small-refinery-exemptions (showing there are a large amount of exemptions).

159. *See* Rebecca Elliott, *Gasoline Makers are Reaping Big Profits*, WALL STREET J. (Aug. 7, 2018), https://www.wsj.com/articles/gasoline-makers-are-reaping-big-profits-1533634201 ("American fuel makers are posting their best second-quarter profits in years, thanks to soaring domestic oil production and regional pipeline bottlenecks that are allowing them to buy crude on the cheap.").

160. *See* Foley, *supra* note 32 (arguing that the current "corn system" exists largely as a result of "lobbyists, trade associations, big businesses and the government").

ethanol-related policies.[161] The corn-based ethanol industry has likewise exerted its influence to evade stringent environmental regulations.[162] Some argue that the corn-based ethanol lobby has even managed to secure for itself subsidies that Congress specifically earmarked for advanced biofuels.[163]

A lack of transparency in RIN trading activities and the EPA's general difficulties in monitoring compliance under the RFS have also undermined enforcement of the standard.[164] There are reports that some refiners have taken advantage of the EPA's struggles by failing to report sales of generated RIN credits or by selling falsified credits.[165] The EPA has attempted to respond to these issues through a "Quality Assurance Plan," but it appears that some of these practices have nonetheless continued.[166] The EPA's approach has largely been to require obligated parties to determine whether a purchased RIN credit is legitimate, which can be a particularly difficult burden to bear for small companies seeking to break into the ethanol market.[167] The RFS will be capable of fulfilling its chief objectives over the long term only if Congress finds a way to insulate the policy from the regulatory capture problems and rent-seeking behavior that currently plague it.

B. Deficiencies in the Current RFS Waiver Structure

The existing statutory provisions governing RFS waivers suffer from several deficiencies that have made them particularly vulnerable to abuse. Fortunately, there are ways that Congress could improve the structure of RFS waiver provisions to afford adequate flexibility to the EPA without becoming

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161. *Id.*; *Federal Subsidies for Corn Ethanol and Other Corn-Based Biofuels*, TAXPAYERS FOR COMMON SENSE (June 15, 2015), https://www.taxpayer.net/energy-natural-resources/federal-subsidies-corn-ethanol-corn-based-biofuels/.

162. Almuth Ernsting, *Cashing in on Cellulosic Ethanol: Subsidy Loophole Set to Rescue Corn Biofuel Profits* (Aug. 8, 2016), https://www.independentsciencenews.org/environment/cashing-in-on-cellulosic-ethanol-subsidy-corn-biofuel/; Arnold W. Reitze, Jr., *Biofuels--Snake Oil for the Twenty-First Century*, 87 OR. L. REV. 1183, 1199, 1203 (2008).

163. Ernsting, *supra* note 162.

164. Evan Halper, *Loosely Regulated Market for Biofuel Credits Spurs Speculators and Swindlers* (Mar. 26, 2018), https://www.latimes.com/politics/la-na-pol-fuel-renewables-20180326-story.html.

165. *See Lifestyles of RINs and Fraudsters* (May 25, 2018), https://smarterfuelfuture.org/blog/details/rin-fraudsters/. Instances of fraud include owning a biodiesel factory as a front for fake production of credits, reselling RIN serial numbers that had previously been sold, and selling fake numbers. The three instances mentioned totaled approximately $200 million worth of fraud on the market. *Id.*

166. *Fraudulent RIN Cases Underscore Continuing Concerns for Renewable Fuel Credit Program*, HUSCH BLACKWELL (Oct. 17, 2016), https://www.emergingenergyinsights.com/2016/10/fraudulent-rin-cases-underscore-continuing-concerns-renewable-fuel-credit-program/

167. *Id.*; Christopher M. Holman, *The Renewable Fuel Standard Reimagined: Clearing a Path for Truly Advanced Biofuels*, 86 UMKC L. REV. 805, 820 (2018).

tools for industry stakeholders to avoid compliance. In a 2013 law journal article, Judge David Barron and Professor Todd Rakoff identified several principles for the structuring of waivers to effectively serve their purposes.[168] The article highlighted a distinction between ordinary waiver provisions and what they call "big waivers," which essentially give agencies "broad, discretionary power to determine whether the rule or rules that Congress has established should be dispensed with" altogether.[169] Professor Derek Black built upon this idea, adding that when Congress conditionally grants "big waiver" authority, a heightened standard of scrutiny is warranted to preserve constitutional limits on the power of executive agencies.[170] However, the case law on statutory waivers and the balance of powers is relatively sparse; thus, courts have largely refrained from analyzing constitutional law issues in this area as there is no clear framework for approaching them.[171]

Waiver authority is a unique administrative law problem because it involves situations in which Congress expressly gives authority to an agency to waive requirements enacted through legislation. Some "little waivers" (as Barron and Rakoff call them) are authorized only for limited circumstances to address exceptional situations, but other types of waivers vest agencies with power to effectively rewrite congressionally enacted requirements.[172] These grants of "big waiver" authority to administrative agencies have become more pronounced in recent decades. In some instances, such "big waivers" can be valuable ways to give agencies the flexibility they need to operate and effectively exercise discretion and are lawful grants of legislative power.[173]

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168. David J. Baron & Todd D. Rakoff, *In Defense of Big Waiver*, 113 COLUM. L. REV. 265, 271–272 (2013). *But see* Yair Sagy, *A Better Defense of Big Waiver: From James Landis to Louis Jaffe*, 98 MARQ. L. REV. 697, 697 (2014) (the only response to Barron and Rakoff's article on big waiver).

169. Baron & Rakoff *supra* note 168, at 267; *see also* Judson N. Kempson, *Star-Crossed Lovers: The Department of Education and the Common Core*, 67 ADMIN. L. REV. 595, n. 168 (2015) (comparing the impact of Flexibility Waivers on the development of State educational standards under the Elementary and Secondary Education Act "ESEA" with the RFS waivers provided by the EPA); Patrick Haney, *Coercion by the Numbers: Conditional Spending Doctrine and the Future of Federal Education Spending*, 64 CASE W. RES. L. REV. 577, 600 (2013) (describing the scope of power ESEA waivers provide the Department of Education as a comparison to the similarly structured RFS waivers).

170. Derek W. Black, *Federalizing Education by Waiver?*, 68 VAND. L. REV. 607, 638 (2015). In addition to issues of agency interpretation, Black raises concerns of non-delegation doctrine, arguing that conditional big waivers heighten the clarity with which Congress must give waiver authority.

171. *Id.* at 628 (citing Beno v. Shalala, 30 F.3d 1057, 1064–67 (9th Cir. 1994)); Connecticut v. Spellings, 453 F. Supp. 2d 459, 464–65 (D. Conn. 2006); C. K. v. Shalala, 883 F. Supp. 991, 1001–04 (D. N.J. 1995); Complaint, Nat'l Ass'n of Cmty. Health Ctrs. v. Shalala, No. 1:94-CV01238 (D. D.C. June 7, 1994)); *see also Recent Case*, 108 HARV. L. REV. 1208, 1211 (1995) (analyzing judicial review of the welfare waiver).

172. Baron & Rakoff, *supra* note 168, at 276–77.

173. *See id.* at 278 (describing a potential model of the "biggest waiver").

However, the RFS small refinery exemption is not a "big waiver," and EPA should not misuse it as such.[174] Statutory language authorizing the small refinery exemption constrains the EPA's use of it and suggests that Congress did not intend to empower the agency to use the exemption to effectively dispense with the RFS requirements.[175] Unfortunately, the EPA has effectively treated the RFS waiver provision as a "big waiver" in ways that exceed the scope of the agency's authority and undermine the goals of the RFS.

Improvements are also needed to other waiver provisions in the RFS including the general waiver, the waiver for cellulosic biofuel, and the waiver for advanced biofuels. As currently structured and interpreted, these waiver provisions also create uncertainty regarding enforcement of the RFS. Drawing from Barron and Rakoff's principles, statutory amendments are needed to clarify: (1) the "scope" of the EPA's statutorily-granted waiver power; (2) the "authority of the agency to create criteria for granting conditional waivers"; and (3) the agency's "duty to explain" and legally justify the waiver decisions it makes.[176] Having a workable framework for assessing effective waivers sets the boundaries of an agency's power as defined by Congress and the Constitution. Broad delegating language should not be viewed as the equivalent to "broad or unlimited power" to substitute an agency's rulemaking with laws Congress enacted.[177] The following materials analyze a few discrete RFS waiver issues under existing legal and policy principles, highlighting some of the deficiencies in the existing structure of these policies.

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174. *See* 42 U.S.C. § 7545(o)(7)(A), (D)–(E)(ii) (2018) (describing that the actual "big waiver" provisions include the general waiver, the cellulosic biofuel waiver, and the waiver for biomass-based diesel); *id.* § 7545(o)(9) (describing the small refinery exemption, which has characteristics that are more representative of a "little waiver" that are unfortunately used in a big way).

175. *See* 42 U.S.C. § 7545(o)(9). There is no mention of the word "waiver" in subsection (9). The exemption is not located in the subsection titled to waivers. If Congress intended for the exemption to be used as a "waiver" with the same degree of impact as the any other waiver in the RFS, it would have placed the small refinery exemption within the section on waivers. Furthermore, there is no language that suggests any issuance of a small refinery waiver would have any effect on modifying total applicable volumes while in the "Waiver" section, such impact is contemplated and accounted for.

176. Baron & Rakoff, *supra* note 168, at 320, 325, 327. Congress had enacted the RFS telling the EPA to enforce a standard for renewable fuel. Congress also gave the EPA the power to waive all or part of that standard if certain circumstances arose. A framework is necessary in order to understand how these two delegations of authority relate to one another. To determine how much deference a court reviewing the EPA's action must give, it would look to the scope of the delegation and the criteria of the specific provision to determine if the EPA's waiver action was justified.

177. Black, *supra* note 170, at 677 ("[T]he EPA's regulation of the environment may appear limitless, but statutory language explicitly narrows the scope in which broad delegating language operates. The EPA does not possess the power to regulate the environment in general.").

1. Waivers Contribute to Uncertainty

The availability of RFS waivers from an agency with broad discretion to grant or deny them erodes certainty and predictability in transportation fuel markets. [178] Indeed, the lack of consistency in the application and enforcement of the RFS is already impeding the efficient functioning of markets for renewable fuel.[179] Few possibilities could create more hesitation in a renewable fuel market stakeholder than the real possibility that a single administrative act could cause market demand for biofuel to instantly disappear. Of course, waiver provisions do not have to create that degree of uncertainty. For example, the biomass-based diesel waiver has never been used.[180] Of all the waivers embedded in the statute, it has the most restrictive grant conditions. Even if it were granted, there would be no possibility of the standard being waived for more than 120 days in total. [181] The specific limitations in the biodiesel waiver provisions, if included in the other waivers, could help shore up market demand and private investment in renewable fuel markets.

Industry stakeholders' use of the small refinery exemption excused those stakeholders from having to supply roughly 2.25 billion gallons of renewable fuel in 2018, significantly decreasing the demand for these products.[182] The negative impact of these exemptions is felt not only by the ethanol industry but also by oil refiners who did not receive exemptions. In fact, some refiners have suffered losses because the abundance of granted exemptions eroded market demand for RIN credits.[183] Such government-induced unpredictable market shifts generate inefficiency for market participants and can ultimately slow the growth of healthy, reliable renewable fuel markets.

2. Interpreting the Scope of Waiver Authority under the RFS

Ambiguous statutory terms governing the EPA's authority to grant waivers are troubling, in part because they ultimately require courts to determine the scope of the agency's waiver powers.[184] Federal agencies, such as the EPA, generally may only waive Congressionally enacted requirements

178. Neufeld & Fey, *supra* note 141, at 300–301.

179. *See id.* at 307 (describing the EPA's negative impact on merchant refiners as a result of imposing its RFS2 authority).

180. CONG. RESEARCH SERV., R44045, THE RENEWABLE FUEL STANDARD (RFS): WAIVER AUTHORITY AND MODIFICATION OF VOLUMES 1, 5 (2019).

181. *See* 42 U.S.C. § 7545(o)(7)(E)(ii)–(iii) (2018) (describing the waiver and extension processes for biomass-based diesel).

182. Voegele, *supra* note 157.

183. *Id.*

184. *Waiving Chevron Deference*, 132 HARV. L. REV. 1520, 1527–28, 1533-34 (2019).

if Congress has expressly given them power to do so. In *MCI Telecommunications Corp. v. AT&T*, the U.S. Supreme Court held that a simple Congressional authorization for the Federal Communications Commission to modify requirements applicable to common carriers did not carry the same power as the power to waive a statutory requirement.[185] Accordingly, the Court held that the Commission could not completely exempt common carriers from regulation because a decision to do so would exceed its authority.[186] Broad waiver authority appears to only be available to an agency if a statute expressly gives that agency power to "waive" or issue a waiver.[187] In the case of the RFS, 42 U.S.C. § 7545(o)(7) suggests that Congress intended to grant the EPA some authority to modify requirements or grant waivers within certain constraints outlined in the statute.[188] However, the EPA is arguably being far too permissive in its interpretation of these constraints in ways that are exceeding the agency's power.

An analog to the *MCI Telecommunications* case is found in the "modification of applicable volumes" section of the RFS.[189] This section gives the EPA Administrator authority to modify fuel standard requirements if certain criteria are met.[190] However, the modification section does not expressly give authority to issue a waiver. The scope of authority granted under these modification provisions is narrower than the general, cellulosic biofuel, and biomass-based diesel waiver provisions.[191] Authority to modify volume requirements is functionally equivalent to the authority to fully waive those requirements.

Evidence that the EPA is exceeding its statutorily-granted authority is also arguably visible in connection with the small refinery exemption, which is also not found in the subsection entitled "Waivers."[192] Referencing only the possibility of a "temporary exemption" or "extension of exemption" for "disproportionate economic hardship," the location of the small refinery provision within the statute and the absence of waiver language in connection with it imply a narrower scope of granted authority.[193] The EPA's recent use of these provisions to liberally excuse refiners from compliance arguably exceeds these more narrowly drawn powers. However, litigation in courts

185. MCI Telecomm. Corp. v. Am Tel. & Tel. Co., 512 U.S. 218, 234 (1994) (noting the difference between modification and waiving requirements)

186. *Id.*

187. *See id.* (discussing the Commission's ability to waive).

188. 42 U.S.C. § 7545(o)(7) (2018).

189. *Id.* § 7545(o)(7)(F).

190. *Id.*

191. *Id.* § 7545(o)(7)(A), (D)–(E) (explaining, respectively, the general waiver, cellulosic biofuel waiver, and biomass-based diesel waiver provisions).

192. *See id.* § 7545(o)(9)(A)–(B) (describing small refinery exemptions, not waivers).

193. *Id*. § 7545(o)(9)(A).

aimed at establishing this and constraining the EPA's discretion is risky and expensive. Improvements to RFS legislation more clearly constraining EPA waiver authority would help alleviate this problem.

3. Comparing the RFS Waiver Provisions to Waivers Elsewhere in Federal Law

The deficiencies in the RFS waivers are easier to recognize when contrasted with more effective waivers found elsewhere in federal law. A government agency executing legislative mandates has a continuing duty to fulfill the purpose of a mandate, even if the agency has authority to waive compliance with those mandates in certain situations.[194] Accordingly, the existing academic literature suggests that two key ingredients in effective delegations of broad waiver authority are "procedural and substantive restrictions on the agency's waiver power."[195] The Montana Renewable Portfolio Standard (RPS) waiver, the Federal Emergency Management Agency's (FEMA) economic hardship assistance waivers for disaster relief, and the RFS waiver for fuel additives all feature desirable provisions in this regard.[196] Multiple other waiver provisions within the RFS do not.[197]

The Montana RPS contains a waiver provision for compliance that is structured to insulate it from potential abuses. The Montana RPS was enacted in 2005 as part of a legislative effort to promote renewable energy development and new economic activity in rural areas.[198] Under the standard, most utilities in the state must get a certain percentage of their retail electricity from eligible renewable resources, with 15% coming from renewable resources by 2015.[199] Importantly, the waiver provision associated with this requirement was among the most explicit in the country when the legislation was enacted and has since served as a model for other states.[200] The waiver is "short term" and, to receive it, a utility must demonstrate it has "undertaken all reasonable steps to procure renewable energy credits under long-term contract" or that integration of renewable technologies "will

194. Baron & Rakoff, *supra* note 168, at 325–26.

195. *Id.* at 323.

196. K.S. CORY & B.G. SWEZEY, NAT'L RENEWABLE ENERGY LABORATORY, TECHNICAL REPORT NREL/TP-670-41409, RENEWABLE PORTFOLIO STANDARDS IN THE STATES: BALANCING GOALS AND IMPLEMENTATION STRATEGIES 17 (2007); 15 U.S.C. § 2229(k)(4)(B); Baron & Rakoff, *supra* note 168, at 340–41.

197. K.S. Cory & B.G. Swezey, *supra* note 196, at 15.

198. *Renewable Resource Standard*, DSIRE, https://programs.dsireusa.org/system/program/detail/384 (last visited Oct. 26, 2019).

199. *Id.*

200. *See* Energy Independence and Security Act of 2007, Pub. L. No. 110-140 (legislation enacted as a demonstration to the states for economical utility renewable sources).

clearly and demonstrably jeopardize the reliability of the electrical system."[201] The explicit statutory purpose was manifest in this waiver provision, which makes clear there is a standard for qualifying for a waiver and that specific substantive and procedural requirements must be met.[202]

Another well-structured waiver provision appears in 15 U.S.C. § 2229(k)(4), which governs the FEMA firefighter assistance program.[203] The statute grants broad waiver authority in cases of economic hardship and empowers the FEMA Administrator to define "economic hardship" and to otherwise "establish and publish guidelines" for the program's implementation.[204] FEMA issues guidelines after consulting with designated experts and taking into account various statutory "considerations."[205] Compared to the ambiguous definition of economic hardship in the RFS, the FEMA definition of economic hardship is clear and specific. Such Congressional guidance can make it easier for courts to evaluate whether an agency's interpretation and action are within intended bounds.

Statutory language clearly prohibiting deviations from the state purposes increases the likelihood that agencies will exercise their waiver powers inappropriately. Barron and Rakoff suggest a baseline presumption for courts to adopt when addressing issues of "big waiver" use:

> [T]he statute should provide, or, if silent, should be understood to provide, for big waiver only insofar as it is in furtherance of the same basic purposes as the substantive statutory provisions to be waived . . . . [S]ilence should not be understood as an occasion for the agency to resolve the ambiguity, such that it may identify reasons more favorable to the exercise of the big waiver power.[206]

Even within the codified statute of the RFS are desirable waiver provisions for other programs. For instance, provisions in the RFS authorize the Administrator to "temporarily" waive a fuel additive requirement regulation if several clear requirements are met.[207] Additionally, granting the waiver must be "in the public interest," such as in the event of a projected temporary

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201. K.S. Cory & B.G. Swezey, *supra* note 196, at 17.
202. *Id.*
203. 15 U.S.C. § 229(k)(4) (2018).
204. *Id.*
205 *Id.*
206. Baron & Rakoff, *supra* note 168, at 335.
207. Specifically, the statute requires "consultation with, and concurrence by, the Secretary of energy" determining that "extreme and unusual" supply circumstances exist, such circumstances are the result of an event that "could not reasonably have been foreseen or prevented" and was not related to a lack of "prudent planning" on the part of regulated parties. 42 U.S.C. § 7545(c)(4)(C)(ii).

shortfall in fuel additive supply with no other means of addressing the shortfall.[208] Even after the Administrator finds that a waiver is warranted, the waiver is permissible only if it features several constraints.[209] Specifically, it must be limited to the "smallest geographic area necessary," be effective for no more than 20 days, have a "transitional period . . . for the shortest practicable time period necessary," apply equally to all parties in the regulated system and follow the delivery of public notice to "all parties in the motor fuel distribution system, and local and State regulators" in affected regions.[210]

The waiver provisions related to fuel additive regulations in § 7545(c) provide a stark contrast to those governing other types of fuel-related waivers. The scope of the waiver is clear: it is temporary, has clearly defined criteria for making determinations, requires joint decision-making, and provides guiding examples and good statutory rules of construction. The chances that the EPA will construe the provisions of the statute in line with Congressional intent, and that any competent court will find such interpretation reasonable, are greatly improved. Predictability and certainty for parties affected by the regulation is also considered through the second part of the waiver provision which sets a time limit to the waiver and requires advance notice.[211] The EPA is also given guidelines for modifying criteria should a waiver be granted allowing the Administrator to modify the transition period by shortening it, and to determine what is absolutely "necessary" to address circumstances for the waiver.[212] Rather than giving the EPA or a federal court free reign to decide what a "reasonable" interpretation of its authority may be, the language of the statute allows the EPA to more effectively carry out its duty to explain any action it may take to modify Congressional standards.[213]

Inseparable from the need to create clear and effective criteria for the grant of waivers is the duty of an agency to justify its action once a waiver authority has been exercised. After being subject to public scrutiny through the EPA's abuse of the small refinery exemption, Andrew Wheeler, recently confirmed head of the EPA, admitted, "As one of the former congressional staffers that helped write . . . [the RFS small refinery exemption provision,] I wish we would have spent a little bit more time on some of the details now that I'm helping to implement it."[214] The duty to explain is also harder to fulfill when clarity is lacking and no explicit procedural requirements exist

208. *Id.*
209. *Id.* § 7545 (c)(4)(C)(ii)–(iii).
210. *Id.* § 7545 (c)(4)(C)(iii)(I)–(V).
211. *Id.* § 7545 (c)(4)(C)(iii)(II), (V).
212. *Id.* § 7545 (c)(4)(C)(iii)(III).
213. *Id.* § 7545 (c)(4)(C)(iii).
214. Voegele, *supra* note 151.

for granting a waiver or denying one. Any reform in the RFS could benefit from substantive and procedural requirements that explicitly embody the statutory purpose of the legislation: to have an actual standard—one that is not so easily undermined by politics of non-enforcement or regulatory capture.

C. The Economic Failings of the Current RFS

The current RFS and the EPA's approaches to enforcing it are not only questionable under the law, they are also inefficient in ways that are delaying the advancement of the nation's renewable fuel industry. By excessively incentivizing corn-based ethanol production over other more renewable fuel strategies, the RFS leads to inadequate investment in advanced biofuel technologies. The EPA's unpredictable use of waivers under the RFS also creates market uncertainty that further deters private investment in renewable fuels.

1. Over-subsidization of the mature corn ethanol industry negatively impacts the growth of advanced biofuels

Advanced biofuels need similar long-term incentives for corn to meet the statutory goals of the RFS. Viewing the development of ethanol as a fuel within the theoretical model of the product life cycle and product innovation suggests that similar market incentives to corn need to exist for advanced and cellulosic biofuel to meet their statutory goals. Generally, the life cycle of a product in its later stages is marked by a leveling out of firms offering the product followed by eventual market consolidation and stabilization.[215] After the RFS was implemented, the number of conventional ethanol firms grew sharply and eventually came to a mature stage characterized by increased production efficiency and stabilization of new actors entering the market.[216] While the RFS mandate has incentives that spurred the development of an economically sustainable corn-based biofuels industry during the initial stages, the effects of the policy are not as significant now that conventional

215. Jay P. Kesan et al., *An Empirical Study of the Impact of the Renewable Fuel Standard (RFS) on the Production of Fuel Ethanol in the U.S.*, 2017 UTAH L. REV. 159, 182 (2017) (documenting the development of forty-six varied products price, output, sales and change in number of firms over the life of each product). There are similar life cycle phases for manufacturing industries identifying five distinct stages: 1) introduction to market with new firms rapidly entering the market, 2) sharp growth of firms, 3) leveling out of firms characterized by similar numbers of firms entering as well as exiting the market, 4) sharp decline in the number of firms and 5) eventual stabilization, consolidation, with almost no new entry. *Id.*

216. *Id.* at 160.

ethanol can be considered an established industry.[217] This long history of corn subsidies has allowed the corn ethanol industry to become the powerful and well-established force it is today.

Numerous policymakers and scholars have criticized the role that the corn industry has played in the development of the American biofuel industry.[218] The vast majority of the ethanol manufactured in the United States comes from corn feedstock, and the environmental effects of commercially grown corn have long been concerning.[219] Over the last 30 years, taxpayers have spent tens of billions of dollars subsidizing the production of corn ethanol.[220] Just between 1995 and 2010 alone, subsidies for corn totaled approximately $90 billion, not including indirect subsidies through the RFS mandates.[221] Congress even recognized how heavily propped up corn was in its 2008 farm bill which prohibited corn ethanol from qualifying for energy title spending.[222] In response, corn ethanol producers avoided these prohibitions by convincing the USDA to add "ethanol blender pumps to its list of projects" that qualify for funding through the Rural Energy for America Program.[223] Scattered throughout various federal programs are a broad range of subsidies and special treatments for the corn industry.[224]

Decades of heavy government support for corn-ethanol industry have helped mature the industry in ways which, today, slow cellulosic and advanced biofuels markets growth. Though the federal government highly subsidizes advanced and cellulosic biofuels, the total assistance they have received over the years is negligible when compared to that of corn-based ethanol.[225] Years and years of sustained corn subsidies allowed the industry to mature to where it can produce more corn on the same land at less cost, producing a competitive edge for ethanol.[226] Under the current system, it is unlikely that advanced biofuels industry will grow to levels comparable to conventional ethanol. These industries need available private financing and

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217. *Id.*

218. *Id.* at 163–64.

219. RENEWABLE FUELS ASS'N, *supra* note 61, at 8–9; Foley, *supra* note 32 (estimating total corn subsidies at $90 billion between 1995 and 2010).

220. *Fact Sheet: Federal Subsidies for Corn Ethanol and other Corn-Based Fuels* (June 15, 2015), https://www.taxpayer.net/energy-natural-resources/federal-subsidies-corn-ethanol-corn-based-biofuels/.

221. Foley, *supra* note 32.

222. *Federal Subsidies for Corn Ethanol*, *supra* note 220.

223. *Id.*

224. *Id.*

225. *Compare id.* (explaining corn subsidies) *with Updated Report: Federal Subsidies for Biofuels and Biomass Energy* (Dec. 1, 2017), https://www.taxpayer.net/energy-natural-resources/federal-subsidies-biofuels-biomass-energy/.

226. Kesan et al., *supra* note 215, at 201.

ongoing guaranteed government assistance, like the corn industry received, to establish them.

2. The Current RFS Leads to Market Uncertainty Hindering Investment in Advanced Fuels.

The RFS and its unpredictably granted waivers create unnecessary policy uncertainty that hinders private investment in renewable fuels. This policy uncertainty also distorts gasoline and corn-based ethanol markets. Because the EPA's issuance of waivers has been inconsistent since EISA was passed, some commodities market experts have been unwilling to factor in the RFS in their forecasts. Generally, uncertainty negatively impacts markets, retarding economic growth.[227] Investors are more risk-averse during times of uncertainty, which can hamper the development of innovative technology.[228] Policy uncertainty pushes investors to take a "wait and see" approach that can stagnate development.[229] These common responses to uncertainty typically dampen growth.[230]

Data describing recent investments in advanced biofuels supports this analysis. For instance, the United Nations Environment Programme (UNEP) report on global trends in renewable energy investment showed that investment in advanced biofuels fell by over a third from 2013 to 2014, due to uncertainties. The report stated, "chronic uncertainty overshadow[s] the US market."[231] The same UNEP report for 2015 stated that conflicting regulations in the U.S. made advanced ethanol producers shift focus to more secure biochemical production.[232] Again, U.S. policy uncertainty was specifically listed as a deterrent for investors from the industry.[233] With the transition of administrations in 2016, investment in biofuels slumped 60% from previous years, in part because of questions surrounding the RFS.[234] In 2017, biofuel investment declined to its lowest level on record while the

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227. *See generally* Scott R. Baker et al., *Measuring Economic Policy Uncertainty*, 131 Q. J. ECON. 1593, 1633 (2016).

228. *See generally* Libing Fang et al., *The Effect of Economic Policy Uncertainty on the Long-Term Correlation Between U.S. Stock and Bond Markets*, 66 ECON. MODELLING 139, 139-140 (2017).

229. SIMON GILCHRIST, JAE W. SIM & EGON ZAKRAJŠEK, UNCERTAINTY, FINANCIAL RESTRICTIONS, AND INVESTMENT DYNAMICS 1 (Nat'l Bureau of Econ. Res., Apr. 2014).

230. STEVEN J. DAVIS, REGULATORY COMPLEXITY AND POLICY UNCERTAINTY: HEADWINDS OF OUR OWN MAKING 15–16 (2017).

231. FRANKFURT SCH. OF FIN. & MGMT., GLOBAL TRENDS IN RENEWABLE ENERGY INVESTMENT 2015 76 (2015).

232. *Id.* at 65.

233. FRANKFURT SCH. OF FIN. & MGMT., GLOBAL TRENDS IN RENEWABLE ENERGY INVESTMENT 2016 69–70 (2016).

234. FRANKFURT SCH. OF FIN. & MGMT., GLOBAL TRENDS IN RENEWABLE ENERGY INVESTMENT 2017 75 (2017).

number of waivers the EPA issued skyrocketed.[235] At least one leading scholar on the RFS has stated that the program's waivable mandate is failing to induce investments, and without policy changes creating greater market certainty the U.S will fail to meet its advanced biofuel goals.[236]

Clearly, uncertainty has negatively impacted investments in advanced biofuels, but there is evidence that RFS uncertainty has also negatively impacted other related industries. In a prepared statement before the Senate, one oil company executive lamented that, "EPA interpretation of the waiver language has caused some confusion and concern . . . Several changes to the waiver language would help to correct these problems."[237] Uncertainty as to whether the EPA will waive compliance hurts oil companies' ability to predict their markets. The credit program can effectively alleviate short term supply issues with ethanol, but also creates market uncertainty for the corn industry.[238] Another major complaint of oil industry stakeholders is the lack of clarity in the granting of waivers has resulted in some refineries obtaining insider information from the EPA.[239] Using the information to secure waivers, in excess of the average, creates an unfair market advantage.[240] This "insider trading" is epitomized by a waiver granted to a refinery owned by Carl Icahn, a member of the Trump administration.[241] Icahn's waiver specifically has drawn the ire of some Senate members.[242] Ironically, during

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235. FRANKFURT SCHOOL OF FIN. & MGMT., GLOBAL TRENDS IN RENEWABLE ENERGY INVESTMENT 2018 52 (2018); *see also* cases interpreting the scope of waiver provisions and ambiguous criteria: Am. Petroleum Inst. v. Envtl. Prot. Agency, 706 F.3d 474, 481 (D.C. Cir. 2013) (EPA waiver conditions interpreted for the cellulosic biofuel waiver as to how "projected volumes" for a given year would be determined); Ams. for Clean Energy v. Envtl. Prot. Agency, 864 F.3d 691, 712 (D.C. Cir. 2017) (waiver triggered if the requirement would harm the economy or environment or there is limited supply); Ergon-W. Va., Inc. v. Envtl. Prot. Agency, 896 F.3d 600, 601 (4th Cir. 2018) (waiver is triggered when the requirement would cause hardship to a small refinery).

236. BRAD BABCOCK, ROLE OF THE RFS IN INDUCING INVESTMENT IN CELLULOSIC BIOFUELS REFINERIES (2014); *Biofuels for Energy Sec. and Transp. Act of 2007*, Hearing Before the Comm. on Energy and Nat. Res. U. S. S., 110th Cong., 40 (2007) (statement of Red Cavaney, President and Chief Executive Officer, American Petroleum Institute).

237. *Biofuels for Energy Security and Transp. Act of 2007*, Hearing Before the S. Comm. on Energy and Nat. Res., 110th Cong. at 40 (2007).

238. GLOBAL TRENDS IN RENEWABLE ENERGY INVESTMENT 2018, *supra* note 235, at 52.

239. Erin Voegele, *EPA Releases Data on Small Refinery Hardship Waivers* (Sept. 20, 2018) http://ethanolproducer.com/articles/15622/epa-releases-data-on-small-refinery-hardship-waivers; *see also* Jarrett Renshaw & Chris Prentice, *Exclusive: U.S. EPA Grants Refiners Biofuel Credits to Remedy Obama-era Waiver Denials* (May 31, 2018), https://www.reuters.com/article/us-usa-biofuels-waivers-exclusive/exclusive-epa-grants-refiners-biofuel-credits-to-remedy-obama-era-waiver-denials-idUSKCN1IW1DW ((noting complaint that the EPA is giving an advantage to a narrow piece of the market).

240. *Id.*

241. Jarrett Renshaw, *Senators ask Billionaire Icahn for Refinery Waiver Details* (May 9, 2018), https://www.reuters.com/article/us-usa-biofuels-icahn/senators-ask-billionaire-icahn-for-refinery-waiver-details-idUSKBN1IA13K.

242. *Id.*

his short stint as also an administration member, Icahn himself called the RFS system "rigged."[243]

IV. RECOMMENDATIONS FOR IMPROVING THE RFS

The most promising potential means of addressing problems with the current RFS waivers are relatively straightforward. Congress must revise the general and advanced biofuel waiver provisions to more clearly limit the EPA's discretion and reduce inconsistencies across administrations. Congress should also eliminate the small refinery waiver, which has no valid justification. Statutory language that requests stringent judicial review of waiver grants could also help promote more consistent implementation. Amendments to statutory provisions related to the RIN credit system could help to discourage the inefficient practice of gaming through stockpiling. Further, Congress should better incentivize non-corn ethanol investment through subsidies, or other means, to push the RFS's advanced biofuel goals.

A. Revising the RFS Waivers

Congress could greatly improve RFS's effectiveness by incorporating elements of other RFS waiver provisions. There must be clear guidelines for understanding Congressional grants of waiver authority.[244] The *Chevron* two-step analysis, finding ambiguity and then assessing reasonableness, produces inconsistent results. Various case law interpreting RFS waiver provisions recognize these inconsistences.[245] If the EPA and other agencies are to be insulated from partisan political considerations and corporate capture, provisions should be construed as objectively and faithfully to the legislation as possible.[246] Effective waivers consider both the agency's

243. Laura Blewitt & Zachary Mider, *Icahn Calls on EPA to Fix 'Mother of All Short Squeezes'* (Aug. 15, 2016), https://www.bloomberg.com/news/articles/2016-08-15/carl-icahn-calls-on-epa-to-fix-mother-of-all-short-squeezes; Jennifer Dlouhy & Mario Parker, *Refiner Bankruptcy Adds to Pressure to Overhaul Biofuel Program* (Feb. 1, 2018), https://www.bloomberg.com/news/articles/2018-02-01/refiner-bankruptcy-adds-to-pressure-to-overhaul-biofuel-program.

244. Black, *supra* note 170, at 670 ("If Congress 'wishes to assign to an agency decision of vast . , . political significance,' Congress must 'speak clearly.'") (citing Util. Air Regulatory Group v. Envtl. Prot. Agency, 134 S. Ct. 2427, 2444 (2014)).

245. *See, e.g.,* Ams. for Clean Energy v. Envtl. Prot. Agency, 864 F.3d 691, 707 (D.C. Cir 2017) (finding that the EPA's interpretation of the "inadequate domestic supply" waiver was inconsistent with the CAA); Am. Petroleum Inst. V. Envtl. Prot. Agency, 706 F.3d 474, 479 (D.C. Cir 2013) (stating that the EPA's interpretation of the RFS waiver to "promote growth" in the cellulosic biofuel industry was inconsistent with the text of the CAA); Sinclair Wyo. Ref. Co. v. Envtl. Prot. Agency, 887 F.3d 986, 988(10th Cir. 2017) (concluding that the EPA incorrectly interpreted the hardship exemption in the CAA).

246. Barron & Rakoff, *supra* note 168, at 335 (explaining that the statute "should be understood to provide, for big waiver only insofar as it is in furtherance of the same basic purposes as the substantive statutory provisions to be waived . . . .").

perspective when determining its scope of action given by Congress and rationales under judicial review.[247] Both the general waiver and the advanced biofuel waiver lack these essential characteristics.[248]

1. Narrowing the General and Advanced Biofuel Waivers

As previously discussed, a good statutory waiver must have clearly defined limits to be effective. Litigation over the cellulosic biofuel and general waivers fails to provide any legal clarity on how such waivers should be interpreted.[249] Clearer procedural and substantive constraints on these waivers are needed to finally enable them to function effectively.[250]

Procedural limits impose a process the parties must follow to protect waiver provisions from misuse and provide adequate notice. The RFS waivers should require mandatory consultation with other agencies, concurrence or consent from other agencies and affected parties, publication of basis for granting waivers, notice to all obligated parties of any waivers under consideration, time limits on the effective period, and geographical or jurisdictional limits on the application of a waiver. [251]

Additionally, effective waivers require substantive limits. A waiver provision could have a list of items that cannot be waived, or a list of scenarios that are precluded from application for a waiver.[252] Definitions of "hardship" or "extreme circumstances" provide guidance to an agency and reviewing courts. Illustrations should include both positive and negative examples, what are anticipated situations for grant of waiver. Furthermore, illustrations should include what situations should be categorically excluded,

247. *Id.* at 319–320.

248. *See* 42 U.S.C. § 7545(o)(7) (2018).

249. *See Am.'s for Clean Energy*, 864 F.3d at 710 (challenging the 2015 General Waiver conditions interpretation by the EPA of "inadequate domestic supply"); *Sinclair Wyo. Ref. Co.* , 874 F.3d at 1159 (finding that the EPA incorrectly interpreted the RFS hardship exemption in the CAA); Ergon-W. Va., Inc. v. U.S. Envtl. Prot. Agency, 896 F.3d 600 (4th Cir. 2018) (questioning the process for granting small refinery exemptions for "disproportionate economic hardship").

250. *See* Baron & Rakoff, *supra* note 168, at 323 (recognizing careful drafting in regard to the significant substantive and procedural requirements for granting waivers within the Affordable Care and the No Child Left Behind Act).

251. 42 U.S.C. § 7545(c)(4)(C)(v); *see also* Lauren Moxley, *E-Rulemaking and Democracy*, 68 ADMIN. L. REV. 661, 663–64 (2016) (discussing advances technology has made in more effect notice-and-comment process to enhance the democratic function of such processes to notify and receive input from all stakeholders affected by agency action).

252. *E.g.*, *Ams. for Clean Energy*, 864 F.3d at 730 (including exclusions such as, include "supply-side factors" would help to bring clarity before an interpretation was challenged and a court would step in).

and pre-determined eligibility criteria, such as who can request waivers.[253] If the agency is required to show a determination, then burdens of proof and relevant factors should be explicit. Like the Montana RPS, applicants could demonstrate they have taken all reasonable steps to comply with the standard, or that issuance of the waiver be in furtherance of the statutory purposes.[254] This and the other aforementioned statutory changes, related to the waivers, would address fundamental problems with the general waiver. This includes waivers for cellulosic and advance biofuel, which creates greater market certainty and thereby helps to improve the overall effectiveness of the RFS.

2. Eliminating the Small Refinery Exemption

Any Congressional amendment aimed at improving the RFS and its waiver structure must also eliminate the small refinery exemption. The scope of the EPA's authority under this exemption is unclear, as it has enabled the EPA to exempt refiners from supplying roughly 2.25 billion gallons of ethanol under Scott Pruitt.[255] Under Pruitt, the EPA effectively waived 15% of total compliance requirements; even the exemption was never intended to be used in this manner.[256] Procedural and substantive limits in the legislation are practically nonexistent.[257] "Disproportionate economic hardship" is undefined, and absolutely no criteria or examples are given to the agency to interpret the provision.[258] While the initial blanket exemption ended in 2010, the extension granted to petitioners have no time limits or transitional period.[259]

The continued existence of the small refinery exemption is even more troubling given that there are arguably no compelling policy reasons today for providing exemptions to small refiners. Declines in refineries have leveled off significantly in recent years, and many refineries are now enjoying record output and profits.[260] In light of these changes and the recent

253. 42 U.S.C. § 7545(o)(9). While this section only made small refiners eligible for a waiver, there should also be more eligibility requirements and clearer eligibility requirements within a waiver. Such criteria determine a threshold as to who could potentially receive the waiver.

254. MONT. CODE ANN. § 69-3-2004(11) (2019).

255. Voegele, *supra* note 157.

256. *Id.*

257. 42 U.S.C. § 7545(o)(9).

258. *Id.* § 7545(o)(9)(B).

259. C*ompare id.* § 7545(o)(7)(E)(ii) (describing that bio-mass based diesel waivers are limited to 60-day periods) *with id.* § 7545(o)(9) ("A small refinery may at any time petition the Administrator for an extension of the exemption under subparagraph (A) for the reason of disproportionate economic hardship.").

260. Andrews et al., *supra* note 139, at 17–18 (explaining that changes in refineries, profits, and industry consolidations indicate circumstances that initially existed to justify the small refinery exemption are no longer relevant).

abuses of the small refinery exemption, the exemption and its many troubles must be eliminated.

3. Legislating Judicial Deference for Use of Waiver Authority

The RFS and its effectiveness would be further strengthened with statutory language instructing courts not to give broad deference to the EPA in its grant of waivers. *Chevron* deference is improper for RFS waivers because waiver authority implicates greater Constitutional concerns. Use of waiver is not the same as agency rulemaking or legislative interpretation because an agency has the power to re-write legislation. When an executive agency acts in a legislative capacity, deference is not enough to enforce the principle of separation of powers. A default pattern collectively suggested by Barron, Rakoff, and Black could be applied to the waiver provisions in the RFS, yielding more desirable outcomes:

i. Deference should be afforded to the requirements Congress established, not the agency action taken to rewrite those requirements. When Congress writes express standards into law, agency action should not be accorded deference under *Chevron*.[261]
ii. The agency must show why use of the waiver better satisfies the statutory purpose under current circumstances than adherence to the Congressional rules—with deference to the initial rules.[262]
iii. The scope of an agency's authority will not be subject to its reasonable interpretation. The judiciary will review questions of scope independently.[263]

This default pattern has the effect of placing more pressure on both the Executive and Congress to seek explicit, specific, and clear waiver provisions. A re-draft of the general waiver and the cellulosic biofuel waiver would be required to pass muster under an analysis that is deferential to the initial Congressional requirements.

261. Baron & Rakoff, *supra* note 168, at 331–32.
262. *Id.* at 332.
263. Black, *supra* note 170, at 642 (referring to the importance of a "scope analysis" to narrowly construe delegations of authority given by Congress to administrative agencies).

B. Restructuring the RIN Credit System to Deter Strategic Behavior

Congress should amend the statutory language governing the RIN credit system to better deter industry abuses within the system. Among other games, oil companies currently buy credits and hold them, manipulating market demand for ethanol. This inconsistency in demand has, in part, led to the closure of several advanced ethanol plants.[264] Additionally, the current credit system is not effective at deterring blenders from buying ethanol, earning the credit, and then selling the ethanol to other blenders as a way of avoiding RFS obligations. One way of reducing these problems would be to make credits available only after blending has taken place and to limit the lifespan of credits to a year. Changing when credits are generated would effectively deter parties from "selling along." Capping the lifespan of credits would limit the ability of companies to game the market through stockpiling credits. Both options would keep parties from skirting their RFS obligations using RIN.

C. Encourage Cross Investment and Ethanol Crop Diversification

To fully advance the general goals of the RFS, Congress should strengthen market incentives for investments in advanced biofuels. Corn-based ethanol's dominance is primarily driven by its long history of subsidies. The most rational critiques of ethanol fuel are a result of the monoculture system which has developed in the U.S. One study has concluded that corn may not be viable in the future as a crop, due to the unavoidable climate change that is already taking place.[265] Generally, relying on a single crop as a fuel feedstock limits the ability of ethanol to strengthen U.S. fuel security. To deal with the issue of mono-cropping, Congress should revise existing legislation to specifically incentivize cross-investment for advanced ethanol and alternative crop growth.

Some critics of advanced ethanol argue that the industry currently gets more than enough support from the federal government.[266] While it is true that advanced ethanol receives sizable government subsidies, they are small compared to the aggregate incentives the corn-based ethanol industry has

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264. *See*, *e.g.*, *More on Why DuPont Closed its Cellulosic Ethanol Plant* (Nov. 22, 2017), https://www.proag.com/news/dupont-closed-cellulosic-ethanol-plant/ (explaining that the DowDuPont cellulosic ethanol plant closed because it was not economically feasible).

265. *See generally* Michelle Tigchelaar et al., *Future Warming Increases Probability of Globally Synchronized Maize Production Shocks*, 115 PROC. NAT'L ACAD. SCI. 6644 (2018) (examining future yields of corn).

266. Jonathan Foley, *It's Time to Rethink America's Corn System* (Mar. 5, 2013) https://www.scientificamerican.com/article/time-to-rethink-corn/.

received. Corn subsidies need to be diversified from corn toward advanced ethanol and to other sugar-rich crops that can produce more ethanol on less acreage.[267] Using special incentives to drive the transition from a monocrop toward other types of ethanol will create valuable diversification within the ethanol industry.

V. CONCLUSION

Although the RFS is more dysfunctional today than ever, there are relatively straightforward ways to significantly address its woes and transform it into an effective and valuable renewable energy policy. Statutory changes that clearly and specifically limit the EPA's waiver discretion, address problems with the RIN credit system, and incentivize more investments in non-corn ethanol technologies could do much to improve the RFS and advance its primary goals. There is substantial evidence that ethanol is a viable and clean automotive fuel source for the U.S. The RFS could return to its original purpose if the general and advanced biofuel waivers are limited; EPA discretion is statutorily cabined; the small refinery waiver is eliminated; stringent review is statutorily implemented; the credit system is narrowed; and non-corn and advanced ethanol is correctly subsidized and incentivized. With the implementation of these proposals, the RFS can be made into a true and meaningful standard, ensuring a livable environment for the countless generations of Americans to come.

267. Al Fin, *Why Sugar Beets are Preferable to Corn for Ethanol Production* (Dec. 16, 2010), https://oilprice.com/Alternative-Energy/Biofuels/Why-Sugar-Beets-Are-Preferable-To-Corn-For-Ethanol-Production.html.