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Energy Transitions in the Trump Administration and Beyond

Alexandra Klass

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ENERGY TRANSITIONS IN THE TRUMP ADMINISTRATION AND BEYOND

BY

ALEXANDRA B. KLASS*

This Essay evaluates U.S. transitions in the energy sector between 2016 and 2020 against the backdrop of the Trump administration's stated priorities regarding energy policy and the administration's successes and failures in implementing those policies. Specifically, this Essay details President Trump's policies and regulatory actions with regard to the electricity sector, the transportation sector, energy development on public lands, and federal approvals of energy infrastructure projects. It ends on a somewhat hopeful note, recognizing that while the Trump administration certainly slowed the pace of a U.S. clean energy transition, the transition continued to make forward progress as a result of countervailing trends in economics, technological advances, private sector preferences, and policy development at the state and local levels. Thus, a foundation exists for the Biden administration to accelerate that transition, hopefully in time to minimize U.S. contributions to global climate change and create the clean energy economy we urgently need.

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I. INTRODUCTION

Soon after President Trump's election in November 2016, the Environmental, Natural Resources, and Energy Law Section of the

*Distinguished McKnight University Professor, University of Minnesota Law School.

Minnesota State Bar Association asked me to participate in a panel presentation entitled "Environmental and Energy Law and Policy Under a Trump Administration." During the session, which took place in January 2017, one speaker focused on environmental law and policy issues, another speaker focused on climate-specific issues, and I covered energy law and policy issues. At this point in time, we all had assumptions about the likely priorities of the Trump administration based on statements and promises made during the campaign, but detail was lacking. President Trump had already nominated Ryan Zinke to be Secretary of the Interior, Rick Perry to be Secretary of Energy, and Scott Pruitt to be the Environmental Protection Agency (EPA) Administrator, but the Senate would not approve the nominations until a few months later. We knew the Pruitt nomination did not bode well for continued enforcement of the nation's environmental protection laws, but the implications of a Secretary Zinke at Interior or a Secretary Perry at Energy were less clear. Indeed, Rick Perry had been the governor of Texas when that state undertook the largest build-out of wind energy and related transmission infrastructure in the nation to date. During the presentation, we discussed some of the more vulnerable Obama administration regulations and initiatives and made some predictions about regulatory rollbacks and their implications. At the time, it was a helpful exercise for me to review more specifically what the President-elect had said during the campaign on these issues, particularly those surrounding energy policy and energy projects, and consider the implications for the future.

Over the next few months, I realized that there was a broader audience for this information. With no time to waste, President Trump quickly issued executive orders to substantially shrink national monuments like Bears Ears and Grand Staircase Escalante in Utah. The administration began the process of rolling back virtually every Obama-era regulation designed to reduce greenhouse (GHG) emissions and other pollutants from automobiles and power plants, minimize air and water pollutants from onshore and offshore oil and gas drilling, increase energy efficiency of appliances, and the like. Unlike other policy areas, such as immigration and international trade, where the administration was often at war with itself, in the environmental and energy realm, there was a clear focus to support fossil fuel development, withdraw from the Paris climate accords, reduce regulations on industry, slow-walk renewable energy development, limit the role of science in policymaking, and impede access to government information.¹ Moreover, not only was the policy focus clear, the implementation was swift, with immediate actions to stay or reverse existing regulations and replace them with new ones. With these environmental and energy policy issues so frequently in the news both domestically and internationally, a larger segment of the public

¹ Elizabeth Kolbert, *Earth Day in the Age of Trump*, NEW YORKER (Apr. 12, 2017), <https://perma.cc/6UQQ-CKSL>.

began to pay attention to U.S. public lands, changes in the energy sector, and the role of climate change. With donations to environmental advocacy groups skyrocketing after President Trump's election, activity in the courts also accelerated, contributing even more to the increase in newsworthy events surrounding energy and environment.

By spring of 2017, I was receiving an increasing number of requests to speak about these issues and created a presentation based on the initial one in January to discuss the impacts of the Trump administration on U.S. energy issues. Since that time, I have given this presentation, with regular updates, at a local high school; at liberal arts colleges in the United States; at universities in Sweden, Denmark, and Finland; and at U.S. law schools and universities around the country. At each presentation I was struck by the level of interest in energy issues as well as the depth of knowledge, even among high school and college students, about the U.S. energy system and what is at stake. During these several years of presenting this information, I have never had the opportunity to put in writing my thoughts on these presentations, and I am grateful for the opportunity to do so now as a result of this distinguished lecture at Lewis & Clark Law School.

As I often stated at the beginning of these presentations, the topic of "U.S. Energy Transitions in the Trump Administration" is not as doom and gloom as it might be, particularly as compared to a presentation on "U.S. Environmental Issues in the Trump Administration."² This is because many aspects of energy production and use in the United States are shaped more by economics, technology, and state policy than by federal policy. Federal energy policy is critically important of course, but even a suite of federal policies to promote fossil fuels can run into opposition from powerful corporations, like electric utilities, that must also consider long-term economic trends, technology development, and costs to retail customers. Moreover, at least in the electricity sector, states also set energy policy in important ways, and it is an understatement to say that many states were not on board with the energy vision of the Trump administration. Finally, in its haste to enact its deregulatory agenda, the Trump administration often failed to comply with Congressional mandates and the procedural requirements of the Administrative Procedure Act,³ resulting in frequent setbacks in the federal courts.

Nevertheless, even when the Trump administration did not fully succeed in various aspects of its deregulatory agenda because of state or industry opposition or judicial roadblocks, it had a significant influence on the U.S. clean energy transition. This is because some areas, like

² For a dire assessment of the state of environmental regulation and enforcement in the Trump administration written by former EPA staffers, see SAVE EPA, *THE TRUMP TAKEOVER OF EPA: THROWING ENVIRONMENTAL PROTECTION IN REVERSE* (June 4, 2020), <https://perma.cc/GPR3-X2MM>.

³ Administrative Procedure Act, 5 U.S.C. §§ 551–559, 701–706, 1305, 3105, 3344, 4301, 5335, 5372, 7521 (2018).

transportation-related emissions, are more solidly within the realm of federal policy, and also because it takes massive amounts of time, funding, and personnel to challenge the continued regulatory assault on the nation's clean energy laws and regulations. This in turn diverts valuable resources away from forward-looking clean energy policymaking. Likewise, in promoting a regulatory agenda that attempted to lock in the long-term continued use of fossil fuels to produce energy, the Trump administration prevented the United States from serving in a leadership role on the world stage when it comes to energy transition. This has dire consequences for global climate change, not to mention the lost domestic clean energy jobs and other long-term economic benefits that come with that leadership role.

This Essay will proceed to describe President Trump's priorities with regard to energy policy and the status of implementation with regard to the electricity sector, the transportation sector, energy development on public lands, and federal approvals of energy infrastructure projects. It ends on a somewhat hopeful note, recognizing that while the Trump administration certainly slowed the pace of a U.S. clean energy transition, the transition was not entirely stopped. Thus, the building blocks are there for the Biden administration to accelerate that transition, hopefully in time to minimize the U.S. contributions to global climate change and create a vibrant, clean energy economy. Just as important, a new administration that strongly embraces a clean energy transition can return the United States to its position as a leader for the rest of the world and help shape global action to address climate change.

II. PRESIDENT TRUMP'S "ENERGY DOMINANCE"

During the 2016 presidential campaign and after taking office, President Trump consistently declared a goal of U.S. "energy dominance."⁴ On one level, promises of U.S. energy dominance could be seen as simply another component of President Trump's "America First" political agenda.⁵ However, by the time of the 2016 presidential election, the U.S. energy landscape had changed so dramatically in the prior ten years that the phrase could not simply be dismissed as campaign bluster.

⁴ See, e.g., Heather Richards, *Trump and "Energy Dominance: What's Next?*, E&E NEWS: ENERGYWIRE (June 2, 2020), <https://perma.cc/SNG6-MPZT>; *President Donald J. Trump Unleashes America's Energy Potential*, WHITE HOUSE (June 27, 2017), <https://perma.cc/XCW9-LDNQ> (listing actions taken by President Trump upon his election to achieve "American energy dominance"); *President Trump Vows to Usher in Golden Era of American Energy Dominance*, WHITE HOUSE (June 30, 2017), <https://perma.cc/4NAQ-SBW7> ("The President explained that he is not only focusing on 'energy independence' but also 'energy dominance.'"); *President Donald J. Trump is Ending the War on American Energy and Delivering a New Era of Energy Dominance*, WHITE HOUSE (Oct. 23, 2019), <https://perma.cc/3EN6-3ME9> ("Instead of relying on foreign oil and foreign energy, we are now relying on American energy and American workers like never before.").

⁵ Lincoln L. Davies et al., *Trump, Energy Policy, and Hard Look Review*, 64 ROCKY MOUNTAIN MIN. L. INST. 21 (2018).

After decades of concern about U.S. energy security, dependence on oil from the Middle East, and dwindling supplies of natural gas, the “fracking revolution” that began in approximately 2007 had radically transformed the U.S. energy outlook. Where shortages of oil and natural gas once loomed large, abundance was now present. Implementation of new technologies like hydraulic fracturing and directional drilling opened up expansive U.S. shale reserves to oil and gas exploration, improving U.S. energy security and creating new export opportunities.

For instance, prior to 2007, U.S. natural gas production was declining rapidly, and the industry was focused on building liquefied natural gas import terminals to ensure adequate supplies of natural gas for U.S. heating, electricity, and industrial uses.⁶ By 2017, the United States had become a net exporter of natural gas, with major production centers in Texas and the Marcellus Shale region of Pennsylvania.⁷ This made natural gas readily available at low prices that would stay low potentially for decades, allowing that fuel to compete directly with coal as a “baseload” fuel to generate electricity for the first time ever.

As for oil, which dominates the transportation sector, more supply meant lower prices and transformed the United States from a major oil importer to a major oil exporter for the first time since the 1970s, when Congress had banned such exports to reduce the nation’s dependency on oil from the Middle East. In 2015, Congress lifted the ban and, by 2018, the United States was the top oil producing country in the world.⁸

During this same time period, investor-owned electric utilities and other private sector actors in the electricity sector began to invest heavily in renewable energy resources—first wind and then solar—spurred by state renewable portfolio standards (RPSs) requiring this investment, federal tax credits for renewable electricity generation, and ongoing technological developments that both decreased the cost of these resources and increased their output. In 2019, renewable energy resources provided over 17% of U.S. electricity, with wind and solar energy alone providing nearly 10% and growing rapidly, up from almost zero in 2000.⁹ Beginning in the 2010s, electric vehicles (EVs) also entered

⁶ See, e.g., James W. Coleman & Alexandra B. Klass, *Energy and Eminent Domain*, 104 MINN. L. REV. 659, 662–74 (2019) (discussing a “fracking revolution” beginning in 2007).

⁷ See *Natural Gas Imports and Exports*, U.S. ENERGY INFO. ADMIN., <https://perma.cc/M9NS-BXPW> (last updated July 21, 2020) (indicating the U.S. has been a net exporter of natural gas since 2017); *Where Our Natural Gas Comes From*, U.S. ENERGY INFO. ADMIN. (Dec. 14, 2020), <https://perma.cc/QX8U-KAJ3> (describing locations of U.S. natural gas production); James W. Coleman, *Pipelines & Power-Lines: Building the Energy Transport Future*, 80 OHIO STATE L.J. 263, 273–74 (2019) (discussing growth in U.S. natural gas production).

⁸ *Frequently Asked Questions: What Countries are the Top Producers and Consumers of Oil?*, U.S. ENERGY INFO. ADMIN., <https://perma.cc/5N9P-7VLX> (last updated Dec. 1, 2020).

⁹ *What is U.S. Electricity Generation by Energy Source*, U.S. ENERGY INFO. ADMIN., <https://perma.cc/RKQ2-PFWH> (last updated Nov. 2, 2020); *Renewable Energy*, CTR. FOR CLIMATE & ENERGY SOLUTIONS, <https://perma.cc/H5EF-LA2V> (last visited Oct. 25, 2020); *Electricity Explained*, U.S. ENERGY INFO. ADMIN., <https://perma.cc/R5AN-5JKK> (last updated Mar. 20, 2020); AMERICAN CLEAN POWER, ACP MARKET REPORT, FOURTH QUARTER

the stage, creating the promise of a transportation sector less dominated by fossil fuels. These changes in both the electricity sector and the transportation sector created the real potential for a significant clean energy transition with natural gas replacing coal in the electricity sector, followed by renewables replacing natural gas in that same sector, and a newly decarbonized electric grid powering the transportation sector.

But this type of clean energy “dominance” was not what President Trump had in mind. Instead, his focus was squarely on energy dominance through the fossil fuel industry.¹⁰ He promised to revive the coal industry; reduce environmental regulation (which he termed “job killing regulations”) on the coal, oil, and natural gas industries; roll back climate-related regulations and international commitments like the Paris climate accords; oppose wind energy at every turn;¹¹ and halt energy efficiency developments such as increased use of LED lightbulbs. He also made a brief attempt to purchase Greenland from Denmark, attracted to Greenland’s reserves of oil and other natural resources, providing the U.S. public with a helpful review of both world geography and European political history.¹²

In this realm, the Trump administration was laser-focused with few distractions and no obvious internal dissention. The federal agencies promptly got to work to repeal the Clean Power Plan designed to reduce GHG emissions from the electricity sector and replace it with the “Affordable Clean Energy Rule” designed to eliminate any requirement for GHG emissions reduction. The U.S. Department of Energy made several efforts to create rules to subsidize coal plants in the name of national security. The EPA and the U.S. Department of Transportation enacted new rules to roll back President Obama’s signature regulations to reduce GHG emissions from the auto sector as well as reverse the preemption waiver the Obama administration EPA had granted to the State of California to set its own, stricter vehicle emission regulations. The Interior Department accelerated the leasing of oil and gas resources on public lands and in offshore waters, and reduced or eliminated protections for public lands set aside for large wind and solar developments and for protection of species like the sage grouse. President Trump himself issued a series of executive orders to greenlight the controversial Keystone XL and Dakota Access oil pipelines, shrink national monuments like Bears Ears and Grand Staircase Escalante to

2020, at 7 (2021), <https://perma.cc/Y6FC-2Y7V> (showing growth in U.S. wind power since 2000).

¹⁰ Davies et al., *supra* note 5.

¹¹ See, e.g., Benjamin Storrow, *Northeast States Hit Snag on Offshore Wind: Trump*, E&E NEWS: ENERGY TRANSITIONS (June 15, 2020), <https://perma.cc/J5QA-HGSY>. See also Scott Streater, *BLM “Behind the Curve” on Large-Scale Solar: Report*, E&E NEWS: PUBLIC LANDS (June 16, 2020), <https://perma.cc/LR76-M6AY>; Scott Streater, *Report Rips Trump’s “Cold-Shoulder Treatment” of Wind, Solar*, E&E NEWS: GREENWIRE (June 25, 2020), <https://perma.cc/K397-W3CH>.

¹² Laura Gegel, *Trump Says He Wants to Buy Greenland. Here’s Why*, LIVE SCI. (Aug. 16, 2019), <https://perma.cc/XZW3-6MV7>.

facilitate more fossil fuel extraction in Utah, restart coal leasing on public lands, and set the stage for agency actions to reduce regulations designed to protect natural resources and the public from onshore and offshore catastrophic oil spills. In sum, when it came to reducing environmental regulations on the fossil fuel sector, the Trump administration certainly spoke with one voice and was not distracted or sidetracked, as it had been in other areas such as international trade, public health, or immigration. A variety of news sources meticulously documented these regulatory rollbacks and the amount of federal government resources directed at this effort was quite remarkable.¹³

Now, four years after the 2016 election, the obvious question is: Did the Trump administration achieve its goals? To answer that question in the context of the U.S. energy transition requires formulating additional, more targeted questions. These include: (1) Did the rollback of environmental regulations on the energy industry overcome economic trends in the energy sector?; (2) To what extent were individual states, local governments, tribes, and industry able to resist the Trump administration's policies?; and (3) What role did the courts play in resolving lawsuits brought by states, tribes, environmental advocacy groups, and others to challenge the administration's energy policies?

As shown below, federal energy policy is only one of many influences on the U.S. energy landscape. While it is clearly important, and, in some areas, dominant, there are large swaths of the U.S. energy space where state policy, technology developments, and energy economics are as important or more important in shaping the U.S. energy sector. The remainder of this Essay tracks these developments with regard to the electricity sector, the transportation sector, energy development on federal public lands, and targeted energy infrastructure projects. It explores where federal policy had a significant influence on the energy transition; where it did not; and the important role of the courts, particularly in the context of public lands policies and federal approval of select fossil fuel infrastructure projects.

III. THE ELECTRICITY SECTOR: THE LIMITS OF FEDERAL POLICY

Any discussion of U.S. energy transition in the electricity sector must start with the role of coal. In the United States, coal is an abundant, domestic, historically low-cost fossil fuel that dominated the electricity sector for all of the 20th century and the start of the 21st century. It also produces more CO₂ emissions and other air pollutants than other fossil fuels, such as natural gas or oil, for the equivalent amount of energy. By the start of the Trump administration in 2016, however, coal was in the

¹³ See Nadja Popovich et al., *The Trump Administration is Reversing 100 Environmental Rules. Here's the Full List*, N.Y. TIMES (July 20, 2020), <https://perma.cc/6L3A-SPP6>; *Tracking Deregulation in the Trump Era*, BROOKINGS (May 22, 2020), <https://perma.cc/QYS8-QCWZ>; *Regulatory Rollback Tracker*, HARV. ENV'T & ENERGY L. PROGRAM, <https://perma.cc/3LED-4QFS> (last visited Feb. 23, 2021).

midst of a major decline as a result of cheap natural gas from fracking, competition from the growth of low-cost renewable energy, and stricter environmental regulations.

In attempting to reverse this trend, President Trump did not take on the natural gas industry, which competes with coal directly in the electricity sector, but instead focused on the remaining obstacles to continued coal use, particularly environmental regulations. In speeches in 2017, he promised to “lift restrictions on American energy, including shale oil, natural gas and beautiful, clean coal”¹⁴ and declared: “We are putting our coal miners back to work. We have ended the war on beautiful, clean coal. We have stopped the EPA intrusion.”¹⁵ President Trump and his administrative agencies certainly made every effort to accomplish this goal. With regard to wholesale electricity markets, his Department of Energy proposed a rule for the Federal Energy Regulation Commission (FERC) to adopt that would provide billions of dollars of subsidies to coal-fired power plants in the name of national security.¹⁶ When FERC declined to enact the rule, as was its prerogative under the applicable federal statute, President Trump intensified his assault on Obama-era environmental regulations. He lifted a moratorium on federal coal leasing President Obama had imposed in 2016; the EPA rescinded a host of regulations governing the use of coal-fired power, most notably repealing the Clean Power Plan; and he strongly supported Congress’s use of the Congressional Review Act in 2017 to overturn the stream protection rule—an Obama-era regulation to limit the use of mountaintop coal mining by regulating the disposal of overburden into the nation’s rivers and streams.¹⁷

¹⁴ Ryan Teague Beckwith, *Read a Transcript of President Trump’s CPAC Speech*, TIME (Feb. 24, 2017), <https://perma.cc/5EQX-XP9V>,

¹⁵ *Trump at West Virginia Rally: “We are Putting Our Coal Miners Back to Work”*, WMUR (Aug. 3, 2017), <https://perma.cc/AWQ9-TLAT>.

¹⁶ See Sharon B. Jacobs, *The Statutory Separation of Powers*, 129 YALE L.J. 378, 416–18 (2019) (discussing DOE proposed “Grid Resiliency Pricing Rule”); Grid Resiliency Pricing Rule, 82 Fed. Reg. 46940 (Oct. 10, 2017), <https://perma.cc/JEQ4-MUHQ>; Gavin Bade, *FERC Rejects DOE NOPR, Kicking Resiliency Issue to Grid Operators*, UTIL. DIVE (Jan. 8, 2018), <https://perma.cc/ME44-25P3>.

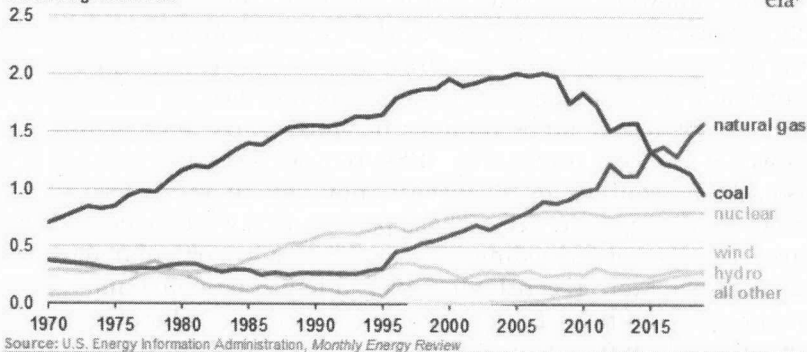
¹⁷ Popovich et al., *supra* note 13; *Tracking Deregulation in the Trump Era*, *supra* note 13. *Regulatory Rollback Tracker*, *supra* note 13; Affordable Clean Energy Rule, U.S. ENV’T PROTECTION AGENCY, <https://perma.cc/37CC-U4GL> (last updated July 15, 2020) (regulatory documents on repeal of Clean Power Plan and enactment of “Affordable Clean Energy Rule” to replace it).

However, reducing environmental regulations on coal-fired power plants cannot bring back coal if electric utilities do not want to buy it to generate electricity. Unlike natural gas and oil, which are used in a variety of residential, commercial, and industrial sectors, over 90% of U.S. coal use is in the electric power sector.¹⁸ Thus, if electric utilities have business reasons to use fuels other than coal to generate electricity, or states require them to do so, the domestic market for coal will continue to decline. As shown by the diagram below, that is precisely what happened.¹⁹

MAY 11, 2020

U.S. coal-fired electricity generation in 2019 falls to 42-year low

U.S. annual electricity generation by energy source (1970-2019)
billion megawatthours



In recent years, National Public Radio, the Washington Post, and the New York Times, among others news sources, have documented the electricity sector's pivot away from coal starting in the late 2000s toward greater use of natural gas and renewable energy, along with helpful graphics showing the changing energy mix to produce electricity in all fifty states. These graphics, along with recent data from the U.S. Energy Information Administration, illustrate how coal has gone from making up more than 50% of electricity consumption nationwide to only 23% in 2019 and was predicted to drop to 17% in 2020.²⁰ Coal's decline has been even

¹⁸ *U.S. Renewable Energy Consumption Surpasses Coal for the First Time in Over 130 Years*, U.S. ENERGY INFO. ADMIN. (May 28, 2020), <https://perma.cc/4PSZ-F74B>.

¹⁹ *U.S. Coal-Fired Electricity Generation in 2019 Falls to 42-Year Low*, U.S. ENERGY INFO. ADMIN. (May 11, 2020), <https://perma.cc/3QGZ-CNBU> (showing decline in U.S. coal-fired electricity generation).

²⁰ *Electricity Explained*, U.S. ENERGY INFO. ADMIN., <https://perma.cc/X5AS-28HN> (last updated Nov. 14, 2019); *Short-Term Energy Outlook*, U.S. ENERGY INFO. ADMIN. (June 9, 2020), <https://perma.cc/2V7K-K5JZ>; Nadja Popovich & Brad Plumer, *How Does Your State Make Electricity?*, N.Y. TIMES (Oct. 28, 2020), <https://perma.cc/G3R9-S34S> (showing changes in electricity by state over time); John Muyskens et al., *Mapping How the United States Generates Electricity*, WASH. POST. (Mar. 28, 2017), <https://perma.cc/KK5K-CY3T>

more dramatic in many individual states, with the only states continuing to rely heavily on coal being those with economies historically tied to coal extraction, such as West Virginia, Kentucky, North Dakota, and Missouri. Even states with a long history of coal extraction, such as Illinois and Pennsylvania, have significantly reduced their use of coal to generate electricity in recent years.²¹ Many states no longer rely on coal at all to generate electricity, others are scheduled to close their last coal plants soon, and in 2020, renewable energy was poised to generate a larger share of U.S. electricity than coal for the foreseeable future.²² As a result of these trends, with coal production already at record low amounts in 2019, it was expected to drop another 25% in 2020.²³ Moreover, the declines in coal use nationwide, which began during the Obama administration, accelerated during the Trump administration. This raises the question of why strong federal policies designed to protect the coal industry have failed.

The answer is that state policies, energy economics, and technological developments are, in this context, far more powerful forces than federal energy policy. First, it is the states, not the federal government, that regulate which power plants electric utilities can build. Since the 1990s, a large number of states have increasingly enacted renewable portfolio standards (RPSs) requiring electric utilities to obtain a certain percentage of electricity they sell to retail customers from renewable energy resources. These percentages were modest in the early years, usually not exceeding 20% or 25% by a particular date, such as 2020 or 2025. More recently, however, a few states have increased those percentages significantly to 50% or more and several states in 2019 and 2020 enacted “100% clean energy” laws that require utilities to obtain 100% of the electricity sold to customers from carbon-free energy resources.²⁴ Also starting in the 1990s, Congress enacted federal tax credits for renewable energy generation that helped support the construction of wind and solar plants across the country.

Electric utilities initially responded to these policies by purchasing wind energy and then solar energy directly from merchant renewable energy plants or in wholesale regional energy markets. In more recent

(discussing how each state creates electricity); Alyson Hurt, *Coal, Gas, Nuclear, Hydro?: How Your State Generates Power*, NPR (Sept. 10, 2015), <https://perma.cc/2JSV-NRZJ> (showing how each state generated energy between 2004–2014). See also John Muyskens & Juliet Eilperin, *Biden Calls for 100 Percent Clean Electricity by 2035. Here’s How Far We Have to Go*, WASH. POST (July 30, 2020).

²¹ *State Profile and Energy Estimates, Illinois*, U.S. ENERGY INFO. ADMIN., <https://perma.cc/VG6M-2YG4> (last updated May 21, 2020); *State Profile and Energy Estimates, Pennsylvania*, U.S. ENERGY INFO. ADMIN., <https://perma.cc/S8CN-S4PZ> (last updated Aug. 15, 2019); Popovich & Plumer, *supra* note 20.

²² *U.S. Renewable Energy Consumption Surpasses Coal for the First Time in Over 130 Years*, *supra* note 18; Brad Plumer, *In A First, Renewable Energy Is Poised to Eclipse Coal in the U.S.*, N.Y. TIMES (May 13, 2020), <https://perma.cc/KT4Z-KT4R>.

²³ *Short-Term Energy Outlook*, *supra* note 20.

²⁴ See, e.g., Alexandra B. Klass, *Eminent Domain Law as Climate Policy*, 2020 WIS. L. REV. 49 (2020) (discussing state laws).

years, as costs of renewable energy generation have declined and technology has continued to improve, vertically integrated utilities in traditionally regulated states have clamored to build their own renewable energy plants with the blessing of state regulators, and merchant generation companies have invested heavily in large solar and wind projects, injecting even greater amounts of renewable energy into the regional energy markets.²⁵

In 2019, renewable energy resources provided over 17% of U.S. electricity, with wind and solar energy providing nearly 10% of that amount and growing rapidly.²⁶ In states with significant wind resources, like Iowa, Oklahoma, and Kansas, those percentages are 30% or higher.²⁷ Moreover, as the offshore wind energy industry develops, states with large, urban populations on the East Coast will join the Midwest and Plains states as regions with access to local, large-scale renewable energy resources.²⁸ A 2020 report from the Goldman School of Public Policy at the University of California Berkeley explains how present-day, low-cost solar, wind, and battery storage could allow the United States to transition to a 90% carbon-free electric grid as early as 2035.²⁹ These developments in renewable energy are one part of the story of coal's demise.

But state policy and renewable energy development, while important, are not the most significant reasons for coal's decline. Instead, it is the advent of hydraulic fracturing technologies, beginning in 2007, that is the primary culprit. Fracking created an abundant, domestic, and

²⁵ See, e.g., Nathaniel Groenwald, *Wind, Solar, Looking Better Against Coal—Report*, E&E NEWS: CLIMATEWIRE (June 3, 2020), <https://perma.cc/D34J-NZVP> (discussing international report which “found that electricity from wind or solar energy technology is proving cheaper than continuing to operate coal-fired power facilities”); Guy Burdick, *As Utility Solar Costs Drop 82%, US Renewables, Storage Leaders Target Majority Generation Share by 2030*, UTIL. DIVE (June 3, 2020), <https://perma.cc/JA87-87VU>; Gang He et al., *Rapid Cost Decrease of Renewables and Storage Accelerate the Decarbonization of China's Power System*, NAT. COMM. (May 19, 2020), <https://perma.cc/M82W-WUDY> (predicting decarbonization of electric grid in China due to renewable energy cost declines).

²⁶ *What is U.S. Electricity Generation by Energy Source?*, supra note 9; *Electricity Explained*, supra note 9.

²⁷ See *State Fact Sheets*, AM. WIND ENERGY ASS'N, <https://perma.cc/C4L8-4H2H> (last updated Apr. 2020); *Wind Facts at a Glance*, AM. WIND ENERGY ASS'N, <https://perma.cc/73P4-9D4P> (last visited Feb. 23, 2021).

²⁸ Katherine Dunn, *After “Decade of False Starts” Offshore Wind Power's Time Has Finally Come*, IEA SAYS, FORTUNE (Oct. 28, 2019), <https://perma.cc/5AB8-9UUE>; ESTIMATING THE VALUE OF OFFSHORE WIND ALONG THE UNITED STATES' EAST COAST, LAWRENCE BERKELEY NAT'L LAB. (2018), <https://perma.cc/3D7A-M2SH>; Eric Niiler, *Offshore Wind Farms are Spinning Up in the US—At Last*, WIRED (Apr. 17, 2019), <https://perma.cc/9VW2-H4LA>; Bob Woods, *US Has Only One Offshore Wind Energy Farm, But a \$70 Billion Market is On the Way*, CNBC (Dec. 13, 2019), <https://perma.cc/C7SJ-QE4E>; U.S. DEPT OF ENERGY, 2018 OFFSHORE WIND TECHNOLOGIES. MARKET REPORT (Aug. 2019), <https://perma.cc/HD34-8B2M>; Heather Richards, *N.J. Plans Massive Offshore Wind Port*, E&E NEWS: RENEWABLE ENERGY (June 16, 2020), <https://perma.cc/3KDJ-AQTL>. But see Storrow, *Northeast States Hit Snag on Offshore Wind: Trump*, supra note 11.

²⁹ GOLDMAN SCH. OF PUB. POL'Y, U.C. BERKELEY, 2035: THE REPORT (2020), <https://perma.cc/N59F-PM4V>.

now low-cost energy resource that electric utilities were already familiar with—natural gas—that could serve as a “baseload” fuel in place of coal. Although the substitution of gas for coal is controversial, as natural gas is also a fossil fuel with GHG emissions, it is this substitution that first fueled and then accelerated the transition away from coal.

Another factor supporting the movement away from coal is the increased reliance on larger, regional grids, known as Regional Transmission Organizations (RTOs) that manage wholesale energy and capacity markets in large swaths of the country. These RTOs have reduced wholesale electricity prices significantly, putting further pressure on electric utilities to retire coal plants that can no longer compete in those markets against low-cost gas and renewable energy resources.³⁰ Technological developments in battery storage have also begun to reduce reliability and variability concerns associated with renewable energy, allowing those resources to participate more fully in RTO markets and rendering the term “baseload power” nearly obsolete.

Thus, while it was certainly politically helpful for President Trump and his allies to blame the demise of coal on heavy-handed federal environmental regulations, the U.S. Department of Energy’s own report in 2017 acknowledged what experts had been saying for a long time—that the Obama administration’s environmental regulations on coal-fired power plants were not the primary reason for the transition away from coal. Instead, cheap natural gas, which competes directly with coal in the electricity sector, was the primary culprit.³¹ As a result, it is unlikely President Trump was able to even slow the demise of coal, much less stop it, in the last four years.

Questions certainly remain with regard to how quickly the nation can pivot away from natural gas toward an electricity system that runs on all or virtually all carbon-free resources. And through his rollback of Obama-era environmental regulations, President Trump may well have slowed that transition by paving the way for greater investments in natural gas and allowing coal plants to remain online longer than they might have in another administration. Nevertheless, the Trump administration appears to have failed in its efforts to protect and preserve

³⁰ See U.S. DEP’T OF ENERGY, STAFF REPORT TO THE SECRETARY ON ELECTRICITY MARKETS AND RELIABILITY 13–14 (Aug. 2017), <https://perma.cc/N676-54HV> (discussing coal plant retirements).

³¹ See *id.* at 13–14 (concluding that “[t]he biggest contributor to coal and nuclear plant retirements has been the advantaged economics of natural gas-fired generation” followed by energy efficiency measures reducing electricity demand, the rise of renewable energy, and then, finally, some financial impact from environmental regulations). See also Michael Drysdale, *Farewell to Coal?*, 62 ROCKY MOUNTAIN MIN. L. INST. 17 (2016); Charles D. Kolstad, *What is Killing the Coal Industry?*, STAN. INST. FOR ECON. POL’Y RES. (Mar. 2017), <https://perma.cc/J5R9-VDLT>; James Van Nostrand, *Why the U.S. Coal Industry and its Jobs Are Not Coming Back*, YALE ENV’T 360 (Dec. 1, 2016), <https://perma.cc/K24H-LYXA>.

coal, demonstrating the limits of federal policy when it comes to certain aspects of the electricity arena.³²

IV. THE TRANSPORTATION SECTOR: THE IMPORTANCE OF FEDERAL POLICY

Unlike the electricity sector, which is powered by a mix of natural gas, renewable energy, nuclear, and coal, the transportation sector relies almost exclusively on oil—gasoline, diesel fuel, and jet fuel—which make up over 90% of transportation energy sources.³³ Moreover, because of the transition in the electricity sector away from coal and towards natural gas and renewable energy, GHG emissions from the electricity sector have declined substantially since the late 2000s, and the transportation sector is now the nation's largest source of GHG emissions.³⁴ Thus, as other nations have also recognized,³⁵ it is imperative that the United States enact policies to reduce GHG emissions from cars, trucks, and other transportation sector sources through tax credits, mandates, technology funding, and the like. This is an area where federal and state policy, technological developments, government funding, industry action (both voluntary and in response to government policy), and consumer behavior all play a role. However, as shown below, federal policy plays a larger role in the transportation sector than it does in the electricity sector, which means the Trump administration's policies in this area likely had a greater immediate and long-term impact on slowing U.S. energy transition.

GHG reductions in the transportation sector are a function of reducing individual car trips through greater use of public transit, bikes, and walking coupled with reducing the emissions from vehicles themselves through stricter fuel economy and emissions standards, which includes replacing gasoline-powered vehicles with EVs.³⁶ While recognizing the importance of transportation planning and reducing car trips for achieving a clean energy transition, this Part focuses solely on policies designed to reduce GHG emissions from individual cars and

³² See Benjamin Storrow, *More Coal Has Retired Under Trump Than in Obama's Second Term*, E&E NEWS: CLIMATEWIRE (June 22, 2020), <https://perma.cc/4KDE-LPD3> ("The coal industry's woes demonstrate the limits of Trump's ability to control sweeping changes in America's power sector.")

³³ *Uses of Energy for Transportation*, U.S. ENERGY INFO. ADMIN., <https://perma.cc/JP8U-GQDW> (last updated June 2, 2020).

³⁴ *Sources of Greenhouse Gas Emissions*, U.S. ENV'T PROTECTION AGENCY, <https://perma.cc/TL8K-TSYJ> (last visited Oct. 25, 2020). See also *Carmakers Must Overhaul Production Plans to Hit Climate Goals*, REUTERS (June 10, 2020), <https://perma.cc/DP2Y-3YWR> (describing a report showing deficiencies in automaker production plans with regard to reducing GHG emissions from transportation sector).

³⁵ See, e.g., *E.U. Warns Automakers to Significantly Cut Emissions*, E&E NEWS: CLIMATEWIRE (June 4, 2020), <https://perma.cc/3BV3-SNDP>.

³⁶ *Carbon Pollution from Transportation*, U.S. ENV'T PROTECTION AGENCY, <https://perma.cc/9VD3-LPKH> (last updated Nov. 20, 2020); DAVIES ET AL., *ENERGY LAW AND POLICY* 497–99 (2d ed. 2018); Vicki Arroyo et al., *New Strategies for Reducing Transportation Emissions and Preparing for Climate Impacts*, 44 *FORDHAM URBAN L.J.* 919 (2017).

trucks. I focus on these tools because the federal government plays a much larger role in setting policies for vehicle emissions than it does in promoting mass transit or non-vehicle use. Americans will not easily give up their cars and trucks, and vehicle emissions policy is an area where the Trump administration was extremely active.

The Clean Air Act requires the EPA to regulate air emissions from vehicles while other federal statutes require the National Highway Transportation Safety Administration (NHTSA) within the U.S. Department of Transportation to regulate vehicle fuel economy. Because vehicle fuel economy is closely related to vehicle emissions, since the start of the Obama administration, the two agencies have issued joint rulemakings to address both vehicle emissions and vehicle fuel economy together. The federal government first regulated GHG emissions from automobiles in 2009, when the EPA under President Obama issued an “endangerment finding” with regard to those emissions following the Supreme Court’s 2007 decision in *Massachusetts v. EPA*.³⁷ In a series of rulemakings during the Obama administration, the two federal agencies set significantly stricter vehicle emission and fuel economy standards for cars and light trucks and, later, heavy trucks. These regulations imposed increasingly stricter standards (approximately 5% per year) for each automaker’s fleet between 2012 and 2025 that would result in an overall industry average fuel economy of 54.5 miles per gallon by 2026 if the GHG standards were met solely through improved fuel economy.³⁸ For each auto company that does not meet the yearly standard across its entire fleet, there are federal statutory penalties.³⁹

In these rulemakings, the federal agencies worked closely with California, which is the only state with statutory authority under the Clean Air Act to set its own vehicle emission standards if it receives a “preemption waiver” from EPA.⁴⁰ Other states may adopt the California standard so there is always the potential for two standards nationwide. The Obama administration EPA granted California’s request for a waiver (it had been denied earlier by the George W. Bush administration EPA) and then worked consistently with California officials to develop a single standard for automakers to meet. EPA also granted California a preemption waiver to allow it to enact a Low Emissions Vehicle (LEV)

³⁷ *Massachusetts v. U.S. Env’t Prot. Agency*, 549 U.S. 497 (2007).

³⁸ 2017 and Later Model Years Light-Duty Vehicle Greenhouse Gas Emissions and Corporate Average Fuel Economy Standards, 77 Fed. Reg. 66,623, 62,626, 62,627 n.3 (Oct. 15, 2012); U.S. ENV’T PROTECTION AGENCY, REGULATORY ANNOUNCEMENT: U.S. EPA, EPA AND NHTSA SET STANDARDS TO REDUCE GREENHOUSE GASES AND IMPROVE FUEL ECONOMY FOR MODEL YEAR 2017–2025 CARS AND LIGHT TRUCKS (2012), <https://perma.cc/2N5A-TMRA>; *Fact Sheet: SAFE Vehicles Rule*, NAT’L HIGHWAY TRAFFIC SAFETY ADMIN., <https://perma.cc/X9C3-WA4E> (last visited Oct. 25, 2020) (discussing changes in SAFE Vehicle Rule from 2012 rule).

³⁹ See ALEXANDRA B. KLASS & HANNAH J. WISEMAN, *ENERGY LAW* 127 (2d ed. 2020) (discussing penalty provisions).

⁴⁰ *Id.* at 124–25 (discussing California waiver provisions in the Clean Air Act).

program and Zero Emission Vehicle (ZEV) program.⁴¹ The ZEV program requires automakers to sell a certain percentage of EVs in the state to spur consumer purchases of EVs. As of 2020, fourteen states had adopted the LEV program, eleven states had adopted the ZEV program and more states were in the process of adopting both programs.⁴²

President Trump made clear early in his term he would make it a priority to roll back the prior administration's vehicle emission and fuel economy standards and revoke California's preemption waivers. He did so even though the auto industry was opposed to a full rollback of the standards, preferring regulatory certainty and uniform standards to uncertainty driven by litigation over the rollbacks and the potential for different standards in different states. One might wonder why the Trump administration would pursue this deregulatory course even though the target of the regulation—the auto industry—opposed it. To answer this question requires considering the industry most harmed by stricter standards. It is not the auto industry, which must transition to cleaner vehicles to meet global standards anyway, but the oil industry, which stands to lose significant market share if cars and trucks are more fuel efficient or run on electricity rather than gasoline or diesel fuel.⁴³ Thus in 2019, EPA and NHTSA revoked California's preemption waiver, and in 2020, the agencies reduced the required yearly GHG reduction and fuel economy increases from 5% per year through 2026 to 1.5%.⁴⁴

Numerous states and environmental groups immediately challenged these actions in federal court and several auto companies—Honda, Ford, Volkswagen, and BMW—announced their intent to continue to follow the stricter California standards voluntarily, despite a threat by the Trump administration, later withdrawn, to initiate an antitrust inquiry against

⁴¹ U.S. State Clean Vehicle Policies and Incentives, CTR. FOR CLIMATE & ENERGY SOLUTIONS, <https://perma.cc/554V-3BW9> (last updated Jan. 2019); *Advanced Clean Cars Program*, CAL. AIR RESOURCES BOARD, <https://perma.cc/U6FR-LLJB> (last visited Oct. 25, 2020) (discussing LEV and ZEV programs).

⁴² KLASS & WISEMAN, *supra* note 39, at 124–25; *Rulemaking: Clean Cars Minnesota*, MINN. POLLUTION CONTROL AGENCY, <https://perma.cc/725X-EGGW> (last visited Feb. 23, 2020) (discussing proposal to adopt LEV and ZEV programs); Maxine Joselow, *Nev. Steers Toward Tougher Tailpipe Standards*, E&E NEWS (June 22, 2020), <https://perma.cc/28F5-JD55> (reporting that 13 states and the District of Columbia had adopted the LEV standards, representing 40% of all cars sold in the United States, that ten states had already adopted the ZEV standards, and that Nevada was beginning the rulemaking process to adoption California's clean car rules).

⁴³ Hiroko Tabuchi, *The Oil Industry's Covert Campaign to Rewrite American Car Emission Rules*, N.Y. TIMES (Dec. 13, 2018), <https://perma.cc/7TTT-KCFP>.

⁴⁴ See *The Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule Part One: One National Program*, 84 Fed. Reg. 51,310 (Sept. 27, 2019), <https://perma.cc/F623-4B5L> (rescinding California's preemption waiver); *The Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule for Model Years 2021–2026 Passenger Cars and Light Trucks*, 85 Fed. Reg. 24,174 (Apr. 30, 2020), <https://perma.cc/9FXU-CXYB> (relaxing vehicle emission standards and fuel economy standards for model years 2021–2026); Coral Davenport, *U.S. to Announce Rollback of Auto Pollution Rules, A Key Effort to Fight Climate Changes*, N.Y. TIMES (Mar. 30, 2020), <https://perma.cc/4BMN-9T8N> (discussing SAFE Vehicles rule).

the companies.⁴⁵ Nevertheless, unless the courts invalidate the new rules or Congress overrides them, there is very little states can do to impose stricter standards on the auto industry.

While vehicle emission standards and fuel economy standards focus on regulating the auto industry to achieve cleaner transportation, incentives for the purchase of EVs focus on consumers. To date, these incentives exist at both the state level and the federal level. Under federal law, consumers purchasing an EV are eligible for a federal tax credit of up to \$7,500 depending on the size of the car battery. However, the tax credit declines and then phases out completely after an automaker sells 200,000 EVs. As a result, tax credits are no longer available for EV purchases from Tesla or General Motors (which manufacturers the Chevy Bolt).⁴⁶ Further subsidization of electric vehicle purchases will be necessary to spur a large-scale consumer switch to EVs and, not surprisingly, President Trump opposed any additional subsidies for EVs. Notably, however, many states have additional tax subsidies for EVs.⁴⁷

Members of Congress have introduced numerous bills to create additional tax incentives for EV purchases and to fund EV charging infrastructure on highway corridors and in other public areas. With regard to EV-related bills, these include the Zero-Emissions Vehicles Act of 2019 (H.R. 2764/S. 1487),⁴⁸ which would amend the Clean Air Act to create a national zero-emissions vehicle standard for automakers whereby zero-emissions vehicles, including but not limited to EVs, must make up 50% of new car sales by 2030 and 100% by 2040. The Driving America Forward Act would provide a tax credit of up to \$7,000 for the purchase of an EV, with a vehicle cap of 600,000 total vehicles per automaker, and the Electric Credit Access Ready at Sale (Electric CARS) Act of 2019⁴⁹ would repeal the vehicle cap altogether and extend the \$7,500 tax credit through December 31, 2029. Federal and state legislation focused on electrifying delivery trucks, equipment, and school buses is also critical. California has already implemented a program for electrifying buses and trucks, which other states have agreed to join, that could serve as a model for Congress.⁵⁰

⁴⁵ See Roberto Baldwin, *Justice Department Drops Antitrust Probe into Honda, BMW, Ford, and VW*, CAR & DRIVER (Feb. 7, 2020), <https://perma.cc/8E86-3Y3X>.

⁴⁶ *The State of Electric Vehicle Tax Credits*, CLEAN CHARGE NETWORK (Mar. 2020), <https://perma.cc/P8E9-VMSL>; Keith Lainge, *GM, Tesla Head for New Year Without Electric Vehicle Tax Credits*, TRANSPORT TOPICS (Dec. 27, 2019), <https://perma.cc/KQ3G-WJG4>.

⁴⁷ *State Incentives*, PLUG IN AMERICA, <https://perma.cc/T56P-C55A> (last visited Feb. 27, 2021).

⁴⁸ Zero-Emissions Vehicles Act of 2019, S. 1487, 116th Cong. (2019).

⁴⁹ Electric CARS Act of 2019, S. 993, 116th Cong. (2019).

⁵⁰ S.L. Fuller, *CARB Passes Clean Trucks Rule, Setting Stage for No-Diesel Sales in California by 2045*, TRANSPORT DIVE (June 26, 2020), <https://perma.cc/D7NM-YKYY> (reporting on new California rule to require truck fleets in the state to transition to zero emission to reduce transportation GHG emissions); S.L. Fuller, *15 States, D.C. Will Collaborate on 100% Electric Truck Sales by 2050*, TRANSPORT DIVE (July 14, 2020), <https://perma.cc/CC22-EGBA>.

With regard to EV charging infrastructure, Section 1413 of the Fixing America's Surface Transportation Act (FAST Act),⁵¹ enacted in 2015, required the U.S. Department of Transportation to designate by 2020 national alternative fuel corridors (AFCs) to promote alternative vehicle use, including EVs. Since that time, the Federal Highway Administration (FHWA) has been working with industry, other federal agencies, and state and local governments, to plan AFCs, develop uniform signage, determine when highway segments are "corridor ready," and help fund charging infrastructure within AFCs. FHWA is also helping coordinate funding from other related programs, such as Volkswagen's multibillion-dollar Electrify America investments resulting from the company's vehicle emission cheating settlement with EPA and the state of California. Additional legislation is required to provide more funding for this program and accelerate its implementation.

As for proposed legislation, the Clean Corridors Act of 2019⁵² would create a grant program for state, tribal, and local governments to install EV charging infrastructure along the National Highway System. The CLEAN Future Act introduced in the U.S. House includes numerous measures to support a shift to low- and zero-carbon transportation fuels through supporting state and local government investment in EV charging infrastructure, support for private sector investment in the same, and aggressive goals to transition federal fleets to EVs.⁵³ The Act also directs the Department of Energy to focus on the transportation needs of underserved and disadvantaged communities.⁵⁴ In 2020, the U.S. House released the INVEST in America Act,⁵⁵ a nearly \$500 billion, five-year, transportation infrastructure bill that includes a \$350 million per year grant program to build EV charging and hydrogen fueling infrastructure in designated AFCs.⁵⁶ States have also enacted legislation to support EV charging infrastructure and state public utility commissions have worked with their states' electric utilities to be part of that build-out.⁵⁷

⁵¹ Fixing America's Surface Transportation Act, P.L. 114-94, 129 Stat. 1312 (2015) (codified as amended in scattered sections of Titles 12, 16, 22, 23, 26, 40, 42, and 49 of the U.S. Code).

⁵² Clean Corridors Act of 2019, S. 674, 116th Cong. (2019).

⁵³ Climate Leadership and Environmental Action for Our Nation's (CLEAN) Future Act, H.R. ____, 116th Cong. (2020) (discussion draft), <https://perma.cc/77QW-XQFT>.

⁵⁴ *Id.* § 434.

⁵⁵ INVEST in America Act, H.R. 7095, 116th Cong. (2020).

⁵⁶ See THE HOUSE COMMITTEE ON TRANSPORTATION AND INFRASTRUCTURE, THE INVEST IN AMERICA ACT: SECTION BY SECTION SUMMARY, § 1303 (June 3, 2020), <https://perma.cc/88A7-EH52>; Press Release, Committee Leaders Unveil the INVEST in America Act, a Transformational Surface Transportation Bill to Bring Nation's Infrastructure into a New Era (June 3, 2020), <https://perma.cc/LT7D-NJBF>.

⁵⁷ See, e.g., Alexandra B. Klass, *Regulating the Energy "Free Riders,"* 100 B.U. L. REV. 581 (2020) (discussing state policies supporting EV charging investment); Alexandra B. Klass, *Public Utilities and Transportation Electrification,* 104 IOWA L. REV. 545 (2019) (same).

While these proposed laws would help usher in a clean energy transition in the transportation sector, at this point all of them other than the FAST Act are only proposed laws and not federal policy. As a result, the Trump administration rollback of the Obama era vehicle emission and fuel economy standards is sobering, even though it will undoubtedly be reversed by the Biden administration. In the electricity sector, a relatively small group of electric utility actors engages in careful planning for their future electricity generation fleets based on a mix of sector economics, predicted technological development, and a near certainty that carbon limits will be imposed on their fleets in the near future. This is why utilities are retiring coal plants early at a dizzying pace despite President Trump's efforts to keep the plants open. By contrast, transportation sector emissions are based at least in part on the collective decisions of billions of consumers purchasing vehicles from a large group of automakers. These automakers are planning for future regulation but also responding to more immediate regulatory conditions as well as current consumer demands for larger cars and SUVs in the face of low gasoline prices.⁵⁸ The rapid decarbonization of the electricity sector cannot easily be replicated in the transportation sector, where less fuel-efficient vehicles purchased today will remain on the roads for decades.

This is an area where federal clean transportation policy as well as the courts are critical. Numerous states and environmental groups challenged the Trump administration's rollback of the Obama-era vehicle emission and fuel economy standards as arbitrary and capricious. How the courts respond remains to be seen and President Biden has already stated that he will quickly restart the Obama administration's approach to vehicle standards and perhaps accelerate it. For its part, Congress could codify the Obama-era standards or enact even stricter standards, but such a move is unlikely in the absence of strong Democratic majorities in both the U.S. House and Senate.

This section shows federal policy for energy transition in the transportation sector is far more critical than it is in the electricity sector. The states have less authority in this arena and automakers are often responsive to the economics of oil prices, which are out of their control, as well as consumer demand, which today favors larger vehicles in the face of low oil prices. Thus, the Trump administration's policies acted to delay a much-needed energy transition and it will take aggressive action by the Biden administration and, perhaps, Congress, to reverse it.

⁵⁸ Lawrence Ulrich, *S.U.V. vs. Sedan and Detroit vs. The World*, In *A Fight for the Future*, N.Y. TIMES (Sept. 12, 2019), <https://perma.cc/QC5Q-6P2G>; David Muller, *Light Trucks Are Now A Record 69% of the U.S. Market*, AUTOWEEK (Jan. 7, 2019), <https://perma.cc/2XRQ-CFGD>. See also Fuller, *CARB Passes Clean Trucks Rule, Setting Stage for No-Diesel Sales in California by 2045*, *supra* note 50 (reporting on new California rule to require truck fleets in the state to transition to zero emission to reduce transportation GHG emissions).

V. FEDERAL PUBLIC LANDS AND FEDERAL PROJECT APPROVALS: THE ROLE OF THE COURTS

The prior Parts of this Essay explored the dramatic changes in federal policy governing U.S. energy use. This section turns to the Trump administration's policies governing energy development on federal public lands and federal decisions to approve key energy infrastructure projects such as pipelines. In the United States, a mix of federal and state law govern energy production. State law governs fossil fuel and renewable energy development on private and state lands with an overlay of federal environmental laws such as the Clean Air Act, the Clean Water Act, and other pollution prevention statutes. By contrast, federal law governs the development of these resources on federal public lands, which means a change in policy governing those lands can dramatically influence whether those lands are used primarily for fossil fuel development, renewable energy development, or the many other designated uses of those lands such as timber, recreation, wildlife protection, mining, and the like.

The Property Clause of the U.S. Constitution grants Congress the authority to acquire, dispose of, and manage federal property through duly authorized statutes and regulations.⁵⁹ There are about 640 million surface acres of U.S. federal public lands, approximately 95% percent of which is under the jurisdiction of four federal agencies—the Bureau of Land Management (BLM), the Fish and Wildlife Service (FWS) and the National Park Service (NPS) within the U.S. Department of the Interior and the Forest Service within the U.S. Department of Agriculture.⁶⁰ The BLM alone is responsible for 245 million acres (one-tenth of America's land base) as well as 700 million acres of subsurface coal, oil, gas, and other minerals underlying onshore federal lands.⁶¹ For its part, the Bureau of Ocean Energy Management (BOEM) administers approximately 1.7 billion acres of federal waters in the U.S. Outer Continental Shelf (OCS), including issuing leases and permits for offshore oil, gas, and renewable energy development.⁶² In 2017, approximately 24% of crude oil, 13% of natural gas, and 40% of coal production in the United States came from federal public lands and waters.⁶³

The Federal Land Policy and Management Act⁶⁴ (FLPMA) governs the BLM's administration of onshore public lands within its jurisdiction

⁵⁹ U.S. CONST. art. IV, § 3, cl. 2 (“The Congress shall have power to dispose of and make all needful rules and regulations respecting the territory or other property belonging to the United States; and nothing in this Constitution shall be so construed as to prejudice any claims of the United States, or of any particular state.”).

⁶⁰ KATIE HOOVER ET AL., CONG. RESEARCH SERV., R43429, FEDERAL LANDS AND RELATED RESOURCES: OVERVIEW AND SELECTED ISSUES FOR THE 116TH CONGRESS (2019).

⁶¹ *Id.*; *What We Manage*, BUREAU OF LAND MGMT., <https://perma.cc/J822-LWAL> (last visited Oct. 25, 2020).

⁶² HOOVER ET AL., *supra* note 60.

⁶³ *Id.* at 12.

⁶⁴ Federal Land Policy and Management Act of 1976, 43 U.S.C. §§ 1701–1782 (2012).

and directs it to manage those lands based on principles of “multiple use” and “sustained yield.”⁶⁵ This mandate gives the BLM significant discretion to determine how to balance surface land uses among “renewable energy development (solar, wind, other); conventional energy development (oil and gas, coal); livestock grazing; hardrock mining (gold, silver, other), timber harvesting; and outdoor recreation (such as camping, hunting, rafting, and off-highway vehicle driving).”⁶⁶ Other federal statutes such as the Mineral Leasing Act,⁶⁷ the Federal Coal Leasing Amendments Act of 1976,⁶⁸ and the Federal Oil and Gas Royalty Management Act⁶⁹ impose additional statutory mandates on BLM with regard to the leasing of federal subsurface coal, oil, and gas resources underlying BLM and Forest Service lands. These laws, as implemented by BLM regulations, set competitive leasing procedures, development requirements, receipt of fair market value for use of public resources through the payment of royalties to the federal government, and environmental and land use protections.⁷⁰

With regard to offshore resources, BOEM leases offshore oil and gas resources to private developers pursuant to the Outer Continental Shelf Lands Act⁷¹ (OCSLA). As of 2019, there were 2,600 active oil and gas leases on nearly 14 million acres on the OCS, in the Gulf of Mexico and in the Alaska region.⁷² According to BOEM, for 2019, offshore federal production reached a record-high 683 million barrels of oil and just over 1 trillion cubic feet of gas, almost all of which was produced in the Gulf of Mexico, making up about 16% of all U.S. oil production and 3% of U.S. natural gas production.⁷³ BOEM is also responsible for leasing areas of the OCS for offshore wind production. Several East Coast states have enacted mandates and subsidies to promote offshore wind development, and BOEM has issued several wind leases in the OCS, but none of the projects have been built except a small one off the coast of Block Island, Maine.⁷⁴ In 2016, the Obama administration had issued a leasing plan for 2017 to 2022 that included oil and gas leases only in the Gulf and Mexico and Alaska and none in the Atlantic or Pacific regions, consistent with recent past practices.

⁶⁵ *Id.*

⁶⁶ BUREAU OF LAND MGMT., *supra* note 61.

⁶⁷ Mineral Leasing Act, 30 U.S.C. §§ 181, 201–226-3 (2018).

⁶⁸ Federal Coal Leasing Amendments Act of 1976, 30 U.S.C. §§ 202a, 208-1 (2018).

⁶⁹ Federal Oil and Gas Royalty Management Act, 30 U.S.C. §§ 1701–1757 (2018).

⁷⁰ *See, e.g.,* Jayni Foley Hein, *Federal Lands and Fossil Fuels: Maximizing Social Welfare in Federal Agency Leasing*, 42 HARV. ENV'T L. REV. 1, 10–12 (2018) (discussing leasing programs on federal lands).

⁷¹ Outer Continental Shelf Lands Act (OCSLA), 43 U.S.C. §§ 1331–1356b (2012).

⁷² HOOVER ET AL., *supra* note 60, at 16.

⁷³ *Oil and Gas Energy*, BUREAU OF OCEAN ENERGY MGMT., <https://perma.cc/G88R-28WS> (last visited Oct. 25, 2020).

⁷⁴ HOOVER ET AL., *supra* note 60, at 17. “As of January 2019, BOEM had issued 13 offshore wind energy leases in areas off the coasts of Massachusetts, Rhode Island, Delaware, Maryland, Virginia, New York, New Jersey, and North Carolina. In December 2016, the first U.S. offshore wind farm, off the coast of Rhode Island, began regular operations.” *Id.*

The President has independent authority by statute to protect and preserve federal public lands and waters, including from the adverse impacts of energy development. Under the Antiquities Act of 1906,⁷⁵ the President can “declare by public proclamation historic landmarks, historic and prehistoric structures, and other objects of historic or scientific interest that are situated on land owned or controlled by the Federal Government to be national monuments.”⁷⁶ Since its enactment, numerous Presidents have used the Antiquities Act to create national monuments, placing them off limits from mineral development and other extractive industries. Recent proclamations creating large-scale monuments include President Clinton’s creation of the 1.8 million-acre Grand Staircase Escalante National Monument and President Obama’s creation of the 1.35 million-acre Bears Ears National Monument, both in Utah. The OCSLA delegates similar authority and allows the President to “withdraw” acreage in the OCS from leasing.⁷⁷ President Obama invoked this provision in 2015 and 2016 to permanently withdraw large areas of the OCS in the Atlantic Ocean and in Alaskan waters from oil and gas leasing.⁷⁸

The shift in energy policy from the Obama administration to the Trump administration was particularly dramatic in the administration of federal public lands and waters, where state policy has far less influence and regulated parties (primarily the fossil fuel industry) are much more united in what they want—more fossil fuel extraction, faster permitting, and decreased environmental regulation. As noted above, during the last years of the Obama administration, President Obama created Bears Ears National Monument, permanently withdrew large expanses of the OCS from oil and gas drilling, and limited new offshore leases to existing oil and gas regions in the Gulf of Mexico and off the coast of Alaska. He also imposed a moratorium on new coal leases on federal lands to evaluate the climate impacts of such leases as well as existing royalty rates. The BLM enacted the “Methane Rule” which limited the release of methane—a powerful GHG—from oil and gas operations on federal lands; the “Fracking Rule,” which created new standards for oil and gas wells using fracking technologies on federal lands; and engaged in large-scale planning to promote wind and solar energy on public lands and to protect endangered species such as sage grouse.

President Obama also took steps to block controversial new fossil fuel projects that required federal permits. He denied a Presidential Permit

⁷⁵ Antiquities Act of 1906, 54 U.S.C. §§ 320301–320303 (2012).

⁷⁶ *Id.*

⁷⁷ Outer Continental Shelf Lands Act, 43 U.S.C. §§ 1331–1356b (2012). “The President of the United States may, from time to time, withdraw from disposition any of the unleased lands of the outer Continental Shelf.” *Id.* § 1341.

⁷⁸ Presidential Memorandum—Withdrawal of Certain Areas of the United States Outer Continental Shelf Offshore Alaska from Leasing Disposition (Jan. 27, 2015), <https://perma.cc/BL3N-K96F>; Presidential Memorandum—Withdrawal of Certain Areas Off the Atlantic Coast of the Outer Continental Shelf from Mineral Leasing Disposition (Dec. 20, 2016), <https://perma.cc/G92Z-YC33>.

for the international border crossing for the Keystone XL oil pipeline from Alberta, Canada to the Gulf of Mexico and halted permitting for the Dakota Access oil pipeline in North Dakota to complete a fuller review of environmental protection and tribal concerns associated with the pipeline.

In January 2017, however, President Trump took immediate steps to reverse those actions through executive orders, new BLM regulations, and repeal of Obama-era BLM regulations. He issued an executive order reducing the acreage of the Bears Ears and Grand Staircase-Escalante national monuments by 85% and 50% respectively and reversed President Obama's withdrawal of large areas of the OCS from offshore oil and gas drilling.⁷⁹ He vacated the moratorium on new coal leasing and canceled the pending environmental review of the federal coal leasing program. He granted the Presidential Permit for the Keystone XL pipeline and the remaining federal permits for the Dakota Access pipeline. The BLM stayed enforcement of the Methane Rule and Fracking rule and then took steps to repeal and replace them.⁸⁰ BOEM replaced the more limited five-year plan for offshore oil and gas leasing with one that included new leases in the Atlantic and Pacific Oceans, the Gulf of Mexico, and expanded areas of Alaskan waters, including 90% of the total acreage in the OCS.⁸¹ In 2018, the BLM offered triple the amount of oil and gas leases on federal lands than during President Obama's second term, including in areas designated as protected for sage grouse.⁸² While advancing fossil fuel projects at record-breaking speed, the administration significantly slowed the planning and approval of wind and solar projects on public lands.⁸³ This is only a sampling of actions taken by the Trump administration to promote fossil fuel development on federal lands and in federal waters above all other uses and to eliminate any barriers posed by environmental regulations meant to address climate change or preserve protected species and other natural resources.⁸⁴

⁷⁹ Juliet Eilperin, *A Diminished Monument*, WASH. POST (Jan. 15, 2019), <https://perma.cc/UYC8-2A7Z>; Joe Fox et al., *What Remains of Bears Ears*, WASH. POST (Apr. 2, 2019), <https://perma.cc/4HGN-N6HL>; Coral Davenport, *Trump Opens National Monument Land to Energy Exploration*, N.Y. TIMES (Feb. 6, 2020), <https://perma.cc/5R44-ET53>.

⁸⁰ See Niina H. Farah, *"Energy Dominance" Under Fire as Court Revives Methane Rule*, E&E NEWS: GREENWIRE (July 16, 2020), <https://perma.cc/2B59-PUCP> (discussing Trump administration repeal and replacement of Methane Rule and court invalidation of same).

⁸¹ LAURA COMAY, CONG. RESEARCH SERV., R 44692, *FIVE-YEAR OFFSHORE OIL AND GAS LEASING PROGRAM FOR 2019-2024: STATUS AND ISSUES IN BRIEF 1* (2019).

⁸² Eric Lipton & Hiroko Tabuchi, *Driven by Trump Policy Changes, A Fracking Boom on Public Lands*, N.Y. TIMES (Oct. 27, 2018), <https://perma.cc/JR8X-MZ8K>.

⁸³ See, e.g., Storrow, *Northeast States Hit Snag on Offshore Wind: Trump*, *supra* note 11; Streater, *BLM "Behind the Curve" on Large-Scale Solar: Report*, *supra* note 11.

⁸⁴ With regard to renewable energy, the Trump administration has mostly taken the opposite approach and used environmental law to create additional delays for pending projects. For instance, in 2019, BOEM announced the need for additional, comprehensive environmental review for a major wind project off the coast of Massachusetts—Vineyard Wind—based on potential adverse impacts to fisheries and concluded in 2020 that the project would

But in the rush to reverse the actions of the Obama administration and to promote fossil fuel interests, President Trump took actions that were beyond his authority under federal law and his federal agencies often acted too quickly to achieve their long-term goals. This has resulted in a string of adverse court decisions finding the President lacked authority for his actions, or that the BLM improperly eliminated notice, comment, or environmental review required under the Administrative Procedure Act,⁸⁵ the National Environmental Policy Act,⁸⁶ the Endangered Species Act,⁸⁷ and other longstanding federal laws.

For instance, in 2019, the U.S. District Court for the District of Alaska vacated President Trump's order revoking President Obama's withdrawals in the OCS, finding the OCSLA authorized a President to withdraw areas of the OCS from leasing but not to "un-withdraw" them by canceling a prior President's withdrawal.⁸⁸ As a result, the Trump administration's five-year plan for offshore oil and gas leases remained on hold until the federal appeals court resolved the issue because many of the areas designated for leasing were in areas President Obama had withdrawn from leasing.⁸⁹ Moreover, the court's decision had implications for litigation over President Trump's orders to shrink the Bears Ears and Grand Staircase Escalante national monuments because the operative language of the OCSLA is very similar to that in the Antiquities Act.⁹⁰

Likewise, in March 2020, the U.S. District Court for the District of Columbia required a full environmental impact statement for the already-built Dakota Access pipeline, raising questions about whether the judge would also order the pipeline shut down while the study was prepared.⁹¹ And after years of litigation over the various federal approvals for the Keystone XL pipeline, a federal judge in Montana held

result major adverse environmental impacts, injecting significant uncertainty into the continued viability of the project. See Heather Richards, *Interior: Offshore Wind to Have Major "Adverse" Effects*, E&E NEWS: ENERGYWIRE (June 10, 2020), <https://perma.cc/UWQ9-CHLF>; *First Major Offshore Wind Farm Reaches Permitting Milestone*, REUTERS (June 9, 2020), <https://perma.cc/SVY7-FC6H>.

⁸⁵ Administrative Procedure Act, 5 U.S.C. §§ 551–559, 701–706, 1305, 3105, 3344, 4301, 5335, 5372, 7521 (2018).

⁸⁶ National Environmental Policy Act of 1969, 42 U.S.C. §§ 4321–4370h (2018).

⁸⁷ Endangered Species Act of 1973, 16 U.S.C. §§ 1531–1544 (2018).

⁸⁸ League of Conservation Voters v. Trump, 363 F. Supp. 3d 1013 (D. Alaska 2019).

⁸⁹ COMAY, *supra* note 81, at 2. See also Ben Lefebvre, *Interior to Push Drilling in Florida Waters After November Election*, POLITICO (June 10, 2020), <https://perma.cc/4WNB-R5WW>.

⁹⁰ See, e.g., Alejandro E. Camacho & Robert Glicksman, *A Defeat on Offshore Drilling Extends the Trump Administration's Losing Streak in Court*, THE CONVERSATION (Apr. 9, 2019), <https://perma.cc/9TU2-FDA9> (discussing similarities between the two federal statutes); Jason Daley, *Judge Blocks Oil Drilling in Arctic Ocean*, SMITHSONIAN MAG. (Apr. 1, 2019), <https://perma.cc/GH6V-9JGR>.

⁹¹ Standing Rock Sioux Tribe v. U.S. Army Corps of Eng'rs, 440 F. Supp. 3d 1 (D.D.C. 2020); Niina Farah, *Judge Axes NEPA Review of Dakota Access. Will it Shut Down?*, E&E NEWS: ENERGYWIRE (Mar. 26, 2020), <https://perma.cc/8YY6-YFJB>. See also Standing Rock Sioux Tribe v. U.S. Army Corps of Eng'rs, 985 F.3d 1032 (D.C. Cir. 2021) (affirming the district court's finding that the Army Corps failed to conduct adequate environmental review under the National Environmental Policy Act).

in May 2020 that the federal nationwide permit issued to authorize river and stream crossings for that pipeline (and all other oil and gas pipelines under construction nationwide) was invalid for the agency's failure to consult with the FWS regarding impacts to endangered species as required under the Endangered Species Act.⁹² The same month, the same court struck down BLM's plan to open millions of acres of western public lands for oil and gas leasing that had been previously reserved for sage grouse habitat on grounds that it violated FLPMA, and vacated hundreds of oil and gas leases it found were issued illegally.⁹³ Federal courts in Montana and Idaho have invalidated several hundred oil and gas leases BLM had issued on public lands for the agency's failure to adequately evaluate the climate and groundwater impacts of the leases under the National Environmental Policy Act and for violations of FLPMA.⁹⁴

News articles regularly documented the string of losses sustained by the Trump administration in federal court over its actions related to energy development on public lands.⁹⁵ The administration's poor track record is notable because of the deference courts are required to give to federal agency decisions carrying out the federal statutes Congress has authorized them to implement. As a result, in each case, the court had to

⁹² N. Plains Res. Council v. U.S. Army Corps of Eng'rs, No. CV 19-44-GF-BMM, 2020 WL 3638125 (D. Mont. May 11, 2020); Matthew Brown, *Court Rejects Bid to Revive Canceled U.S. Pipeline Program*, THE ASSOCIATED PRESS (May 28, 2020), <https://perma.cc/JSQ3-DHJZ>; Niina Farah, "A Big Deal": *Keystone XL Ruling Could Threaten Other Pipelines*, E&E NEWS: ENERGYWIRE (Apr. 22, 2020), <https://perma.cc/3A2F-VCHU>.

⁹³ Montana Wildlife Fed'n v. Bernhardt, No. CV-18-69-GF-BMM, 2020 WL 2615631 (D. Mont., May 22, 2020) ("As for the lease sales, the errors here occurred at the beginning of the oil and gas lease sale process, infecting everything that followed. The proper implementation of the 2015 Plans' priority requirement [for sage grouse] means that BLM may not include parcels included in the lease sales. This change affects everything else that happened in the oil and gas lease sales, including but not limited to BLM's NEPA analysis of each lease sale, the protests that BLM received and the responses it provided to those protests, and potentially the EOIs that interested parties may have submitted in the first place. The Court recognizes that the Government and states will need to return millions of dollars to the interested parties who won lease sales, but that economic harm does not rise to the level of harm that the Ninth Circuit has previously considered significant enough to warrant remand without vacatur.")

⁹⁴ *Wildearth Guardians v. Zinke*, 368 F. Supp. 3d 41 (D. Mont. 2019); *Wildearth Guardians v. Bureau of Land Mgmt.*, 457 F. Supp. 3d 880 (D. Mont. 2020) ("The problems with BLM's [environmental assessments] largely relate to the absence of analysis rather than to a flawed analysis. In other words, the Court does not fault BLM for providing a faulty analysis of cumulative impacts or impacts to groundwater, it largely faults BLM for failing to provide any analysis.") (emphasis in original); *Western Watersheds Project v. Zinke*, 441 F. Supp. 3d 1042 (D. Mont. 2020).

⁹⁵ Jennifer A. Dlouhy & Malathi Nayak, *Trump's Scorn for Climate Change Meets Courts Saying It Matters*, BLOOMBERG: GREEN (June 9, 2020), <https://perma.cc/WD36-SZZW> (documenting agency losses in federal court); Anna M. Phillips, *Courts Slow Trump Agenda to Open Public Lands to Oil and Gas Drilling*, L.A. TIMES (Mar. 13, 2020), <https://perma.cc/NMM5-N2NP>; *Trump's Fossil Fuel Agenda Gets Pushback from Federal Judges*, U.S. NEWS (Sept. 15, 2020), <https://perma.cc/25H4-ZU44>; Greg Stohr, *Trump's Corner-Cutting Fails Him as Supreme Court Losses Mount*, BLOOMBERG NEWS (June 19, 2020), <https://perma.cc/H2RC-QRAR>; Farah, "Energy Dominance" Under Fire as Court Revives Methane Rule, *supra* note 80.

find that the agency action was “arbitrary and capricious” or failed to follow procedural requirements in the Administrative Procedure Act or other applicable statutes.

Litigation and appeals over these actions will very likely continue into the Biden administration. However, the story of the Trump administration’s energy policy with regard to federal public lands highlighted in this Part shows how important federal policy is when it comes to use of public lands. Even though the Trump administration had significant setbacks in the courts, it was still able to increase substantially the use of federal lands for oil and gas development at the expense of protected species and other natural resources, issue permits for significant fossil fuel infrastructure that will last for decades, and minimize the use of public lands and waters for renewable energy resource development. However, this Part also illustrates the critical role of the courts as a limit on the use of that federal power and the need for constant vigilance on the part of environmental advocacy groups, states, local governments, and other interested parties. To date, court decisions have tempered the Trump administration’s best efforts to completely turn over federal public lands to oil and gas companies, but the legal battles will no doubt continue.

VI. CONCLUSION

As this Essay goes to print, the Trump administration has come to an end and the Biden administration has begun. President Biden has assembled an impressive and experienced team to address the climate crisis and has nominated the first Native American Interior Secretary—Debra Haaland—a Congresswoman with a strong track record on climate and environmental protection.⁹⁶ President Biden took office with narrow majorities in both the U.S. House of Representatives and the U.S. Senate, which was critical to any hope that he could carry out an aggressive energy transition agenda.⁹⁷

But although there is cause for hope, there is also significant damage. As detailed in this Essay, the Trump administration has stalled many Obama-era initiatives, completely reversed others, and defunded and demoralized the federal agencies that must do the real work to implement the new administration’s energy transition and GHG reduction policies.⁹⁸ While critics of energy transition in general, or more ambitious legislation like the Green New Deal, decry the costs of change, the status quo is not cheap. Inaction has significant costs, as we have seen from the record number of hurricanes, wildfires, floods, droughts, and

⁹⁶ See Coral Davenport, *Biden Picks Deb Haaland to Lead Interior Department*, N.Y. TIMES (Dec. 17, 2020), <https://perma.cc/J8MK-D2T6>.

⁹⁷ See Lesley Clark & Peter Behr, *Will Senate Wins Unlock Biden’s 100% Clean Energy Agenda?*, E&E NEWS (Jan. 7, 2021), <https://perma.cc/6FY6-5VTY>.

⁹⁸ See, e.g., Adam Aton, *Biden Climate Team Says It Underestimated Trump’s Damage*, E&E NEWS: CLIMATEWIRE (Jan. 6, 2021), <https://perma.cc/SVL8-Q7CB>.

other U.S. and global disasters dangerously enhanced by climate change in 2020 alone.⁹⁹ The year 2021 will be both challenging and exciting as we close the door on the Trump administration and learn more about what to expect from “Energy Transitions in the Biden Administration.”¹⁰⁰

⁹⁹ See Christopher Flavelle, *U.S. Disaster Costs Doubled in 2020, Reflecting Costs of Climate Change*, N.Y. TIMES (Jan. 7, 2021), <https://perma.cc/SUZ3-LHFJ>; Brian K. Sullivan, *Second-Warmest Year on Record Cost the World \$210 Billion*, BLOOMBERG L. (Jan. 7, 2021), <https://perma.cc/AR8G-UGL8>; Brian K. Sullivan, *Record Number of \$1 Billion Disasters Hit the U.S. in 2020*, BLOOMBERG L. (Jan. 8, 2021), <https://perma.cc/SYV2-ZX2W>.

¹⁰⁰ Exec. Order No. 13,986, 86 Fed. Reg. 7015 (Jan. 20, 2021), <https://perma.cc/WPC6-PLU4>.