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THE GREENS' DILEMMA: BUILDING TOMORROW'S CLIMATE INFRASTRUCTURE TODAY

J.B. Ruhl[*]

James Salzman[**]

"We need to make it easier to build electricity transmission lines." This plea came recently not from an electric utility executive but from Senator Sheldon Whitehouse, one of the Senate's champions of progressive climate change policy. His concern is that the massive scale of new climate infrastructure urgently needed to meet our nation's greenhouse gas emissions reduction policy goals will face a substantial obstacle in the form of existing federal, state, and local environmental laws. A small but growing chorus of politicians and commentators with impeccable green credentials agrees that reform of that system will be needed. But how? How can environmental law be reformed to facilitate building climate infrastructure faster without unduly sacrificing its core progressive goals of environmental conservation, distributional equity, and public participation?

That hard question defines what this Article describes as the Greens' Dilemma, and there are no easy answers. We take the position in this Article that the unprecedented scale and urgency of required climate infrastructure requires reconsidering the "Grand Bargain" of the 1970s that established stronger environmental protection in exchange for more challenging infrastructure development. Green interests, however, largely remain resistant even to opening that discussion. As a result, with few exceptions, reform proposals thus far have amounted to modest streamlining "tweaks" compared to what we argue will be needed to accelerate climate infrastructure sufficiently to achieve national climate policy goals. To move beyond tweaking to a "New Grand Bargain," we explore how to assess the trade-off between speed to develop and build climate infrastructure, on the one hand, and ensuring

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adequate conservation, distributional equity, and public participation on the other. We outline how a new regime would leverage streamlining methods more comprehensively and, ultimately, more aggressively than has been proposed thus far, including through federal preemption, centralizing federal authority, establishing strict timelines, and providing more comprehensive and transparent information sources and access.

The Greens' Dilemma is real. The trade-offs inherent between building climate infrastructure quickly enough to achieve national climate policy goals versus ensuring strong conservation, equity, and participation goals are difficult. The time for serious debate is now. This is the first law review article to lay the foundation for that emerging national conversation.

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> *Climate is as much an infrastructure problem as a pollution problem.*[1]
>
> *When they were designed, these bills were radical reforms to an intolerable status quo. Now they are, too often, powerful allies of an intolerable status quo, rendering government plodding and ineffectual and making it almost impossible to build climate infrastructure at the speed we need.*[2]

INTRODUCTION

Climate changes everything. Amidst intense wildfires and scorching drought, this same message features large in newspaper headlines,[3] think tank reports,[4] even tank top shirts.[5] The meaning is clear—we are suffering the impacts of climate change, and these will only get worse in the future. We need big changes to address the climate threat, and quickly.

Politicians have started to listen, rising to the challenge through ambitious declarations to reduce greenhouse gas emissions and "decarbonize" our economy. The Green New Deal called for achieving "net-zero global emissions by 2050" through, among other goals, "meeting 100 percent of the power demand of the United States through clean, renewable, and zero-emission energy

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[1] Ted Nordhaus, Exec. Dir., The Breakthrough Inst., Speech at the Regulatory Reform Workshop (July 19, 2021).

[2] Ezra Klein, *Government Is Failing, in Part Because Liberals Hobbled It*, N.Y. TIMES (Mar. 13, 2022), https://www.nytimes.com/2022/03/13/opinion/berkeley-enrollment-climate-crisis.html.

[3] *See, e.g.*, Sammy Roth et al., *The Scary New Climate Report Means Fossil Fuel Use Needs to Start Falling, Fast*, L.A. TIMES (Aug. 9, 2021), https://www.latimes.com/business/story/2021-08-09/the-scary-new-climate-report-means-fossil-fuel-use-needs-to-start-falling-fast.

[4] *See, e.g.*, Edwin Bendyk, *Global Solidarity or Collective Suicide: Why We Cannot Abandon the Paris Agreement's Global Warming Target*, EUR. COUNCIL ON FOREIGN REL. (Jan. 4, 2023), https://ecfr.eu/article/global-solidarity-or-collective-suicide-why-we-cannot-abandon-the-paris-agreements-global-warming-target/.

[5] *See, e.g.*, *Climate Changes Everything Changes Tank Top*, AMAZON, https://www.amazon.com/Climate-Changes-Everything-Tank-Top/dp/B08CXDBF1H (last visited Feb. 9, 2023) (product listing).

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sources."[6] California has pledged net-zero greenhouse gas emissions by 2045.[7] The Biden administration committed to an ambitious climate target of reaching net-zero carbon emissions by 2050, a 100 percent carbon pollution-free power sector by 2035, and a 50 percent reduction in greenhouse gas emissions by 2030.[8] The private sector has been even more ambitious. Corporations with combined market caps of $1.3 trillion have made "net–zero" carbon pledges.[9]

While differing in their targets, these calls from the public and private sectors for a significant transition to a net-zero emissions economy share one common feature—they will all require massive new infrastructure initiatives.

The Inflation Reduction Act (IRA) recently committed $370 billion to infrastructure supporting energy decarbonization and other climate policy goals—the largest clean energy infrastructure investment in American history.[10] These funds are certainly important, but they are only the first step. The infrastructure they fund needs to be built, and built quickly. A study by the National Renewable Energy Laboratory (NREL) found that renewables deployment and linked infrastructure would need to occur at three to six times the current pace to meet the goal of decarbonizing the grid by 2035.[11] A Princeton University study reached similar findings for reaching net-zero

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[6] The Green New Deal is generally identified with the agenda outlined in a resolution Representative Ocasio-Cortez introduced in the U.S. House of Representatives, and Senator Ed Markey introduced in the Senate, in February of 2019. H.R. Res. 109, 116th Cong. (2019); *Markey and Ocasio-Cortez Reintroduce Green New Deal Resolution*, (Apr. 20, 2023), https://www.markey.senate.gov/news/press-releases/markey-and-ocasio-cortez-reintroduce-green-new-deal-resolution. Among many other initiatives, the Resolution called for "dramatically expanding and upgrading renewable power sources," investing in high-speed rail, and "upgrading the infrastructure in the United States . . . by reducing the risks posed by climate impacts," H.R. Res. 109 §§ (2)(B)(iii), (2)(C)(i), (2)(H)(iii), 116th Cong. (2019). Commentary on the Green New Deal was extensive and outside the scope of this Article. *Id*. § (2)(C).

[7] CAL. HEALTH & SAFETY CODE § 38562.2 (West 2023).

[8] *Fact Sheet: President Biden Sets 2030 Greenhouse Gas Pollution Reduction Target Aimed at Creating Good-Paying Union Jobs and Securing U.S. Leadership on Clean Energy Technologies*, WHITE HOUSE (Apr. 22, 2021) [hereinafter Biden's Greenhouse Gas Target], https://www.whitehouse.gov/briefing-room/statements-releases/2021/04/22/fact-sheet-president-biden-sets-2030-greenhouse-gas-pollution-reduction-target-aimed-at-creating-good-paying-union-jobs-and-securing-u-s-leadership-on-clean-energy-technologies/.

[9] U.N. Global Compact et al., 28 Companies with Combined Market Cap of $1.3 Trillion Step Up to New Level of Climate Ambition (July 23, 2019), https://www.un.org/sustainabledevelopment/blog/2019/07/un-global-compact-pr/.

[10] Inflation Reduction Act, H.R. 5376, 117 Cong. (2022); WHITE HOUSE, INFLATION REDUCTION ACT GUIDEBOOK 5 (2d ed. 2023), https://www.whitehouse.gov/wp-content/uploads/2022/12/Inflation-Reduction-Act-Guidebook.pdf.

[11] NAT'L RENEWABLE ENERGY LAB'Y, EXAMINING SUPPLY-SIDE OPTIONS TO ACHIEVE 100% CLEAN ENERGY BY 2035 xix (2022) [hereinafter NREL], https://www.nrel.gov/docs/fy22osti/81644.pdf. For more analysis of the NREL report, see *infra* Part I.A.

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emissions as a nation by 2050.[12] A 2020 report by the International Energy Agency summed it up, warning that "the path to net-zero emissions is narrow: staying on it requires immediate and massive deployment of all available clean and efficient energy technologies."[13]

Put simply, the net zero goals announced from both the public and private sectors all make a key assumption: *our current laws allow us to site, permit, and build tomorrow's climate infrastructure fast enough*. Is that a sound assumption? We argue that experience to date suggests a clear answer—*No*.

While financing, technological, and political obstacles serve to slow down infrastructure, another major constraint comes from, ironically, environmental law. The 1970s saw an explosion of new federal environmental statutes, and state and local initiatives followed.[14] Looking back, an unspoken bargain was struck: in exchange for a cleaner environment, we adopted laws effective at modifying, slowing, and even stopping traditional "brown" infrastructure seen as threatening environmental quality, such as highways, oil pipelines, and industrial facilities. It has proven a very good bargain. While economic growth in the United States has increased more than five-fold since the 1970s, by most measures our environment is much cleaner.[15]

The problem is that it has been fifty years since the bargain was struck. Laws designed to slow and stop traditional infrastructure can equally slow and stop environmentally beneficial or "green" infrastructure, including what we term the "climate infrastructure" necessary for net zero decarbonization, such as solar arrays and clean energy transmission lines.[16] It is naïve to think that the legal

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[12] ERIC LARSON ET AL., FINAL REPORT SUMMARY OF NET-ZERO AMERICA: POTENTIAL PATHWAYS, INFRASTRUCTURE, AND IMPACTS 9–10 (2021) [hereinafter NET-ZERO AMERICA], https://netzeroamerica.princeton.edu/img/Princeton%20NZA%20FINAL%20REPORT%20SUMMARY%20(29Oct2021).pdf. We use the summary report herein as a reference given the unwieldy size of the full report, which is available at https://netzeroamerica.princeton.edu/the-report. For more analysis of *Net-Zero America*, see *infra* Part I.A.

[13] INT'L ENERGY AGENCY, NET ZERO BY 2050: A ROADMAP FOR THE GLOBAL ENERGY SECTOR 14 (May 2021).

[14] RICHARD LAZARUS, THE MAKING OF ENVIRONMENTAL LAW 48–49 (2004).

[15] *GDP (Current US$) – United States*, WORLD BANK, https://data.worldbank.org/indicator/NY.GDP.MKTP.CD?locations=US (last visited Feb. 9, 2023); U.N. Environment Programme, The United States Clean Air Act Turns 50: Is the Air Any Better Half a Century Later? (Mar. 17, 2020), https://www.unep.org/news-and-stories/story/united-states-clean-air-act-turns-50-air-any-better-half-century-later; LAZARUS, *supra* note 14, at xiv.

[16] *See* James W. Coleman, *Pipelines & Power-Lines: Building the Energy Transport Future*, 80 OHIO ST. L.J. 263, 279–80 (2019) (describing how the federal and state governments, environmental groups, and landowners have been the major forces behind opposition to oil pipeline proposals, and how they can have the

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tools used in the past to fight pipelines and power plants will be put aside simply because the new agenda is climate friendly. The existing project siting and environmental protection regulatory regimes do not hand out a "green pass" to infrastructure projects that promote desirable environmental outcomes. This is clear from conflicts climate infrastructure has faced around the country.

Renewable projects in every region face major opposition, ranging from environmental, Not in my backyard (NIMBY), and social justice organizations to business and labor groups.[17] And perhaps for good reason.[18] Wind turbines kill birds and bats; solar arrays disrupt habitat; lithium batteries require raw materials that must be mined; coastal protection alters habitat; high-speed rail and electric transmission lines cut through habitat and near neighborhoods.[19] All of these change the landscape, whether on public or private property.[20] The IRA may have been inspired by the Green New Deal, but neither has fully taken into account the challenge of realizing their infrastructure goals through the Old Green Laws.[21]

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same impact on all types of energy projects); Uma Outka, *Environmental Law and Fossil Fuels: Barriers to Renewable Energy*, 65 VAND. L. REV. 1679, 1696 (2012). *See generally* Sam Kalen, *A Bridge to Nowhere?: Our Energy Transition and the Natural Gas Pipeline Wars*, 9 MICH. J. ENV'T & ADMIN. L. 319, 339–57 (2020) (chronicling pipeline litigation and disputes across the country).

[17] *See* Jim Carlton, *Solar Power's Land Grab Hits a Snag: Environmentalists*, WALL ST. J. (June 4, 2021), https://www.wsj.com/articles/solar-powers-land-grab-hits-a-snag-environmentalists-11622816381. A number of labor unions, particularly those representing workers in conventional fuel industries, have officially voiced opposition to agendas like the Green New Deal. *See* Nick Sobczyk, *Union Chief Says No to Green New Deal*, E&E NEWS (Apr. 24 2019), https://www.eenews.net/special_reports/green_new_deal/stories/1060211973. Similarly, automobile industry labor unions have expressed resistance to adoption of electric vehicles. Chester Dawson et al., *They Don't Need Us Anymore: Auto Workers Fear Electric Unrest*, BLOOMBERG, (Sept. 27, 2019, 5:00 AM), https://www.bloomberg.com/news/articles/2019-09-27/-they-don-t-need-us-anymore-auto-workers-fear-electric-unrest. For more examples, see *infra* Part IV.

[18] *See* John Copeland Nagle, *Green Harms of Green Projects*, 27 NOTRE DAME J.L. ETHICS & PUB. POL'Y 59, 59–60 (2013); Francesco Fuso Nerini et al., *Mapping Synergies and Trade-Offs Between Energy and the Sustainable Development Goals*, 3 NATURE ENERGY 10, 13 (2018).

[19] *See* Nagle, *supra* note 18, at 62; Nerini, *supra* note 18, at 13; *see also* Samuel L. Brown & Lauren A. Bachtel, *A Decarbonized Economy: Risks and Opportunities*, 34 NAT. RESOURCES & ENV'T 50, 51 (2019) (discussing environmental and social harms from transitioning to massive electrification using battery technology for power storage); Cameron Holley et al., *Governing Energy Transitions: Unconventional Gas, Renewables and their Environmental Nexus*, 36 ENV'T & PLAN. L.J. 427 (2019) (discussing environmental impacts of transitioning to renewable power sources); Benjamin K. Sovacool et al., *Sustainable Minerals and Metals for a Low-Carbon Future*, 367 SCIENCE 30 (2020) (discussing social and economic impacts of extraction of raw materials needed for solar photovoltaics, batteries, electric vehicle motors, wind turbines, fuel cells, and other climate adaptation technologies).

[20] Uma Outka, *The Renewable Energy Footprint*, 30 STAN. ENV'T L.J. 241, 250–51 (2011).

[21] J.B. Ruhl & James Salzman, *What Happens When the Green New Deal Meets the Old Green Laws?*, 44 VT. L. REV. 639, 696–97 (2020); *see also* Eric Orts, *The Green New Deal: What It Can Do, and What It Can't*, KNOWLEDGE AT WHARTON PODCAST (Feb. 19, 2019),

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We argue this conflict needs to be recognized and taken seriously. What should the proper balance be between building climate infrastructure quickly versus ensuring strong environmental protection and social justice goals. Equally important, who should do the balancing?

This is a daunting challenge. We have no precedent at scale. The large infrastructure projects of the past—the Intracoastal Waterway, interstate highway system, electricity transmission grid, and national oil, gas, and water pipeline distribution systems—were largely planned and in place or well underway before the rise of modern environmental law statutes in the 1970s.[22] They were impressive achievements, to be sure, but often built at the high cost of environmental harms and communities destroyed, particularly in poor and politically weak areas.[23] The environmental laws of the 1970s were passed for good reason. Since then, a common goal for much of the environmental

https://knowledge.wharton.upenn.edu/podcast/knowledge-at-wharton-podcast/the-green-new-deal-explained/ (quoting David Spence, expressing skepticism at the Green New Deal's ability to accomplish its goals).

[22] The 3,000-mile intracoastal waterway was completed by 1950. *Intracoastal Waterway*, BRITANNICA, https://www.britannica.com/topic/Intracoastal-Waterway (last visited Apr. 28, 2020); LYNN M. ALPERIN, HISTORY OF THE GULF INTRACOASTAL WATERWAY 63 (1983), https://www.publications.usace.army.mil/Portals/76/Publications/Miscellaneous/NWS_83-9.pdf. Railway mileage peaked in the United States in 1916 at 254,000 miles. *The Golden Age of American Railroading*, UNIV. IOWA LIBR. (June–Aug. 1989), https://www.lib.uiowa.edu/exhibits/previous/railroad/; ASS'N OF AM. R.RS., A SHORT HISTORY OF U.S. FREIGHT RAILROADS (2019), https://www.aar.org/wp-content/uploads/2018/05/AAR-Short-History-American-Freight-Railroads.pdf. The majority of the public roads and highways in the United States, which today amount to over four million miles, were first constructed before 1920. *Public Road Mileage, Lane-Miles, and VMT 1920-2015*, U.S. DEP'T OF TRANSP., OFFICE OF HWY. POL'Y INFO., https://www.fhwa.dot.gov/policyinformation/statistics/2015/vmt421c.cfm (last updated Dec. 14, 2016). The Interstate Highway System's 41,000 miles were largely built from 1956 to 1992. *Interstate Highway System*, BRITANNICA (May 25, 2023), https://www.britannica.com/print/article/291675. Roughly half of the existing mainline natural gas transmission network and a significant portion of the local distribution network were installed in the 1950s and 1960s. *Natural Gas Pipelines*, U.S. ENERGY INFO. ADMIN. (Dec. 5, 2019), https://www.eia.gov/energyexplained/natural-gas/natural-gas-pipelines.php. According to the American Society of Civil Engineers' annual report card on national infrastructure, the Nation's 90,000 plus large dams were built an average of 56 years ago, and its 600,000 plus bridges were built an average of 43 years ago. AM. SOC'Y OF CIVIL ENG'RS, DAMS: 2017 INFRASTRUCTURE REPORT CARD (2017), https://www.infrastructurereportcard.org/wp-content/uploads/2017/01/Dams-Final.pdf; AM. SOC'Y OF CIVIL ENG'RS, BRIDGES: 2017 INFRASTRUCTURE REPORT CARD (2017), https://www.infrastructurereportcard.org/wp-content/uploads/2017/01/Bridges-Final.pdf. Seventy percent of the grid's transmission lines and power transformers, which have a 50-year life expectancy, are over 25 years old, with the majority built in the 1950s and 1960s. AM. SOC'Y OF CIVIL ENG'RS, ENERGY: 2017 INFRASTRUCTURE REPORT CARD (2017), https://www.infrastructurereportcard.org/wp-content/uploads/2017/01/Energy-Final.pdf; Sarah Gerrity & Allison Lantero, *Understanding the Grid*, U.S. DEP'T OF ENERGY (Nov. 17, 2014), https://www.energy.gov/articles/infographic-understanding-grid.

[23] *See, e.g.*, ROBERT CARO, THE POWER BROKER: ROBERT MOSES AND THE FALL OF NEW YORK 20 (1974).

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movement for decades has been stopping or slowing what was seen as bad growth. But this feature can become a bug.

The use of environmental laws now presents a core challenge to the rapid climate infrastructure build timeline needed to achieve our national climate change policy goals. As Ezra Klein recently observed, "victories of yesteryear have become the obstacles of this year. Too many of the tactics and strategies and statutes are designed to stop transformational or even incremental projects from happening."[24] He is not alone in voicing this concern. More magazine articles and newspaper opinion pieces have started addressing the issue,[25] and it has become a concern in Congress as well.[26]

Consider that the claim "to better address the climate crisis, the US must reform its permitting process,"[27] which captures the thesis of this Article, did not come from the CEO of a renewable energy company. Rather, it was the title of a 2022 *Boston Globe* op-ed by Chris Murphy, Democrat Senator for Connecticut, and Brad Campbell, President of the Conservation Law Foundation, both of whom have strong green credentials.[28] Similarly, the recent plea that "we need to make it easier to build electricity transmission lines" came not from an electric utility executive but from Senator Sheldon Whitehouse, one of the Senate's champions of progressive climate change policy.[29] Yet with few exceptions, the environmental community has been negative or reluctant on this score, concerned that speeding up climate infrastructure may open the door to

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[24] Klein, *supra* note 2.

[25] *See* Aaron Gordon, *Why Doesn't America Build Things?*, VICE (Aug. 22, 2022, 6:00 AM), https://www.vice.com/en/article/93a39e/why-doesnt-america-build-things; M. Nolan Gray, *How Californians Are Weaponizing Environmental Law: And How to Fix It*, THE ATLANTIC (Mar. 12, 2021), https://www.theatlantic.com/ideas/archive/2021/03/signature-environmental-law-hurts-housing/618264/; Hope Cohen, *Rethinking Environmental Review: A Handbook on What Can Be Done*, MANHATTAN INST. (May 17, 2007), https://www.manhattan-institute.org/html/rethinking-environmental-review-handbook-what-can-be-done-5924.html.

[26] Christian Britschgi, *Joe Manchin Strikes a Deal To Fix Antiquated Environmental Review Regulations. Will It Do Any Good?*, REASON (Aug. 3, 2022, 4:25 PM), https://reason.com/2022/08/03/joe-manchin-strikes-a-deal-to-fix-antiquated-environmental-review-regulations-will-it-do-any-good/.

[27] Chris Murphy & Brad Campbell, *To Better Address the Climate Crisis, the US Must Reform Its Permitting Process*, BOSTON GLOBE (Nov. 21, 2022, 3:00 AM), https://www.bostonglobe.com/2022/11/21/opinion/better-address-climate-crisis-us-must-reform-its-permitting-process/.

[28] *See id.*

[29] Sheldon Whitehouse, *Senator Whitehouse: To Unlock the Full Potential of the IRA, We Need to Make It Easier to Build Electricity Transmission Lines*, DATA FOR PROGRESS (Oct. 25, 2022), https://www.dataforprogress.org/blog/2022/10/25/senator-whitehouse-to-unlock-the-full-potential-of-the-ira-we-need-to-make-it-easier-to-build-electricity-transmission-lines.

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harmful development.[30] Many environmental groups, such as the Sierra Club, were created or evolved to oppose development.[31] It is not in their DNA to facilitate infrastructure. And even if that opposition softens, what will they and other interests accept in compromise?

Until very recently, legal scholarship has overlooked this conflict, missing the forest for the trees. There have been many articles on specific conflicts such as bats versus wind farms,[32] and on specific statutes such as the National Environmental Policy Act (NEPA),[33] but surprisingly little written on the larger challenge of how the vast regime of environmental and land use law permitting and litigation hinders climate infrastructure, much less what to do about it.[34] In 2020, we were the first to argue that when the Green New Deal (or its politically acceptable alternative) ran up against what we described as the Old Green Laws, the Old Green Laws would prevail—the Green New Deal's deadlines would have long passed before its infrastructure was built.[35] Beyond identifying the problem, however, we offered no solutions.

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[30] *See* Shannon Osaka, *To Fight Climate Change, Environmentalists May Have to Give Up a Core Belief*, WASH. POST (Sept. 2, 2022, 7:00 AM), https://www.washingtonpost.com/climate-environment/2022/09/02/fight-climate-greens-have-embrace-big-energy-projects-fast/.

[31] The Sierra Club was founded as group for outdoor recreationists in the Sierra Nevadas but came of age in its opposition to Hetch Hetchy Dam. *Hetch Hetchy History*, SIERRA CLUB (Feb. 10, 2023), https://vault.sierraclub.org/ca/hetchhetchy/history.asp. [https://web.archive.org/web/20230216235627/https://vault.sierraclub.org/ca/hetchhetchy/history.asp].

[32] J.B. Ruhl, *Harmonizing Commercial Wind Power and the Endangered Species Act Through Administrative Reform*, 65 VAND. L. REV. 1769, 1772–73 (2012) (examining how numerous groups have used the Endangered Species Act to attack the construction of renewable resources, especially wind power).

[33] *See* Roger P. Hansen et al., *NEPA and Environmental Streamlining: Benefits and Risks*, 9 ENV'T PRAC., 83 (2007); *see also* Irma Russel, *Streamlining NEPA to Combat Global Climate Change: Heresy or Necessity?*, 39 ENV'T L. 1049, 1051, 1058 (2009).

[34] Jeffrey Thaler rang an early alarm in 2013. Jeffery Thaler, *Fiddling as the World Floods and Burns: How Climate Change Urgently Requires a Paradigm Shift in the Permitting of Renewable Energy Projects*, 42 ENV'T L. 1101, 1155 (2012) (arguing that existing environmental laws prevent us from building renewable energy sources to reduce carbon emissions). The theme gathered little attention until Michael Gerrard resurrected it comprehensively in his 2017 study of obstacles to renewable energy infrastructure. Michael B. Gerrard, *Legal Pathways for a Massive Increase in Utility-Scale Renewable Generation Capacity*, 47 ENV'T L. REP. NEWS & ANALYSIS 10591, 10596, 10612 (2017) (pointing to renewable energy projects opposed and delayed through challenges under current environmental laws and suggesting reforms). *See generally* Rachael E. Salcido, *Rationing Environmental Law in a Time of Climate Change*, 46 LOY. U. CHI. L.J. 617, 621 (2015) (raising similar concerns and suggesting reforms). Nicholas Bagley has identified the challenge entrenched laws, many the result of progressive movements, pose to modern progressive agendas as one broadly applicable in administrative law. Nicholas Bagley, *The Procedural Fetish*, 118 MICH. L. REV. 345 (2019); *see also* PAUL SABIN, PUBLIC CITIZENS (2021) (tracing the rise of what the author describes as "adversarial" liberalism).

[35] Ruhl & Salzman, *supra* note 21, at 700.

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Since then, three trends have made this theme all the more pressing and in need of thoughtful assessment. First, comprehensive studies like those from NREL and Princeton have attached numbers to the aspirations, highlighting for all to see just how much climate infrastructure must be built, and how fast.[36] Second, our prediction that opposition from the Old Green Laws to climate infrastructure projects would continue, if not grow, has borne true.[37] This is particularly the case at the state and local level.[38] Opposition to climate infrastructure cannot be wished away. Third, as noted above, the political tide has started to turn, with prominent green politicians ringing the alarm bell. Yet reform proposals, most of them inadequate in our assessment, continue to gain little traction.[39] These trends have led us to pick up where we left off in our assessment of the Green New Deal, to move beyond our conclusion that "it won't work" to explore "what will work."

The Article proceeds in six parts. Part I sets out the case for urgency—why the different types of climate infrastructure, from wind farms and solar arrays to electric transmission lines and carbon dioxide pipelines, are needed quickly on an unprecedented scale. Part II explores the impact of environmental law on infrastructure cost and timing. We describe the "Grand Bargain of environmentalism" in the 1970s that slowed and increased the costs of infrastructure in exchange for greater environmental protection. We identify the two pinch points of that regulatory regime—permitting and litigation—and summarize empirical studies on their impacts. Part III then describes a range of current conflicts around the nation that pit conservation and social justice goals against climate infrastructure, and concludes with a broad evaluation of this "green versus green" dilemma. Part IV sets out the "streamlining toolkit" of four strategies that have developed since the 1970s to manage the trade-offs between facilitating infrastructure and protecting the environment: limiting coverage, centralization, timelines, and increasing information.[40]

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[36] *See infra* Part I.

[37] *See infra* Part III.

[38] *See infra* Part III.

[39] The most prominent example is the measure advanced by Senator Manchin. *See Manchin Releases Comprehensive Permitting Reform Text To Be Included in Continuing Resolution*, SEN. COMM. ON ENERGY & NAT. RES.: DEMOCRATIC NEWS (Sept. 21, 2022), https://www.energy.senate.gov/2022/9/manchin-releases-comprehensive-permitting-reform-text-to-be-included-in-continuing-resolution; *infra* Part IV.B.

[40] Rachel Salcido refers to using these streamlining tools in connection with promoting renewable energy infrastructure as "rationing environmental law," arguing that such methods will be necessary given lack of sufficient progress to date. *See* Salcido, *supra* note 34, at 622. We employ the tools far more extensively in our proposed reforms.

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Part V examines where to go from here. We can muddle through the status quo, engage in more tweaking, or force projects through with no protections. The growing consensus is that the status quo will not meaningfully speed up infrastructure, and nobody proposes fully returning to the unconstrained regimes that led to the Grand Bargain of the 1970s. Reform proposals made in legal scholarship and the floors of Congress thus have relied on using the streamlining tools to tweak the current web of environmental and siting laws, such as by shortening decision timelines and requiring more agency coordination.[41] Given the number and distribution of permitting and litigation pinch points throughout multiple statutes at federal, state, and local scales, we argue that this approach cannot sufficiently accelerate the pace of climate infrastructure.

In Part VI, we argue that the time is ripe to consider a New Grand Bargain—a new environmental and siting regime designed for the scale and urgency of climate infrastructure. Taking this challenge seriously, we explore how to assess the trade-off between speed to develop and build climate infrastructure, on the one hand, and how to ensure adequate environmental protection, distributional justice, and public participation on the other. We outline how a new regime would leverage the streamlining toolkit more comprehensively and aggressively than has been proposed thus far while protecting our core environmental statutes. In a thought experiment, we propose creating a special process that would identify and apply to a small number of infrastructure projects that "move the needle" on decarbonization. This targeted strategy promotes rapid progress on important climate infrastructure while avoiding large scale overhaul of our environmental laws.

We want to make clear at the outset that this explicitly is not an "anti-environmentalist" article. We both have devoted our careers to environmental protection. We think it critical, though, to highlight and unpack the growing challenges within the environmental movement needed to recognize the trade-

[41] For examples in legal scholarship, see *id.*; *see also* Tiffany Challe, *Testimony of Michael Gerrard About Siting Renewable Energy on Public Land*, SABIN CTR. FOR CLIMATE CHANGE L.: CLIMATE L. (May 6, 2019), https://blogs.law.columbia.edu/climatechange/2019/05/06/testimony-of-michael-gerrard-to-congress-about-siting-renewable-energy-on-public-lands/. This was also the thrust of the failed Manchin energy permitting reform bill. *See infra* Part III.B. An exception in legal scholarship is Danielle Stokes' recent proposal to centralize siting approvals for utility-scale renewable energy production facilities in one federal agency. *See* Danielle Stokes, *Renewable Energy Federalism*, 106 MINN. L. REV. 1757 (2022); *see also* Michael B. Gerrard, *Who Decides Where the Renewables Should Go? A Response to Danielle Stokes'* Renewable Energy Federalism, 106 MINN. L. REV. HEADNOTES 400 (2022). Our proposal goes further in two important respects by covering a broader range of climate infrastructure categories supporting decarbonization (e.g., carbon sequestration pipelines) and by applying complete federal preemption of other federal, state, and local laws for projects selected through a process identifying the most critical and interdependent. *See infra* Part VI.

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offs between rapidly planning, siting, and constructing climate infrastructure versus environmental protection, distributive equity, and public participation. 2050 may seem like the distant future, but the consequences of not getting those trade-offs right could be dire. At the very least, the public conversation about how to manage the next twenty-five years should include an alternative to tweaking our way to net zero. This Article is the first in legal scholarship to set out the framework and tools for designing that alternative, in the form of a New Grand Bargain.

I. DECARBONIZATION IS A MASSIVE, URGENT, AND UNPRECEDENTED INFRASTRUCTURE CHALLENGE

Net-zero carbon emissions by 2050; 100 percent carbon pollution-free power sector by 2035; 50 percent reduction in greenhouse gas emissions by 2030.[42] Even assuming those ambitious national goals survive into future administrations and enjoy broad and durable political and funding support, the scale of new infrastructure development needed to meet them is staggering, and there is very little slack in the timeline. The Biden administration has made this clear, stating that "[a]chieving the President's ambitious goal of net-zero emissions by no later than 2050 will require building new transmission lines and clean energy projects at a pace and scale that is unprecedented in U.S. history."[43] Within the past two years, multiple reports have been published confirming the infrastructure needs and the climate consequences of not staying on the timeline.[44] In this section we briefly summarize their key findings in regard to scale, timeline, and precedent to provide the case for rapidly accelerated climate infrastructure.

A. Massive Scale

The 2021 *Net-Zero America* report provides a comprehensive and detailed study of climate infrastructure needs under a range of scenarios varying primarily in the mix of fuel sources, all of which meet the national goals.[45] The 2022 NREL report assessed a similar set of scenarios achieving the goal of a

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[42] *See* Biden's Greenhouse Gas Target, *supra* note 8.

[43] WHITE HOUSE, BUILDING A CLEAN ENERGY ECONOMY: A GUIDEBOOK TO THE INFLATION REDUCTION ACT'S INVESTMENTS IN CLEAN ENERGY AND CLIMATE ACTION 182 (2023) [hereinafter Guidebook to IRA], https://www.whitehouse.gov/wp-content/uploads/2022/12/Inflation-Reduction-Act-Guidebook.pdf.

[44] *See infra* Part I.A.

[45] *See* NET-ZERO AMERICA, *supra* note 12, at 5–6.

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hundred percent clean energy by 2035.[46] The bottom line from these and the mounting additional analyses is that, for *any* of the scenarios to have a chance of meeting the nation's decarbonization goals, it will require "siting and interconnecting new renewable and storage plants at rates of three to six times recent levels, potentially doubling or tripling the capacity of the transmission system, upgrading the distribution system, building new pipelines and storage for hydrogen and CO_2, and/or deploying nuclear and carbon management technologies with low environmental disturbance and in an equitable fashion to all communities."[47] In short, achieving our nation's decarbonization goals involves planning, financing, and building out multiple lines of new infrastructure at massive scale. Below we unpack five essential pillars of this climate infrastructure to illustrate the breadth and depth of the challenge: (1) clean energy production; (2) electric power transmission; (3) electrification of consumption; (4) carbon capture and sequestration; and (5) resources development.

1. Clean Energy Production

Currently, sixty percent of electric power produced in the United States comes from fossil fuel combustion,[48] making fuel-switching in that sector a critical component of decarbonization policy.[49] Under any decarbonization scenario meeting the national goals, therefore, new wind and solar power production infrastructure dominates—the question being how much nuclear, natural gas (with carbon capture), and other fuel types fit into the mix.[50] A middle-road scenario relying heavily but not exclusively on wind and solar will require their production capacity to quadruple over current levels to supply half of the nation's electric power,[51] which would mean setting a new record for installed capacity year-after-year for the next thirty years.[52] To put that into

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[46] NREL, *supra* note 11, at vi–vii.

[47] *Id.* at xix. We do not cover the development and distribution of "green" hydrogen as a fuel in our analysis. *See* EXEC. OFF. PRES. ET AL., U.S. NATIONAL CLEAN HYDROGEN STRATEGY AND ROADMAP (2023), https://www.hydrogen.energy.gov/pdfs/us-national-clean-hydrogen-strategy-roadmap.pdf (discussing "green" hydrogen's extensive infrastructure demands).

[48] *Frequently Asked Questions (FAQs): What is U.S. Electricity Generation By Energy Source?*, U.S. ENERGY INFO. ADMIN., https://www.eia.gov/tools/faqs/faq.php?id=427&t=3 (last updated Mar. 2, 2023).

[49] *See* NET-ZERO AMERICA, *supra* note 12, at 16.

[50] *See id.* at 25; *see also* John Bistline et al., *Actions for Reducing US Emissions at Least 50% by 2030*, 376 SCIENCE 922 (2022).

[51] NET-ZERO AMERICA, *supra* note 12, at 24.

[52] *See id.* at 26; *see also* U.S. DEP'T OF ENERGY, OFFICE OF ENERGY EFFICIENCY & RENEWABLE ENERGY, SOLAR FUTURES STUDY viii (2021), https://www.energy.gov/sites/default/files/2021-09/Solar%20Futures%20Study.pdf ("Compared with the approximately 15 GW of solar capacity deployed in

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perspective, consider that the largest solar facility currently online in the United States is capable of generating 580 MW.[53] To meet even a middle-road renewable energy scenario would require bringing online two new 400 MW solar power facilities—each taking up at least 2,000 acres—*every week for the next thirty years*.[54] Similarly, consider that the European Union currently has 5,400 offshore wind turbines in operation, whereas the United States has seven.[55] The Biden Administration has proposed to add 2,000 offshore wind turbines by 2030.[56] The picture is no less challenging under a low-renewables scenario, as that would require an unprecedented sustained addition of nuclear and natural gas (with carbon capture) facilities to fill the gap.[57] Biomass (with carbon capture) and clean hydrogen production infrastructure could also contribute, but would require similar unprecedented scales and paces of capacity development.[58]

2. Electric Power Transmission

Depending on how much the clean energy production transition relies on new wind and solar sources, high-voltage electricity transmission capacity must increase substantially to meet the goal of a hundred percent carbon pollution-free power sector by 2035.[59] NREL recently put this into perspective:

> In all scenarios, significant transmission is constructed in many locations, and significant amounts are deployed to deliver energy from wind-rich regions to major load centers in the eastern United States.

2020, annual solar deployment doubles in the early 2020s and quadruples by the end of the decade . . . . Similarly substantial solar deployment rates continue in the 2030s and beyond. Deployment rates accelerate for wind and energy storage as well.").

[53] WORLEY & PRINCETON E-FILLIATES PARTNERSHIP, FROM AMBITION TO REALITY: WEAVING THE THREADS OF NET ZERO DELIVERY 13 (2022) [hereinafter WORLEY], https://www.worley.com/our-thinking/from-ambition-to-reality/from-ambition-to-reality-report.pdf.

[54] *Id.* at 10.

[55] Ivan Penn, *Offshore Wind Farms Show What Biden's Climate Plan Is Up Against*, N.Y. TIMES (June 7, 2021), https://www.nytimes.com/2021/06/07/business/energy-environment/offshore-wind-biden-climate-change.html.

[56] *Id.*

[57] NET-ZERO AMERICA, *supra* note 12, at 32.

[58] *Id.* at 34–35.

[59] *Id.* at 27–29. Small-scale local distributed energy facilities, such as rooftop and community solar panels, can reduce the need for utility-scale generation and long-distance transmission lines. *See* Bo Shen et al., *Facilitating Power Grid Decarbonization with Distributed Energy Resources: Lessons from the United States*, 46 ANN. REV. ENV'T RES. 349, 351, 360 (2021). Even so, the Net-Zero America and NREL reports discussed herein demonstrate the extensive utility-scale renewable energy generation and transmission infrastructure needed to achieve the nation's net zero goals. NET-ZERO AMERICA, *supra* note 12, at 34–35; NREL, *supra* note 11, at ix.

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> Total transmission capacity . . . in 2035 is 1.3–2.9 times current capacity. Beyond already planned additions, these total transmission builds would require 1,400–10,100 miles of new high-capacity lines per year, assuming new construction began in 2026.[60]

Since 2010, the maximum transmission line infrastructure installation in one year was 4,100 miles,[61] meaning sustained new approved installations of over twice that could be needed annually for ten years starting in 2026.

3. Electrification of Consumption

Massively increasing the capacity to produce and transmit clean electric power is only one side of the energy transition driving decarbonization—the energy consumption sectors must also switch power sources. Currently, for example, half of all homes in the United States use natural gas for space and water heating, and natural gas is thirty-three percent of industrial sector energy consumption.[62] Thus, roughly 80 to 120 million homes (54 to 80 percent) in the United States will need to convert to heat pumps,[63] and the industrial sector will need to adopt new fuel and carbon capture technologies.[64] Electric vehicle adoption also must skyrocket from the current level of around 1.45 million registered light duty fully electric vehicles,[65] to anywhere from 210 to 330 million light duty vehicles needed in use by 2050.[66] Public and private charging station infrastructure must also grow to meet demand, requiring tens of millions of new "plugs" by 2030 just to keep up with vehicle adoption goals.[67] While

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[60] NREL, *supra* note 11, at xi.

[61] *Id.* at xi n.5.

[62] U.S. ENERGY INFO. ADMIN., NATURAL GAS EXPLAINED, https://www.eia.gov/energyexplained/natural-gas/use-of-natural-gas.php (last updated Nov. 16, 2022).

[63] *See* NET-ZERO AMERICA, *supra* note 12, at 21.

[64] *See id.* at 10.

[65] Scooter Doll, *Current EV Registrations in the US: How Does Your State Stack Up and Who Grew the Most YOY?*, ELECTREK (Aug. 24, 2022), https://electrek.co/2022/08/24/current-ev-registrations-in-the-us-how-does-your-state-stack-up/.

[66] NET-ZERO AMERICA, *supra* note 12, at 17; Alexandre Milovanoff et al., *Electrification of Light-duty Vehicle Fleet Alone Will Not Meet Mitigation Targets*, 10 NATURE CLIMATE CHANGE 1102, 1103–04 (2020) (explaining the scale and complexity of EV adoption).

[67] *See* DEP'T OF ENERGY ET AL., THE U.S. NATIONAL BLUEPRINT FOR TRANSPORTATION DECARBONIZATION 58–60 (2022), https://www.energy.gov/sites/default/files/2023-01/the-us-national-blueprint-for-transportation-decarbonization.pdf (setting a goal of all-electric light duty vehicles sales by the mid-2030s and 50 percent of new car sales by 2030). The federal government hopes to coordinate adding 500,000 new public charging units by 2030 to jumpstart a national charging network. *Id.* at 60. The public network will need to be at least twice that size, and millions of new private units will be needed. *See* Philipp Kampshoff et al., *Building the Electric Vehicle Charging Infrastructure America Needs*, MCKINSEY & CO. (Apr. 18, 2022), https://www.mckinsey.com/industries/public-and-social-sector/our-insights/building-the-electric-vehicle-

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these and other consumption sector transitions do not involve the same siting approval complexities as large-scale production and transmission infrastructure projects, they will require a concerted and sustained combination of public and private sector initiatives for the rest of the decarbonization strategy to succeed.[68]

4. Carbon Capture and Sequestration

The net-zero emissions goals is not a no-emissions goal—many industries will continue to emit greenhouse gases, and most clean energy production scenarios rely on some share of production from natural gas and biomass.[69] To meet its decarbonization goals, therefore, "the United States will likely have to capture, transport, and permanently sequester significant quantities of carbon dioxide."[70] This carbon capture and sequestration (CCS) infrastructure challenge will require rapid growth in the number of capture plants, transportation channels, and sequestration facilities.[71] With sequestration taking place throughout the nation and substantially in the Gulf of Mexico seabed, it is expected that tens of thousands of miles of high capacity trunk pipelines and at least 50,000 miles of spur pipelines will be needed to transport the carbon dioxide to its final storage location.[72]

5. Resources Development

Before new clean energy production and transmission infrastructure can be sited, it must be built. The same goes for the hundreds of millions of new electric vehicles. Their unprecedented deployment rates "require[] a corresponding growth in raw materials supply, manufacturing facilities, and trained workforce throughout the supply chain."[73] In particular, the clean energy transition will depend on a number of critical minerals needed for production of essential metals used in production of renewable energy production infrastructure,

charging-infrastructure-america-needs (stating that in a scenario in which half of all vehicles sold are zero-emission vehicles (ZEVs) by 2030—in line with federal targets—America would require 1.2 million public EV chargers and 28 million private EV chargers by that year, which is 20 times more chargers than it has now).

[68] *See* Bistline, *supra* note 50, at 923; Milovanoff, *supra* note 66, at 1104.

[69] *Executive Summary*, *The Role of Critical Materials in Clean Energy Transitions*, IEA, https://www.iea.org/reports/the-role-of-critical-minerals-in-clean-energy-transitions/executive-summary (last visited Aug. 26, 2023).

[70] Carbon Capture, Utilization, and Sequestration Guidance, 87 Fed. Reg. 8808 (Feb. 16, 2022).

[71] *See* NET-ZERO AMERICA, *supra* note 12, at 39.

[72] *See id.* at 41–43.

[73] NREL, *supra* note 11, at xix.

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electric vehicles, and battery storage.[74] In 2022, President Biden committed the United States to a secure supply chain for these minerals and metals, including an emphasis on domestic production.[75] Yet a recent assessment commissioned by the Department of Energy concluded that:

> [t]he lack of a substantial lithium battery supply chain in the United States and the lack of secure access to energy materials pose serious threats to U.S. national and economic security. These threats will not only inhibit the manufacture of lithium batteries in the United States but will stymie the development and growth of the many downstream industries that design, manufacture, and operate products powered by lithium batteries.[76]

Decarbonization will phase down coal mining and drilling for oil, but new domestic mining and manufacturing infrastructure is on the horizon in their place and must be developed swiftly.

B. Urgent Timeline

Decarbonization to meet our national goals clearly is an infrastructure challenge in terms of scale. What makes it even more challenging is that, in order to meet the nation's decarbonization goals, all of the major infrastructure components described in the previous section must be well underway by 2030 and fully built out and operating by 2050. As explained below, these dates are not arbitrary, nor is the ramp-up pace. Rather, both the practical implications of the infrastructure build-out and the impacts of missing the targets compel urgency.

1. Interdependency

The infrastructure components described in the previous section cannot be deployed sequentially or haphazardly—they are interdependent and thus must all happen simultaneously and with system-wide coordination. For example, to contribute to decarbonization, newly adopted electric vehicles must be powered by clean energy sources; to contribute to decarbonization, new renewable energy

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[74] INT'L ENERGY AGENCY, THE ROLE OF CRITICAL MINERALS IN CLEAN ENERGY TRANSITIONS 5 (2022), https://www.iea.org/reports/the-role-of-critical-minerals-in-clean-energy-transitions.

[75] *Fact Sheet: Securing a Made in America Supply Chain for Critical Materials*, WHITE HOUSE (Feb. 22, 2022), https://www.whitehouse.gov/briefing-room/statements-releases/2022/02/22/fact-sheet-securing-a-made-in-america-supply-chain-for-critical-minerals/.

[76] LI-BRIDGE, BUILDING A ROBUST AND RESILIENT U.S. LITHIUM BATTERY SUPPLY CHAIN 3 (2023), https://www.anl.gov/sites/www/files/2023-02/Li-Bridge%20Industry%20Report_2.pdf.

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sources need more electrified consumption, including electric vehicles and residential heat pumps; to move the energy from production sources to consumption points requires new transmission and charging infrastructure; and to build any of these components will require new sources of raw materials.[77] Indeed, dyssynchronous buildout could worsen climate change. For example, putting millions of electric vehicles on the road increases demand for electricity, but if there is insufficient clean energy to power them, that demand will be met by increased generation from fossil fuel sources.[78] Even the energy used to build climate infrastructure must shift rapidly to clean production sources to avoid substantial increases in greenhouse gas emissions.[79] As the *Net-Zero America* report aptly concluded in its assessment of climate infrastructure buildout, "[n]et-zero by 2050 requires aggressive action to begin now."[80]

2. Delay Embeds More Warming

Reaching net-zero emissions is critical—until then, even annual reductions in net emissions continue adding to atmospheric concentrations of greenhouse gases.[81] Yet, following the drop-off attributable to the Covid pandemic, global greenhouse gas emissions are rising once again.[82] The goal of net zero by 2050 is designed to meet the Paris Agreement goals of holding temperature rise to 1.5ºC ideally and 2.0ºC at most.[83] As it stands currently, estimates are "only by halving emissions over the next 10 years and then rapidly dropping them to net zero by 2050 can the world gain a [fifty percent] chance of staying below 1.5ºC."[84] Each year emissions continue to rise thus requires even steeper post-peak reductions to reach net zero by 2050, thus putting yet more pressure on the

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[77] Milovanoff, *supra* note 66, at 1105 (explaining the need for simultaneous deployment and development).

[78] NREL, *supra* note 11, at xix (explaining that electrification of vehicles and building increases electricity demand, meaning they must have clean energy sources or else greenhouse gas emissions rise). The Department of Energy Solar makes the same point. *See* Siobhan Powell et al., *Charging Infrastructure Access and Operation to Reduce the Grid Impacts of Deep Electric Vehicle Adoption*, 7 NATURE ENERGY 932, 933–34 (2022).

[79] Corey Lesk et al., *Mitigation and Adaptation Emissions Embedded in the Broader Climate Transition*, 119 PNAS (2022), https://www.pnas.org/doi/10.1073/pnas.2123486119. Under a gradual decarbonization scenario the energy needed to build needed renewable energy infrastructure would release the equivalent of two years of current global CO_2 emissions. *Id.* A slower transition (current pathway) is double that. *Id.*

[80] NET-ZERO AMERICA, *supra* note 12, at 74.

[81] *See* INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, GLOBAL WARMING OF 1.5°C 56 (2018). As one climate scientist put it, "[t]he buildup of CO_2 is a bit like trash in a landfill. . . . As we keep emitting, it keeps piling up." Henry Fountain, *'Like Trash in a Landfill'*, N.Y. TIMES (June 4, 2020), https://www.nytimes.com/2020/06/04/climate/carbon-dioxide-record-climate-change.html.

[82] *Carbon Emissions Increase—As Do Ways to Track Them*, 378 SCIENCE. 690, 690 (2022) (discussing how 2022 carbon dioxide emissions projected to rise 1% above 2021 level).

[83] Cathleen O'Grady, *Glasgow Pact Leaves 1.5ºC Goal on Life Support*, 374 SCIENCE 920, 920 (2021).

[84] *Id.*

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pace of climate infrastructure deployment. And the national goals may fall short even if met. Recent analyses conclude that even if nations meet their currently adopted emissions reduction goals by 2030 and then continue to strengthen them by achieving 5% reductions year-over-year after 2030, there is only an 11% chance of achieving 1.5ºC with no overshoot and a 60% chance of achieving 2.0ºC with no overshoot.[85] Even worse, achieving net-zero emissions is not enough—net negative emissions are needed to reverse the rise in temperatures within human timescales.[86] Climate infrastructure is the critical lynchpin in meeting even these discouraging projections and avoiding worse.

3. Climate Tipping Points Loom

One of the concerns about crossing temperature thresholds like 1.5ºC and 2.0ºC has to do with what are known as tipping points—thresholds along a nonlinear pattern of system change that, once crossed, move the climate system into a new set of warming-feeds-warming positive feedback dynamics that accelerate the pace of change and can be extremely difficult to reverse.[87] Scientists are increasingly concerned that we are dangerously close to passing these and many other irreversible climate change tipping points,[88] which could

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[85] Yang Ou et al., *Can Updated Climate Pledges Limit Warming Well Below 2ºC?: Increased Ambition and Implementation are Essential*, 374 SCIENCE 693, 695 (2021).

[86] Even after net zero is achieved, which will likely require extensive carbon removal, without substantial net-negative emission reductions through more carbon removal, temperatures will continue to rise for a century as the oceans release stored heat, and sea-level rise will continue long after temperatures peak. Gerald A. Meehl et al., *How Much More Global Warming and Sea Level Rise?*, 307 SCIENCE 1769, 1772 (2005). Once that peak temperature is reached, without achieving net-negative emissions the planet will be warmer than pre-industrial levels, and the resulting biophysical disruptions will continue for at least one thousand years. *If Emissions of Greenhouse Gases Were Stopped, Would the Climate Return to the Conditions of 200 Years Ago?*, ROYAL SOC'Y, https://royalsociety.org/topics-policy/projects/climate-change-evidence-causes/question-20/ (last updated Mar. 2020). The upshot is that, even if greenhouse gas concentrations return to pre-industrial levels, many natural systems will have been permanently altered. *See id.* ("The current CO_2-induced warming of Earth is . . . essentially irreversible on human timescales."). *See generally* NAT'L ACAD. OF SCIS., NEGATIVE EMISSIONS TECHNOLOGIES AND RELIABLE SEQUESTRATION: A RESEARCH AGENDA (2019) (background on net-negative technologies); Tracey Hester, *Carbon Capture and Sequestration and Carbon Dioxide Removal*, in GLOBAL CLIMATE CHANGE AND U.S. LAW 485–524 (Michael B. Gerrard et al. eds., 3d ed. 2023) (survey of legal issues).

[87] *See* Timothy M. Lenton et al., *Early-Warning Signals for Critical Transitions, Climate Tipping Points—Too Risky to Bet Against*, 575 NATURE 592, 592–95 (2019).

[88] *See id.* For example, there is evidence that the Greenland ice sheet is experiencing mass loss at accelerating rates and has "switch[ed] to a new dynamic state of sustained mass loss that would persist even under a decline in surface melt." Michalea D. King et al., *Dynamic Ice Loss from the Greenland Ice Sheet Driven by Sustained Glacier Retreat*, 1 COMMC'NS EARTH & ENV'T 1, 1 (2020). Glaciers distinct from Greenland and the Antarctic ice sheet also are experiencing accelerating mass loss. Romain Hugonnet et al., *Accelerated Global Glacier Mass Loss in the Early Twenty-First Century*, 592 NATURE 726, 726 (2021).

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set off cascades of transformations in other natural systems.[89] Indeed, a recent study raises the concern that overshooting the 1.5ºC goal, which is growing increasingly likely, risks triggering many of nine identified "core tipping points" in the climate system.[90]

C. Unprecedented

It is challenging enough to build infrastructure at massive scale when time is not of the essence (e.g., the Interstate Highway system). And it is challenging enough to build infrastructure quickly when scale is not as daunting (e.g., a major transportation bridge). The United States has a long history of doing both.[91] Apart from the national effort to move to a war footing after Pearl Harbor,[92] however, the Nation has no precedent for building infrastructure at the scale *and* timeframe needed to meet the its decarbonization goals. The sobering reality is that if we attempt to meet those goals using the prevailing federal, state, and local regulatory processes for infrastructure project impact assessment and siting approval, it will not happen.

This is the theme and conclusion of a follow-up study to *Net-Zero America* that merges the scale and timeline needs and asks: how do we do that? In *From Ambition to Reality*, energy infrastructure consulting firm Worley and Princeton University's Andlinger Center for Energy and the Environment considered how energy infrastructure is planned, financed, approved, and built under conventional business as usual and concluded:

> If we develop energy infrastructure the way we always have, we won't get to net zero by 2050. We might not even get halfway. . . . To achieve this ambition, our energy systems need to be transformed. We'll need

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[89] *See* Will Steffen et al., *Trajectories of the Earth System in the Anthropocene*, 115 PNAS 8252, 8253–54 (2018).

[90] David I. Armstrong McKay et al., *Exceeding 1.5°C Global Warming Could Trigger Multiple Climate Tipping Points*, 377 SCIENCE 1171 (2022). In addition to ice sheet and glacier losses, examples of positive feedback loops that appear to be underway already include wildfire and methane release. *See* Eric Post & Michelle C. Mack, *Arctic Wildfires at a Warming Threshold*, 378 SCIENCE 470 (2022) (describing a positive feedback loop as wildfires burn arctic peat releasing CO_2, causing more warming and worse fire regimes); Jeff Tollefson, *Scientists Raise Alarm Over 'Dangerously Fast' Growth in Atmospheric Methane*, NATURE (Feb. 8, 2022), https://www.nature.com/articles/d41586-022-00312-2 (expressing concern that atmospheric methane is causing the earth to warm, in turn causing more methane to be released into the atmosphere).

[91] *See, e.g.*, TOM LEWIS, DIVIDED HIGHWAYS: BUILDING THE INTERSTATE HIGHWAYS, TRANSFORMING AMERICAN LIFE (2013) (detailing the development of the highway system in the United States and other infrastructure projects).

[92] *See* VAN RENSSELAER SILL, AMERICAN MIRACLE: THE STORY OF WAR CONSTRUCTION AROUND THE WORLD 16–19 (1st ed. 1947) (discussing the speed of construction after Pearl Harbor).

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> vast amounts of new infrastructure: from grids and wind farms, to nuclear power plants and facilities for sequestering carbon. And all these projects take years – or decades. Which is time we don't have. To decarbonize the world and meet the mid-century net-zero challenge we need to reinvent the way we deliver energy infrastructure.[93]

The core theme of their study is that building and putting climate infrastructure into operation in time to meet national goals will require a new way of thinking about infrastructure delivery, moving from delivering on an incremental parts basis (a solar array here, a new transmission line there) to planning and building climate infrastructure as a coordinated, modular, national system.[94] As they put it, governments and industry must "consider all the different threads in supply-side energy, untangling them from their current formation, and braiding them into a coherent pathway towards net zero."[95] This system-wide thinking approach is all the more necessary given how interconnected the different components are, requiring simultaneous and coordinated delivery and connection.[96]

To be sure, *From Ambition to Reality* evaluates more than the time frames imposed by the conventional regulatory approval stage of infrastructure delivery—the report holistically assesses infrastructure delivery from beginning to end—but regulatory constraints factored significantly into their conclusion as one of the "threads" that needs "braiding."[97] In short, one of the changes in infrastructure delivery they identified as needed to meet the goals is to "accelerate approval and regulatory processes."[98] But the study also recognizes the inherent challenge of doing so—that "[w]e need to ensure that the rigor and quality of the regulatory processes stay high, as the pace and complexity of projects increase."[99] Beyond that call for carefully designed reform, however, *From Ambition to Reality* makes no specific or even general proposals. Nor does it unpack what it is about the conventional regulatory processes that presents the challenge, beyond that they take too long.

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93 WORLEY, *supra* note 53, at 7.
94 *See id.* at 10–37.
95 *Id.* at 20.
96 *See id.* at 39 (illustrating the "jigsaw" of components that must be coordinated to achieve net zero).
97 *See id.* at 8, 20.
98 *Id.* at 21.
99 *Id.*

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II. THE GRAND BARGAIN OF ENVIRONMENTAL LAW: ORIGINS, EVOLUTION, AND THE INFRASTRUCTURE WARS

This Article focuses on accelerating the approval and regulatory processes for climate infrastructure while also maintaining their rigor and quality in achieving the goals they are designed to achieve—e.g., environmental protection, public input, and just social outcomes. This will require a law and policy transformation of such magnitude as to have only one modern precedent. Ironically, that precedent is found in the very making of the modern environmental law and policy regime that now requires transformation. We turn in Part II to the origins and evolution of that regime and in Part III to the constraints it is imposing on climate infrastructure delivery.

A. The Modern Era Begins

The 1970s is often referred to as the start of the "Modern Era" of environmental law.[100] In just over a decade, the confluence of bipartisanship in Congress and deep concern over the state of the environment led to enactment of all our major environmental statutes—the National Environmental Policy Act in 1969, the Clean Water Act in 1972, the Endangered Species Act in 1973, Superfund in 1980, among others.[101] These laws represented a radical break from past legislation.[102] Uniform, national standards developed by the newly-formed EPA were guided more by health and environmental concerns than by cost.[103] Procedural rights were granted for citizens to act as private attorneys general, greatly amplifying the limited enforcement capacity of the government.[104] And administrative requirements were established through

[100] Richard J. Lazarus, *The Greening of America and the Graying of United States Environmental Law: Reflections on Environmental Law's First Three Decades in the United States*, 20 VA. ENV'T L.J. 75, 76 (2001).

[101] *See generally* Christopher H. Schroeder, *Rational Choice Versus Republican Moment—Explanations for Environmental Laws, 1969-1973*, 9 DUKE ENV'T L. & POL'Y F. 29 (1998) (discussing how the strong cultural push toward environmentalism in the 1960s and 1970s made the adoption of environmental legislation a rational policy choice for political actors).

[102] *See generally*, LAZARUS, *supra* note 14.

[103] ENVIRONMENTAL POLICY: NEW DIRECTIONS FOR THE TWENTY-FIRST CENTURY 15 (Norman J. Vig et al. eds., 11th ed. 2022).

[104] Andrea Berlowe & Albert M. Ferlo, *Litigating NEPA Cases*, in THE NEPA LITIGATION GUIDE 203–05 (Albert M. Ferlo et al. eds., 2d ed. 2012).

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formal and informal consultation processes and analysis of proposed actions.[105] Similar advances also took place in some states.[106]

Previous national-scale, critical infrastructure initiatives largely predated these new environmental laws.[107] Our highways, bridges, and canals were mostly built with no environmental restrictions at all.[108] Nor was there meaningful consideration of social justice concerns.[109] That all changed quickly, as environmental groups won victory after victory enforcing the Modern Era laws.

Looking back from today's vantage, it is apparent that the package of new federal environmental laws in the 1970s represented a "Grand Bargain" of sorts. While environmental and development interests never literally sat across a table negotiating a package deal, in retrospect it's fair to say that a deal was effectively struck. In exchange for greater environmental protection, major infrastructure projects—particularly linear projects such as pipelines, transmission lines, and highways—now had to undergo an extensive and complex array of environmental assessment and permitting programs to ensure environmental protection goals were integrated into project planning, siting, and design. Infrastructure development could go forward, but under a new regime devoted to environmental protection.

The quid pro quo for a cleaner environment was that development would become slower and more expensive due both to permitting and to the litigation that often ensued.[110] In many respects, this has turned out to be a good deal. Apart from greenhouse gases, which effectively have been unregulated, every major air pollutant has decreased significantly over the past five decades, from

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105 Joseph Feller, *Public Participation Under NEPA*, in THE NEPA LITIGATION GUIDE 119–34 (Albert M. Ferlo et al. eds., 2d ed. 2012).

106 *See, e.g.*, N.Y. DEP'T ENV'T CONSERVATION, HISTORY OF DEC: HIGHLIGHTS & ENVIRONMENTAL MILESTONES, https://www.dec.ny.gov/docs/administration_pdf/dectimeline.pdf (last visited June 28, 2023) (describing environmental advances in New York); Univ. of the Pacific, McGeorge School of Law, *Environmental Review of Selected 1970 California Legislation*, 2 PAC. L.J. 406 (1971), https://scholarlycommons.pacific.edu/mlr/vol2/iss1/27 (describing similar advances in California).

107 *What is the National Environmental Policy Act?*, EPA, https://www.epa.gov/nepa/what-national-environmental-policy-act (last updated Oct. 26, 2022). NEPA, the first modern environmental statute, was passed in 1969, well after most of the nation's transportation infrastructure had been built. *Id.*

108 *See id.*

109 The start of the environmental justice movement is often set at the protests against a hazardous waste facility in Warren County, North Carolina, in 1982. *See, e.g.*, *Environmental Justice History*, U.S. DEP'T OF ENERGY, https://www.energy.gov/lm/environmental-justice-history (last visited May 9, 2023).

110 *See infra* Section II.B.

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carbon monoxide and sulfur dioxide to airborne lead and others.[111] Surface water quality has similarly improved substantially since the 1970s.[112] Other metrics for environmental health and safety also show major progress, from acid rain to recycling.[113] And all this occurred while allowing for strong economic growth, with GDP adjusted for inflation increasing five-fold.[114]

Despite these achievements, both sides of the political spectrum have criticized the Grand Bargain.[115] The legacy of highways sited through poor neighborhoods in the 1950s and 1960s provides stark evidence that underserved communities had little to no influence in infrastructure planning.[116] Consideration of distributional impacts was not part of the Modern Era environmental laws of the 1970s either. The new pollution laws focused on overall pollution reductions, not whether the burdens were equitably distributed.[117] The term "environmental justice" did not even exist until the 1980s.[118] These concerns simply were not part of the discussion when the Grand Bargain laws were passed. Since then, progressive and social justice interests have called for public participation and social justice goals as co-equal with

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[111] *See Air Quality-National Summary*, EPA (June 1, 2022), https://www.epa.gov/air-trends/air-quality-national-summary.

[112] David A. Keiser & Joseph S. Shapiro, *Consequences of the Clean Water Act and the Demand for Water Quality*, 134 Q. J. ECON. 349 (2019); Joseph S. Shapiro, *Pollution Trends and US Environmental Policy: Lessons from the Past Half Century*, 16 REV. ENV'T ECON. & POL'Y 42, 45–46 (2022).

[113] Wet sulfate deposition, an indicator for acid rain, dropped sixty-eight percent between 1989 and 2019. *Acid Rain Program Results*, EPA, https://www.epa.gov/acidrain/acid-rain-program-results (last updated Dec. 14, 2022). Recycling and composting of municipal solid waste increased from 6 percent of waste in 1960 to 32 percent in 2018. *National Overview: Facts and Figures on Materials, Wastes and Recycling*, EPA, https://www.epa.gov/facts-and-figures-about-materials-waste-and-recycling/national-overview-facts-and-figures-materials#GenerationTrends (last updated Dec. 3, 2022).

[114] *Real Gross Domestic Product*, FED. RSRV. ECON. DATA, https://fred.stlouisfed.org/series/GDPC1 (last updated Apr. 27, 2023). Inflation adjusted GDP grew from $4.94 trillion in 1970 to $19.9 trillion in 2022. *Id.* Per capita GDP adjusted for inflation likewise grew from $24,204 in 1970 to $59,756 in 2022. *Id.*

[115] *See* Richard Lazarus & Sara Zdeb, *Environmental Law & Politics*, 19 INSIGHTS L. & SOC'Y (Jan. 5, 2021), https://www.americanbar.org/groups/public_education/publications/insights-on-law-and-society/volume-19/insights-vol—19—-issue-1/environmental-law—-politics/.

[116] *See, e.g.*, Noel King, *A Brief History of How Racism Shaped Interstate Highways*, NPR (Apr. 7, 2021, 5:02 AM), https://www.npr.org/2021/04/07/984784455/a-brief-history-of-how-racism-shaped-interstate-highways; Deborah N. Archer, *White Men's Roads Through Black Men's Homes*, 73 VAND. L. REV. 1259, 1259 (2020).

[117] Renee Skelton & Vernice Miller, *The Environmental Justice Movement*, NRDC (Mar. 17, 2016), https://www.nrdc.org/stories/environmental-justice-movement.

[118] *Id.*

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environmental protection.[119] The EPA has even created a new office dedicated to environmental justice concerns.[120]

The Grand Bargain has equally come under fire from development interests calling for relief from what they regard as costly and inefficient requirements that take far too long to satisfy.[121] And even after satisfying permit requirements, developers must deal with the post-approval litigation that has become a given for large infrastructure projects.[122] Timelines and expense, they charge, have become longer with little real benefit to the environment or community.

This growing tension between equity and expense has spilled over into many contexts, including resource extraction from public lands, pollution from industrial facilities, and large-scale construction.[123] Whether intended or not at its origins, the Grand Bargain regime has evolved over time to present a formidable obstacle to infrastructure siting. To better understand what that means for climate infrastructure, the following sections provide a brief review of the infrastructure development process and sources of delay.

B. Infrastructure Permitting and Litigation Pinch Points

In his recent assessment of the challenges for climate infrastructure, law professor Michael Gerrard concluded that "in the United States many impediments stand in the way. Among them, ironically enough, are environmental laws. . . . When all the legal impediments are added up, it is difficult to imagine how the United States can build the renewables capacity needed to come even close to our temperature targets."[124] Those legal impediments, what we call pinch points, fall into two separate but related domains—regulatory approvals and post-approval litigation.

1. Regulatory Approval

Putting aside cost, politics, and a host of other obstacles, the project permitting timeline for climate infrastructure has become a serious concern.

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119 *See id.*

120 *See About the Office of Environmental Justice and External Civil Rights*, EPA, https://www.epa.gov/aboutepa/about-office-environmental-justice-and-external-civil-rights (last updated May 3, 2023) (discussing the new Office of Environmental Justice and External Civil Rights within the EPA).

121 *See infra* note 143 and accompanying text.

122 *See infra* Part II.B.

123 *See infra* Part II.B.

124 Michael B. Gerrard, *A Time for Triage*, 39 ENV'T F. 38, 38–39 (2022).

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Legal scholars began surfacing the potential problem over a decade ago and have continued since then.[125] To be clear, we are not arguing that the current permitting process is broken. Rather, we are focusing on its inability to achieve the rapidity and scale of climate infrastructure required for the net zero goal. From the *Wall Street Journal* to *Vox*, op-ed headlines from publications across the political spectrum reveal that this concern has gone mainstream and awakened a growing number of decarbonization advocates to the need for reform.[126]

The concern is not simply that climate infrastructure requires regulatory approval. Rather, it is that major projects could require multiple approvals at all governance scales, immersing the project in a web of federal, state, and local permitting regimes. Furthermore, those regulatory processes have been battle tested for decades by opponents of so-called "brown" infrastructure—e.g., oil and natural gas extraction and transmission pipelines, refineries, mining projects, highways, and electric transmission lines—over time forging a formidable weapon for slowing down and preventing infrastructure development.[127] As Part III will show, that same weapon can be wielded by interests opposed to "green" climate infrastructure projects—And let there be no mistake that such opposition is active and robust.

This regulatory approval process for large-scale infrastructure projects can and often does trigger a multi-jurisdictional network of environmental and other regulatory programs. At the federal level, siting climate infrastructure on federally owned land and waters requires some form of regulatory approval from

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[125] *See supra* note 34.

[126] Ted Nordhaus, *For a Clean-Energy Future, We Need Deregulation*, WALL ST. J. (Feb. 17, 2022, 10:00 AM) [hereinafter Nordhaus], https://www.wsj.com/articles/for-a-clean-energy-future-we-need-deregulation-11645110044; Colin Mortimer, *Manchin's Permitting Reform Effort is Dead. Biden's Climate Agenda Could Be a Casualty*, VOX (Dec. 26, 2022), https://www.vox.com/policy-and-politics/2022/12/12/23500140/permitting-reform-inflation-reduction-act-congress-manchin.

[127] *See* James W. Coleman, *Pipelines & Power-Lines: Building the Energy Transport Future*, 80 OHIO ST. L.J. 263, 279–80 (2019) (describing how the federal and state governments, environmental groups, and landowners have been the major forces behind opposition to oil pipeline proposals, and how they can have the same impact on all types of energy projects); Sam Kalen, *A Bridge to Nowhere? Our Energy Transition and the Natural Gas Pipeline Wars*, 9 MICH. J. ENV'T & ADMIN. L. 319 (2020) (chronicling pipeline litigation and disputes across country); John C. Ruple & Kayla M. Race, *Measuring the NEPA Litigation Burden: A Review of 1,499 Federal Court Cases*, 50 ENV'T L. 479, 506–08 (2020) (showing the public land management and infrastructure development and approval agencies experiencing the highest levels of litigation under the National Environmental Policy Act); David B. Spence, *Regulation and the New Politics of (Energy) Market Entry*, 95 NOTRE DAME L. REV. 327, 330 (2019) (tracking opposition to fossil fuel infrastructure).

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the resource management agency.[128] On non-federal lands, context-specific laws such as the Endangered Species Act (species and habitat) could apply and require approvals from multiple federal agencies.[129] These substantive regulatory approval requirements trigger other federal laws designed to assess impacts, such as the NEPA.[130] Public participation of some form is required under many of these substantive and impact assessment regimes.[131] Navigating the multi-approval process is daunting. For example, focusing on renewable wind and solar production facilities, Michael Gerrard describes the long list of federal substantive and impact assessment laws that potentially apply and the processes and restrictions they impose.[132] These include the National Environmental Policy Act; federal species protection laws such as the Endangered Species Act, Migratory Bird Treaty Act, the Coastal Zone Management Act, Federal Land Policy and Management Act; and the National Forest Management Act.[133] All told, over sixty federal permitting programs operate in the infrastructure approval regime.[134] And that is just the federal system—state and local approvals and impact assessments could also apply to any project, as federal preemption in this realm is the exception.[135]

By no means are we suggesting that climate infrastructure get a "green pass" from siting approval regulation. Rather, there is mounting and justified concern that meeting the scale and urgent pace of climate infrastructure is simply not feasible to accomplish through the existing multi-tier, multi-approval process. Yet, while there is growing recognition that reform should be put on the table for consideration, it has tended to focus myopically on NEPA as the root of the

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[128] *Legal Pathways for a Massive Increase in Utility-Scale Renewable Generation Capacity*, *supra* note 34, at 10594–602.

[129] *See id.* at 10609–13 (discussing permitting requirements under the Endangered Species Act).

[130] *Id.* at 10603–05.

[131] *See* Joseph Feller, *Public Participation Under NEPA*, *in* THE NEPA LITIGATION GUIDE 119–53 (Albert M. Ferlo et al. eds., 2d ed. 2012) (explaining the NEPA's public participation process).

[132] *Legal Pathways for a Massive Increase in Utility-Scale Renewable Generation Capacity*, *supra* note 34, at 10594–605, 10609–13.

[133] *Id.*

[134] *See Federal Environmental Review and Authorization Inventory*, FED. ENV'T REV. & AUTHORIZATION INVENTORY, https://www.permits.performance.gov/tools/federal-environmental-review-and-authorization-inventory (last updated Sept. 10, 2021).

[135] *Legal Pathways for a Massive Increase in Utility-Scale Renewable Generation Capacity*, *supra* note 34, at 10605–09; *see also* RADHIKA GOYAL ET AL., SABIN CTR. FOR CLIMATE CHANGE L., OPPOSITION TO RENEWABLE ENERGY FACILITIES IN THE UNITED STATES (Hillary Aidun ed., 2021) [hereinafter SABIN CENTER], https://climate.law.columbia.edu/sites/default/files/content/RELDI%20report%20updated%209.10.21.pdf.

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problem.[136] For example, the so-called Manchin reform bill debated in Congress 2022 was aimed largely at expediting the NEPA impact assessment process.[137] To be sure, the NEPA process can add time and expense to the approval process, particularly for the kind of large-scale facilities involved in decarbonization,[138] but NEPA is by no means alone in that respect. Rather, as Gerrard and others have explained in detail,[139] large-scale infrastructure siting must endure a sprawling *system* of federal, state, and local approval processes within which any one process can be the source of pinch-points and delays.

2. Post-Approval Litigation

Assuming an infrastructure project survives the regulatory approval regime and secures all the necessary federal, state, and local approvals, is by no means the green light for turning the first shovel of dirt. Most of the project approval regimes allow the unsuccessful opponents to litigate.[140] If successful, the remedy usually is to remand the decision to the agency so it can correct the errors and reissue a new approval, which in turn is subject to a new round of judicial review litigation. And even if the litigation is ultimately unsuccessful at reversing the siting approval, this ping-pong process of serial approvals and litigation can extend the timeline, sometimes substantially.[141]As with the permitting processes, opponents of fossil fuel and other "brown" infrastructure have honed litigation strategies under these laws for decades.

C. Impacts on Infrastructure

To be clear, we are neutral with respect to whether the permitting-litigation regime described above imposed too much or too little expense and delay on "brown" infrastructure in the past, or even today. The key point is that, for climate infrastructure advancing national decarbonization goals, time *is* of the essence. Unlike the infrastructure wars of the past, the climate infrastructure battle is under a time constraint. The past experience of "brown" infrastructure

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136 *See, e.g.*, MAJORITY STAFFS SENATE ENERGY & NAT. RES. COMM. & SENATE ENV'T & PUB. WORKS COMM., ENERGY INDEPENDENCE AND SECURITY ACT OF 2022 SUMMARY 1 (2022), https://www.energy.senate.gov/services/files/92E7EAA5-E7BC-48E1-8E7F-FE688AE43252.

137 *Id.*

138 *See infra* Part III.

139 *See, e.g.*, *Legal Pathways for a Massive Increase in Utility-Scale Renewable Generation Capacity*, *supra* note 34.

140 *See* Berlowe & Ferlo, *supra* note 104 (discussing litigation under NEPA).

141 *See infra* notes 158–61 and accompanying text.

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thus can inform what climate infrastructure is up against if the existing permitting-litigation regime remains in place.

As described above, environmental and land use laws have become increasingly caught between a hammer and anvil since the 1990s, between calls for greater process and inclusion to ensure social justice versus cries for fewer restrictions and more streamlined processes.[142] As a result, the trade-off between infrastructure and environmental protection goals has long been a divisive issue. For example, in 2007 the American Association of State Highway and Transportation Officials declared:

> the most intractable problem that affects the timely completion of transportation projects is related to the coordination of environmental federal requirements beginning with the 1970 environmental law [NEPA]. The association blames delays on the complex maze of individual statutes and regulations relating to air, water, parkland, historic properties, rare and endangered species, and other resources. The highway and transportation officials argue that the federal agencies' interpretations of laws are inconsistent and constantly changing.[143]

Nor is it hard to find newspaper headlines recounting horror stories about project costs and delays. A November 2021 headline from the *New York Times* paints the picture: "Years of Delays, Billions in Overruns: The Dismal History of Big Infrastructure."[144] But focusing on horror stories tells us little unless we consider the broader data. Just as studies have shown environmental quality improvements since the 1970s so, too, are there careful studies examining the cost and the time for infrastructure development.[145]

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[142] *See supra* Part II.A.

[143] Philip Mark Plotch, *What's Taking So Long? Identifying the Underlying Causes of Delays in Planning Transportation Megaprojects in the United States*, 30 J. PLAN. LITERATURE 282, 283 (2015) (citing AM. ASS'N OF STATE HIGHWAY & TRANSP. OFFS., TRANSPORTATION: INVEST IN OUR FUTURE: ACCELERATING PROJECT DELIVERY (2007)); *see also*, Philip Rossetti, *Addressing NEPA-related Infrastructure Delays*, R ST. (July 2021), https://www.rstreet.org/2021/07/07/addressing-nepa-related-infrastructure-delays/ (arguing the NEPA needs to be reformed to speed renewable infrastructure deployment).

[144] Ralph Vartabedian, *Years of Delays, Billions in Overruns: The Dismal History of Big Infrastructure*, N.Y. TIMES (Nov. 28, 2021), https://www.nytimes.com/2021/11/28/us/infrastructure-megaprojects.html.

[145] Perhaps surprisingly, there are not very many studies on this issue. Leah Brooks and Zachary Liscow argue that "lack of scholarship on infrastructure costs is likely attributable to several factors. With so many political, legal, and economic differences across countries, international comparisons are difficult. Even domestic comparisons across time and space face a bedeviling challenge due to the diversity of infrastructure investments. Further, the combination of economic, technical, historical, and legal background knowledge required to understand infrastructure spending and its potential drivers is a strong deterrent to research." Leah Brooks & Zachary Liscow, *Infrastructure Costs*, AM. ECON. J, Apr. 2023, at 1, 2 [hereinafter Brooks & Liscow].

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Research consistently shows increasing costs (inflation adjusted) of infrastructure over time.[146] The NYU Marron Institute of Urban Management, for example, studied transit infrastructure projects from more than fifty countries since the late 1990s.[147] In total, the researchers examined over 11,000 kilometers of urban rail.[148] They found transit infrastructure in New York City was twenty times more expensive per kilometer than in Seoul.[149] Moving to the national level, the United States' average cost per kilometer was almost double that of Germany, more than triple Sweden and Japan.[150] A study in the prestigious *American Economic Journal* by Brooks and Liscow examined highway interstate construction costs in the United States from the 1960s to the 1980s.[151] Controlling for a wide range of variables, the authors found that costs increased more than threefold.[152] Other studies have found that the most expensive transit projects were in the United States.[153]

Most legal scholarship concerned with infrastructure delays has focused on NEPA[154] and its requirement that environmental impact statements (EIS) be prepared for major federal actions significantly affecting the environment.[155] John C. Ruple and Kayla Race reviewed NEPA litigation in federal court from 2001 to 2013.[156] They found only 1 in 450 NEPA decisions were litigated and the rate of litigation declined over that period.[157] A study by the Council on Environmental Quality on 1,161 EIS from 2010 to 2017 found that the mean completion time for an EIS was 4.5 years, the median a shorter 3.6 years.[158] The

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146 *See, e.g.*, Eric Goldwyn et al., *About*, TRANSIT COSTS PROJECT, https://transitcosts.com/about/ (last visited May 23, 2023).

147 *Id.*

148 *Id.*

149 *Id.*

150 Marron Inst. of Urb. Mgmt., *What the Data Is Telling Us*, TRANSIT COSTS PROJECT, https://transitcosts.com/what-does-the-data-say/ (last visited May 10, 2023).

151 Brooks & Liscow, *supra* note 145.

152 *Id.*

153 Tracy Gordon & David Schleicher, *High Costs May Explain Crumbling Support for U.S. Infrastructure*, REAL CLEAR POL'Y, (Mar. 30, 2015), https://www.realclearpolicy.com/blog/2015/03/31/high_costs_may_explain_crumbling_support_for_us_infrastructure_1249.html; *see also* Jerusalem Demsas, *Why Does It Cost So Much to Build Things in America?*, VOX (June 28, 2021), https://www.vox.com/22534714/rail-roads-infrastructure-costs-america.

154 *See, e.g.*, Marron Inst. of Urb. Mgmt., *What the Data Is Telling Us*, TRANSIT COSTS PROJ., https://transitcosts.com/what-does-the-data-say/ (last visited May 10, 2023); Brooks & Liscow, *supra* note 145.

155 National Environmental Policy Act of 1969, 42 U.S.C. §§ 4331–32 (2018).

156 *See* Ruple & Race, *supra* note 127, at 483, 483 n.14.

157 *Id.* at 483, 503–04. The study defined a NEPA decision as any instance in which NEPA applied to a project, which is far greater than the number of projects requiring a full EIS. *Id.* at 505 n.149.

158 COUNCIL ON ENV'T QUALITY, ENVIRONMENTAL IMPACT STATEMENT TIMELINES (2010-2017) (Dec. 14, 2018), https://ceq.doe.gov/docs/nepa-practice/CEQ_EIS_Timelines_Report_2018-12-14.pdf.

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top quartile took more than 6 years to complete.[159] Robert L. Glicksman and David E. Adelman found that the median duration of a NEPA litigation matter during the George W. Bush Administration was under 2 years and 75% were resolved in 3.2 years.[160] Yet that means 25% of the litigation matters stretched beyond 3.2 years, and some dragged on for up to 10 years.[161]

Importantly, none of these studies examines delays caused by litigation under the full array of federal, state, and local laws.[162] Moreover, none of the NEPA studies differentiated based on project type, scale, and complexity.[163] As explained in Part I, many climate infrastructure projects will resemble large-scale "brown" infrastructure projects like electric transmission lines, pipelines, and massive land-use developments, the only difference being the energy they produce and transport.[164] Large-scale infrastructure projects like these are not the "median" proposition under NEPA or any other federal, state, or local environmental law.[165] There is good reason to expect that many climate infrastructure projects will require multiple federal permits and a NEPA environmental impact statement.[166] If litigation ensues following permit approval, it will be complex and contentious.[167] To put it another way, it is unlikely that substantial climate infrastructure projects will routinely breeze through the permitting and NEPA processes and post-approval litigation, meaning that any project could be facing ten or more years of approval process.[168]

Importantly, while studies consistently show increasing cost and length of infrastructure projects since the 1970s, by no means is this entirely due to

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159 *Id.*

160 David E. Adelman & Robert L. Glicksman, *Presidential and Judicial Politics in Environmental Litigation*, 50 ARIZ. ST. L.J. 3, 38 (2018).

161 *Id.* at 38 n.146. *See generally* Karl Geier & Sean Marciniak, *Time Periods for Approval and Disapproval*, 7 CAL. REAL EST. § 21:14 (4th ed.).

162 *See supra* notes 156–61.

163 *See supra* notes 156–61.

164 *See generally supra* Part I.

165 *See* Adelman & Glicksman, *supra* note 160, at 8.

166 *See* Ruple, *supra* note 156, at 484, 488 n.53.

167 *See* Adelman & Glicksman, *supra* note 160, at 16, 68 tbls. 4–6.

168 *See id.* A recent study of NEPA litigation for the period 2010 to 2018 found that just under two-thirds of the twenty-two solar projects requiring an EIS, and over one-third of the thirteen winds projects, faced post-approval litigation challenges. Michael Bennon & Devon Wilson, *Environmental Litigation on Large Energy and Transport Infrastructure Projects in the United States*, ENV'T L. REP. (forthcoming 2023) (manuscript at 46) (available at https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4498938).

Electronic copy available at: https://ssrn.com/abstract=4443474

environmental laws.[169] A 2011 report from the Congressional Research Office concluded that:

> [although t]he environmental review process required by the National Environmental Policy Act (NEPA) and other federal environmental laws and regulations is often cited as the main culprit for long delivery times[, a]vailable data and research[] show that environmental review is typically not the greatest source of delay in surface transportation projects. Developing a community consensus on what to do, securing the funding, and dealing with affected residents and businesses, including utilities and railroads, also contribute to the long timelines required to complete certain projects.[170]

Eric Biber has similarly observed in the context of mass transit project delays that "the issue is multi-faceted, including issues around labor, public contracting, local control and input into decisionmaking, a desire to make new projects 'perfect,' and a whole lot more than just litigation and environmental red tape."[171] A Department of Transportation survey found "the most frequent causes of project delay are lack of funding or low priority, local controversy, stakeholder and/or local opposition, insufficient political support, project complexity, and poor consultant work.[172] Depending on the context, one could add trade restrictions and transport restrictions, as well.[173] So it clearly is inaccurate to lay all of the blame for increases in infrastructure cost and delay at the feet of strong environmental laws.[174]

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169 *See, e.g.*, Eric Biber, *An Abundance Research Agenda*, LEGAL PLANET (June 7, 2022), https://legal-planet.org/2022/06/07/an-abundance-research-agenda/.

170 CONG. RSCH. SERV., R41947, ACCELERATING HIGHWAY AND TRANSIT PROJECT DELIVERY: ISSUES AND OPTIONS FOR CONGRESS (2011); *see also*, Aaron Gordon, *Why America Doesn't Build Things*, VICE, (Aug. 22, 2022), https://www.vice.com/en/article/93a39e/why-doesnt-america-build-things.

171 *See* Biber, *supra* note 169.

172 Plotch, *supra* note 143, at 284. "The 1956 Interstate Highway Act was 28 pages long, the 1998 Federal Transportation Law was 403 pages, and the 2005 law was over 1,200 pages long." *Id.* at 283.

173 *See* Ivan Penn, *Offshore Wind Farms Show What Biden's Climate Plan Is Up Against*, N.Y. TIMES (Oct. 13, 2021), https://www.nytimes.com/2021/06/07/business/energy-environment/offshore-wind-biden-climate-change.html ("There's even a century-old, politically fraught federal law, known as the Jones Act, that blocks wind farm developers from using American ports to launch foreign construction vessels . . . . The largest U.S.-built ships designed for doing offshore construction work are about 185 feet long and can lift about 500 tons, according to a Government Accountability Office report published in December. That is far too small for the giant components [needed for wind farm construction]. . . . Had the Jones Act not existed — it was enacted after World War I to ensure that the country had ships and crews to mobilize during war and emergencies — Dominion could have run European vessels out of Virginia's ports. The law is sacrosanct in Congress, and labor unions and other supporters argue that repealing it would eliminate thousands of jobs at shipyards and on boats, leaving the United States reliant on foreign companies.").

174 *See, e.g.*, Plotch, *supra* note 143, at 284.

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Just because environmental law is one of several contributing factors, however, does not mean it is unimportant. Brooks and Liscow concluded that what they term, "citizen voice," was one of the major factors increasing costs.[175] They define citizen voice as "a combination of social movements, legislation, and judicial doctrine that significantly expanded the opportunity for citizens to influence government behavior directly to reflect their concerns."[176] In essence, they argue that the increase in environmental laws and the rise of the hard look doctrine and citizen suits, coupled with the emergence of new social movements and organizations, has led to a measurable increase in the cost of infrastructure.[177] More litigation, lengthier environmental reviews, and agency actions to avoid conflict work in tandem to increase costs.[178]

III. GREEN LAWS STANDING IN THE WAY?

The cost studies cited in Part II focused primarily on highways and transit projects.[179] The length of permitting and litigation studies focused on NEPA and its application across a wide range of projects.[180] But it is not obvious that environmental law will necessarily add delay and cost when applied to *climate* infrastructure. One might expect that environmental advocates would be selective in their opposition, facilitating (or at least not opposing) projects that advance climate mitigation goals.

It turns out, however, that the strategies used to delay "brown" infrastructure are also used with great frequency against climate infrastructure, and often by the same groups.[181] And they have used them effectively, leading to concerns that the climate infrastructure approval process is simply taking too long.[182] As the Worley/Princeton *From Ambition to Reality* analysis sums up,

> [c]urrently, a large-scale energy project takes anywhere from a few years to decades to go from concept to first operation, depending on complexity, economics and location. Obtaining the land and satisfying the regulations to build – critical for the project to begin – can take

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175 Brooks & Liscow, *supra* note 145, at 3.

176 *Id.* at 3 (defining "citizen voice" along with changes in income and housing prices).

177 *See id.*

178 *Id.* at 3, 22.

179 *See supra* Part II.

180 *See supra* Part II.

181 *See Legal Pathways for a Massive Increase in Utility-Scale Renewable Generation Capacity*, *supra* note 34, at 10594.

182 *Id.*

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> many years. For nuclear infrastructure and CCS [carbon capture and storage], timelines are even longer.[183]

These potentially long timelines and uncertain outcomes not only delay projects once they are initiated, but also deter investment in new projects.[184] The following discussion supports these broad assessments, showing that the cause for concern is very real, and then steps back to put some perspective on this growing "green versus green" dilemma.

A. Illustrative Examples of Opposition to Climate Infrastructure

Having provided an overview of the potential infrastructure delays resulting from regulatory approval and post-approval litigation, we set out below brief examples of project-specific opposition to several components of renewable energy infrastructure—wind, solar, transmission lines, and minerals mining—as well as more general opposition to renewable projects through regulation and statute. Not all opposition to climate infrastructure, of course, comes from environmental groups or is even based in environmental law.[185] NIMBY, business, labor, and other interests often have their own reasons for opposing solar facilities, wind facilities, and transmission lines carrying renewable energy and, we want to make clear, there are often legitimate concerns over renewable energy projects.[186] Our goal is not to assess the merits of resistance to specific projects but, rather, demonstrate that opposition is widespread and gives no signs of going away. There is no "green pass" for renewables.

1. Wind

Commercial-scale wind power projects, which take up large areas and are highly visible, have faced significant opposition at the local level.[187] The poster child for this is the Cape Wind offshore wind power project, a wind power

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183 WORLEY, *supra* note 53, at 13.

184 *See Legal Pathways for a Massive Increase in Utility-Scale Renewable Generation Capacity*, *supra* note 34, *passim* (pointing to renewable energy projects opposed and delayed through challenges under current environmental laws).

185 *See, e.g.*, David R. Baker & Millicent Dent, *NIMBYs Shoot Down Green Projects Next Door While the Planet Burns*, BL (Sept. 17, 2019), https://www.bloomberg.com/news/features/2019-09-17/nimbys-shoot-down-green-projects-next-door-while-planet-burns.

186 Indeed, the assaults on renewable energy are so pervasive they prompted the creation of a law school pro-bono clinic to offer free legal assistance to renewable energy projects facing NIMBY opposition. *See Renewable Energy Legal Defense Initiative*, SABIN CTR. FOR CLIMATE CHANGE L., https://climate.law.columbia.edu/content/renewable-energy-legal-defense-initiative (last visited Aug. 28, 2023).

187 Baker & Dent, *supra* note 185.

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facility in Nantucket Sound with a 468 MW capacity.[188] Over the course of sixteen years, the project faced a gauntlet of challenges from affluent Cape Cod communities, Tribal groups, and other interests.[189]

Cape Wind was proposed in November 2001.[190] The Army Corps of Engineers issued a draft Environmental Impact Statement (EIS) for the project in 2008 and published a final EIS in 2009.[191] The Department of Interior approved issuance of a commercial lease for the project in 2010.[192] A number of environmental groups supported the wind farm, including the Massachusetts Audubon Society, Greenpeace, the Conservation Law Foundation, and the Union of Concerned Scientists.[193] It was opposed by a diverse range of parties, ranging from other environmental groups, fossil fuel billionaire Bill Koch, and notable Massachusetts politicians such as Ted Kennedy and Mitt Romney to the Martha's Vineyard/Duke's County Fishermen's Association and Public Employees for Environmental Responsibility among others.[194] A range of lawsuits were threatened or filed.[195] The Wampanoag Tribe of Gay Head (Aquinnah), for example, sued to stop the project's permitting for violations of NEPA, the NHPA, and the APA.[196] In January 2015, energy providers Eversource and The National Grid ended their contracts to buy power from the

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188 *See Cape Wind*, U.S. DEP'T OF INTERIOR, BUREAU OF OCEAN ENERGY MGMT. [hereinafter BUREAU OF OCEAN ENERGY MGMT.], https://www.boem.gov/renewable-energy/studies/cape-wind (last visited June 28, 2023).

189 *Legal Pathways for a Massive Increase in Utility-Scale Renewable Generation Capacity*, *supra* note 34, at 10600; *see also* BUREAU OF OCEAN ENERGY MGMT., *supra* note 189 (detailing thorough timelines of the Cape Wind saga); *Cape Wind*, WIKIPEDIA, https://en.wikipedia.org/wiki/Cape_Wind.

190 BUREAU OF OCEAN ENERGY MGMT., *supra* note 189.

191 *Id.*

192 *Id.*

193 *See Audubon Society Supports Cape Wind*, ASSOCIATED PRESS (Mar. 30, 2006), https://www.southcoasttoday.com/story/news/2006/03/30/audubon-society-supports-cape-wind/50314992007/; Amanda Little, *Activists Are Split On a Proposed Wind Project Off Cape Cod*, GRIST (Dec. 20, 2002), https://grist.org/article/griscom-windmill/.

194 David Schoetz, *Wind Farm? Not Off My Back Porch*, ABC NEWS (Mar. 30, 2007), https://abcnews.go.com/US/story?id=2995334&page=1; Philip Bump, *Mitt Romney May Have a Few Million Reasons to Oppose Wind Power*, GRIST (July 17, 2012), https://grist.org/wind-power/mitt-romney-may-have-a-few-million-reasons-to-oppose-wind-power/; *Eco-Lawsuit Advances Against Cape Wind*, PUB. EMPS. FOR ENV'T RESP. (Oct. 10, 2012), https://peer.org/eco-lawsuit-advances-against-cape-wind/.

195 *See, e.g.*, *Eco-Lawsuit Advances Against Cape Wind*, *supra* 194; Nelson Sigelman, *Island Fishermen Settle Lawsuit with Cape Wind*, MV TIMES (June 26, 2012), https://www.mvtimes.com/2012/06/26/island-fishermen-settle-lawsuit-cape-wind-11311/.

196 Bettina Washington, the Tribe's Historic Preservation Officer, stated that "Cape Wind will destroy our traditional cultural property, Horseshoe Shoal and the surrounding Nantucket Sound, where our Tribe has flourished and continues to utilize for significant cultural and spiritual ceremonies and practices." Gale Courey Toensing, *Aquinnah Wampanoag Sues Feds Over Cape Wind*, INDIAN CNTY. TODAY (July 14, 2011), https://indiancountrytoday.com/archive/aquinnah-wampanoag-sues-feds-over-cape-wind.

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proposed turbines and, in 2016, the Massachusetts Energy Facilities Siting Board declined to extend permits originally issued in 2009.[197] By the end of 2017, Cape Wind had been officially abandoned.[198]

On the other side of the country, California has also been focusing on wind infrastructure.[199] In 2021, wind power made up eleven percent of the state's total electricity usage, second only to solar for renewable energy production.[200] State policy requires utilities to "procure 50 percent of retail sales from renewable sources by 2020 and 60 percent by 2030"[201] but, despite these goals, wind projects in California have seen serious opposition in recent years.[202]

In 2007, the Kerncrest Audubon Society sued the Los Angeles Department of Water and Power over the environmental impact of the proposed Pine Tree Wind Project on migratory birds.[203] The suit claimed that the project's Environmental Impact Review did not fulfill minimum disclosure requirements under the California Environmental Quality Act, specifically a lack of studies examining threats to birds protected under the federal Migratory Bird Treaty Act.[204] A year later, the Center for Biological Diversity filed suit against Altamont Pass wind turbine owners and operators for killing federally protected bird species; the lawsuit failed to stop electricity generation at Altamont Pass.[205] In 2021, the National Audubon Society sued to challenge Alameda County's construction of a new 80 MW wind facility at Altamont Pass on the grounds that the project had undergone insufficient environmental review and would harm bird and bat populations.[206]

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197 Michelle Froese, *Lessons Learned from Cape Wind*, WINDPOWER ENG'G & DEV. (July 30, 2019), https://www.windpowerengineering.com/lessons-learned-from-cape-wind/.

198 BUREAU OF OCEAN ENERGY MGMT., *supra* note 189.

199 *See 2021 Total System Electric Generation*, CAL. ENERGY COMM'N, https://www.energy.ca.gov/data-reports/energy-almanac/california-electricity-data/2021-total-system-electric-generation (last visited Oct. 2, 2022).

200 *Id.*

201 *Wind Energy in California*, CAL. ENERGY COMM'N, https://www.energy.ca.gov/data-reports/california-power-generation-and-power-sources/wind-energy-california (last visited Aug. 26, 2023).

202 Brit T. Brown & Benjamin A. Escobar, *Wind Power: Generating Electricity and Lawsuits*, 28 ENERGY L.J. 489 (2007).

203 *Id.* at 495.

204 *Id.*

205 *Id.* at 495, 495 n.30.

206 *National Audubon Society Sues California County to Improve Bird Protections in Controversial Wind Energy Project*, AUDUBON SOC'Y (Nov. 17, 2021), https://www.audubon.org/news/national-audubon-society-sues-california-county-improve-bird-protections.

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The largest planned land-based wind farm in U.S. history, the 2,500–3,000 MW Chokecherry and Sierra Madre Wind Project located on federal land in Wyoming, was proposed in 2008 and required many federal, state, and local siting and environmental approvals and agreements along the way.[207] It will be fully completed, assuming no further delays due to litigation, in 2026—eighteen years after being proposed.[208]

2. Solar

There has been a significant increase of large solar arrays proposed but many of these are facing intense local opposition. Some of these conflicts have been featured in a series of *New York Times* articles.[209] Consider, for example, two proposed solar installations in Clark County, Kentucky.[210] The developer worked with the Clark County planning department to draft a zoning ordinance to allow solar development in agricultural zones.[211] Before the planning commission had even scheduled a meeting to vote on the proposed solar ordinance, however, over 2,000 people signed an online petition opposing commercial solar developments in Clark County.[212] The Clark Coalition, a nonprofit advocacy organization,[213] quickly formed in opposition to the solar projects and by the end of 2020 had proposed a year-long moratorium on solar development and solar ordinances.[214] Community opponents highlighted the importance of protecting Clark County's agricultural zone and soils and the potential aesthetic impact of industrial-scale solar on scenery.[215] After continued public opposition, the planning commission eventually recommended that the

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[207] Matthew Bandyk, *Largest Planned Wind Farm in US Gets Key Federal Approval*, UTILITY DIVE (Oct. 25, 2019), https://www.utilitydive.com/news/largest-planned-wind-farm-in-us-gets-key-federal-approval/565795/.

[208] *Id.*

[209] *See, e.g.*, Ellen Rosen, *As Demand for Green Energy Grows, Solar Farms Face Local Resistance*, N.Y. TIMES (Nov. 2, 2021), https://www.nytimes.com/2021/11/02/business/solar-farms-resistance.html.

[210] *Id.*

[211] Linda Blackford, *A Secretive Solar Dust-Up in Clark County Could Soon Be Coming to a County Near You*, LEXINGTON HERALD-LEADER (Aug. 26, 2020), https://www.kentucky.com/opinion/linda-blackford/article245082495.html.

[212] Fred Petke, *Thousands Sign Online Petition to Prevent Major Solar Developments in Clark*, WINCHESTER SUN (Aug. 18, 2020), https://www.winchestersun.com/2020/08/18/thousands-sign-online-petition-to-prevent-major-solar-developments-in-clark/.

[213] *Our Work*, CLARK COAL., https://www.clarkcoalition.com/our-work (last visited Oct. 17, 2022).

[214] Letter from Clark Coalition to the Community, In Re: Next Steps in Solar Determination Process (Dec. 4, 2020), https://assets.website-files.com/600f9bfb44a08a3d4fc751cd/604bd666a1b2f0acf9b001a3_Clark%20Coalition%20-%20Open%20Letter%20-%20December%204%202020.pdf.

[215] Blackford, *supra* note 211.

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Clark County Fiscal Court deny the two ordinances.[216] The court further provided that no industrial solar should be permitted in Clark County until the county planning commission addressed it in a comprehensive plan.[217]

A similar conflict has been playing out in rural New York state.[218] In 2016, renewable energy developer Hecate Energy began plans to develop Shepherd's Run Solar, a 60 MW, 500-acre solar farm in Copake, New York.[219] The company highlighted benefits to the local community, such as jobs and clean energy to meet New York State's Clean Energy Law, tax revenue, and co-located agricultural projects such as grazing, farming, and beekeeping.[220] Despite the area's liberal politics and leadership,[221] the Copake community quickly organized strong opposition to the project, creating a nonprofit organization, Sensible Solar for Rural New York.[222] As the group explained on its website:

> While Sensible Solar supports combating climate change and expanding renewable energy resources in New York, we believe the solar project as currently proposed will adversely impact Copake's natural resources, farmland, wildlife and habitats, rural viewsheds, property values, and tourism- and agriculture-dependent economy.[223]

In Alachua County in Florida, a 650-acre solar project was denied approval in a 3 to 2 vote of county commissioners despite support from the planning staff.[224] The project would have provided 75 MW of energy but was opposed by groups including the local NAACP and Sierra Club chapters.[225] The Sierra Club explained its opposition in a letter to the commissioners, stating that:

> While advancing renewable energy is essential for the sustainability of the county, the state and the nation . . . it is also essential that

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216 Rosen, *supra* note 209.

217 *Id.*

218 *Id.*

219 *Id*.

220 *About Shepherd's Run Solar Farm*, HECATE ENERGY, http://www.shepherdsrunsolar.com/about/ (last visited Aug. 26, 2023).

221 *Politics & Voting in Copake, New York*, BEST PLACES, https://www.bestplaces.net/voting/city/new_york/copake (last visited Aug. 26, 2023).

222 *The Copake Solar Project*, SENSIBLE SOLAR FOR RURAL N.Y., https://sensiblesolarny.org (last visited Aug. 26, 2023).

223 *Id.*

224 Brian Burgess, *Sierra Club Points to "Environmental Racism" to Help Block Solar Plant in Florida*, THE CAPITOLIST (Oct. 21, 2020), https://thecapitolist.com/sierra-club-points-to-environmental-racism-to-help-block-solar-plant-in-florida/.

225 *Id.*

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> communities of color, which have experienced a historic and ongoing marginalization, have meaningful and substantive opportunities to meet with project managers and with county officials to understand and influence the decisions made regarding their communities.[226]

3. Transmission Lines

Even if large-scale wind and solar facilities can be built quickly, the challenge remains to move the electricity from the generation site to distant sites where it will be used.[227] Doing so often requires the installation of transmission lines and these, too, have faced significant opposition and delays.[228] Consider, for example, the New England Clean Energy Connect (NECEC) transmission line.[229] Proposed in 2017, the NECEC project seeks to create a 145-mile transmission line to bring up to 1,200 MW of hydropower from Canada to Massachusetts by extending and upgrading an existing line through western Maine.[230] The project was developed in response to a Massachusetts request for proposals for clean energy projects to meet their Net Zero emissions goals.[231] It was estimated that the project would avoid 3.5 million metric tons of greenhouse gas emissions per year, "the equivalent of taking roughly 700,000 cars off the road every year."[232]

NECEC was approved by the Federal Energy Regulatory Commission in October 2018[233] and the Maine Public Utilities Commission granted a Certificate of Public Convenience and Necessity in May 2019.[234] Construction

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[226] *Id.*

[227] *Transmission*, SOLAR ENERGY INDUS. ASS'N, https://www.seia.org/initiatives/transmission (last visited May 20, 2023).

[228] *Id.*

[229] *About the NECEC*, NEW ENG. CLEAN ENERGY CONNECT, https://www.necleanenergyconnect.org/about-the-project (last visited May 20, 2023).

[230] Aliya Uteuova, *How New England Bungled Its Plan to Transition to Renewable Energy*, THE GUARDIAN (Dec. 29, 2021), https://www.theguardian.com/us-news/2021/dec/29/maine-renewable-energy-hydropower-new-england; Sabrina Shankman, *Maine Voters Reject Transmission Line That Would Bring Clean Energy to Mass.*, BOSTON GLOBE (Nov. 3, 2021), https://www.bostonglobe.com/2021/11/03/science/maine-voters-reject-transmission-line-that-would-bring-clean-energy-mass/.

[231] CENT. MAINE POWER, NEW ENG. CLEAN ENERGY CONNECT 7, https://www.energy.gov/oe/articles/exhibit-o-public-outreach-materials-0.

[232] William Reilly, *This Maine Power Struggle Could Portend Trouble for Energy Projects Nationwide*, WASH. POST (Oct. 6, 2021), https://www.washingtonpost.com/opinions/2021/10/06/this-maine-power-struggle-could-portend-trouble-energy-projects-nationwide/.

[233] Central Maine Power Co., Order Accepting Transmission Service Agreements,165 F.E.R.C. ¶ 61,034 (2018).

[234] Order Granting Certificate of Public Convenience and Necessity and Approving Stipulation, Docket No. 2017-00232 (Me. Pub. Utils. Comm'n 2019).

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began in January 2021.[235] By November 2021, the NECEC had spent $450 million on the $1 billion project.[236]

Undeterred, opponents to the transmission line in Maine hit upon the idea of a state referendum to "ban the construction of high impact electric transmission lines in the Upper Kennebec region" and to require the Legislature to approve retroactive and future projects, taking the decision from the relevant agencies.[237] This would effectively kill the project.[238] The Natural Resources Council of Maine and other environmental groups backed the referendum, arguing that the line "would fragment the largest contiguous temperate forest in North America."[239] Competing power companies also spent millions to block construction.[240] Despite warnings by former EPA Administrator Bill Reilly and others that resorting to a referendum would set a "terrible precedent" by making irrelevant the "gauntlet of environmental reviews" by expert agencies,[241] almost sixty percent of voters in Maine voted in favor of the referendum.[242]

In August 2022, Maine's Supreme Court struck down the referendum, holding that it would violate the Maine Constitution to retroactively shut down a project that was already being constructed with good faith reliance on a PUC Certificate.[243] It then remanded to a lower court to determine if NECEC did indeed operate in good faith.[244] This case and appeals of NECEC's federal permits are still pending.[245]

It is worth noting that Massachusetts only turned to the Maine route for the transmission lines because in 2018 the New Hampshire Site Evaluation Committee unanimously rejected the permit for the Northern Pass project, a 192-

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235 Bruce Mohl, *Maine Court Revives Mass.-Financed Hydroelectric Power Line*, COMMONWEALTH (Aug. 30, 2022), https://commonwealthmagazine.org/environment/maine-court-revives-mass-financed-hydro-electric-power-line/.

236 *Id.*

237 DEP'T OF SEC'Y OF STATE, SECRETARY BELLOWS ANNOUNCES FINAL WORDING OF REFERENDUM QUESTION (May 24, 2021), https://www.maine.gov/sos/news/2021/referendumquestionwording.html.

238 *See* ME. REV. STAT. ANN. tit. 35-A § 3132(6–C)–(6–E).

239 *CMP Corridor Proposal: A Bad Deal for Maine*, NAT. RES. COUNCIL OF ME., https://www.nrcm.org/programs/climate/proposed-cmp-transmission-line-bad-deal-maine/.

240 Benjamin Storrow, *Embattled Maine Power Line Foreshadows U.S. Climate Obstacles*, E&E NEWS (Sept. 6, 2022), https://www.eenews.net/articles/embattled-maine-power line foreshadows-u-s-climate obstacles.

241 Reilly, *supra* note 232.

242 Uteuova, *supra* note 230.

243 NECEC Transmission LLC v. Bureau of Parks & Lands, 281 A.3d 618, 637 (Me. 2022).

244 *Id.*

245 *Id.*

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mile transmission line from Quebec through New Hampshire's White Mountains to Massachusetts.[246] Environmental groups also opposed that project.[247]

Similarly effective efforts have challenged transmission lines in the Midwest.[248] According to a February 2022 Wall Street Journal article, the United States has not constructed a new transmission line in the past decade.[249]

4. Rare Earth Minerals

Assuming the wind and solar facilities are built, and transmission lines constructed to move the electricity to where it is needed, the power still needs to be used. For electric vehicles, this means storing energy in batteries that rely on key minerals such as lithium, nickel, and copper.[250] Not surprisingly, mining projects focused on these minerals are also facing opposition in permitting and litigation proceedings. The recent national assessment of lithium battery supply chain deficiencies identified as a leading challenge the "highly unpredictable timelines for securing permits and approvals in the United States relative to much of the rest of the developed world."[251] Unpredictable timelines are most pervasive for critical mineral projects. But the unpredictability of permitting and project approvals limits potential investment in projects across the lithium battery supply chain."[252]

The conflict that has garnered the most attention in this regard is the Rhyolite Ridge Lithium-Boron project in Nevada.[253] Proposed by Ioneer USA Corp., an Australian company, the Rhyolite Ridge project would take place on public land managed by the Bureau of Land Management in Esmerelda County, Nevada.[254]

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[246] Julian Spector, *New Hampshire Rejects Northern Pass Transmission Line Project*, GREENTECH MEDIA (Feb. 1, 2018) https://www.greentechmedia.com/articles/read/new-hampshire-rejects-northern-pass.

[247] *See, e.g.*, *Stopping Northern Pass*, CONSERVATION L. FOUND., https://www.clf.org/making-an-impact/stopping-northern-pass/ (last visited Aug. 26, 2023).

[248] The 102-mile Cardinal-Hickory Creek transmission line from Dubuque, Iowa to Middleton, Wisconsin has also been contentious among environmental groups and residents. Chris Hubbuch, *Cardinal-Hickory Creek: Judge Blocks Mississippi River Crossing for $492M Power Line*, WISC. STATE J. (Jan. 15, 2022), https://madison.com/news/local/environment/cardinal-hickory-creek-judge-blocks-mississippi-river-crossing-for-492m-power-line/article_761b202c-8d80-5537-9326-d029dbfb62bc.html.

[249] Nordhaus, *supra* note 126.

[250] LI-BRIDGE, *supra* note 76, at 5.

[251] *Id.* at 9.

[252] *Id.*

[253] *Rhyolite Ridge Lithium-Boron Project*, IONEER, https://rhyolite-ridge.ioneer.com/ (last visited May 20, 2023).

[254] *Id.*

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The location is believed to be one of the largest deposits of lithium and boron in North America.[255] Lithium is a key component of electric vehicle batteries, and Ioneer has already contracted with companies such as Ford Motor Company to supply lithium carbonate mined from Rhyolite Ridge for electric vehicle battery production.[256]

Unfortunately, the proposed mining area also provides habitat for the rare plant, Tiehm's buckwheat.[257] Indeed, the plant has evolved to grow in a small area precisely because there are high concentrations of lithium and boron in the soil, making this as direct a conflict between mining for key renewables materials and conservation as one could imagine.[258]

In October 2019, once Ioneer had begun exploration activities for the Rhyolite Ridge project within the wildflower's habitat, the Center for Biological Diversity submitted an emergency petition to the U.S. Fish and Wildlife Service to list Tiehm's buckwheat under the Environmental Species Act and designate its critical habitat.[259] The Center for Biological Diversity claimed that the proposed Rhyolite Ridge mine would destroy up to 90 percent of the global population.[260] A mysterious disappearance of about half of the plant's total population around Summer 2020, possibly due to rodents or vandalism, made the plant even more vulnerable.[261]

Following a series of lawsuits, in October, 2021, the FWS announced a proposed rule to list Tiehm's buckwheat under the ESA and in February 2022 they also issued a proposed rule to designate 910-acres in Nevada as critical

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[255] *Id.*

[256] Jason Hidalgo, *Ford Inks Deal to Get Lithium From Nevada's Controversial Rhyolite Ridge Mine for Its EVs*, RENO GAZETTE J. (July 21, 2022), https://www.rgj.com/story/news/money/business/2022/07/21/ford-inks-lithium-deal-nevada-rhyolite-ridge-ev-electric-vehicles/10122776002/.

[257] *Emergency Petition to the U.S. Fish and Wildlife Service to List Tiehm's Buckwheat* (Eriogonum Tiehmii) *Under the Endangered Species Act as an Endangered or Threatened Species and to Concurrently Designate Critical Habitat*, CTR FOR BIOLOGICAL DIVERSITY 5 (Oct. 7, 2019), https://www.biologicaldiversity.org/species/plants/pdfs/Tiehms-buckwheat-petition-to-FWS.pdf.

[258] *Id.* at 11.

[259] *Id. passim.*

[260] Press Release, Cts. For Biological Diversity, Legal Victory Compels Federal Government to Decide on Tiehm's Buckwheat Protections (Apr. 21, 2021), https://biologicaldiversity.org/w/news/press-releases/legal-victory-compels-federal-government-to-decide-on-tiehms-buckwheat-protections-2021-04-21/email_view/.

[261] Daniel Rothberg, *The Curious Case of a Rare Plant's Destruction Raises Further Questions About the Extinction Crisis, Climate Change and the Role of Humans*, NEV. INDEP. (Jan. 10, 2021), https://thenevadaindependent.com/article/the-curious-case-of-a-rare-plants-destruction-raises-further-questions-about-the-extinction-crisis-climate-change-and-the-role-of-humans.

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habitat.[262] Ioneer submitted a revised Plan of Operations to the Bureau of Land Management in July 2022[263] and plans to move forward with a "combination of avoidance, propagation and translocation."[264]

While the Rhyolite Ridge project has garnered the greatest media attention, significant opposition has also resulted in years of permitting and litigation delays for other mining projects that would provide key minerals for EV battery production.[265] The NorthMet project in northern Minnesota's Mesabi Iron Range, for example, is a copper, nickel, cobalt, and platinum metals had its environmental impact statement approved by the Minnesota Department of Natural Resources in 2016, but the relevant state and federal permits have been actively challenged.[266] Unlike in the Tiehm's buckwheat case, here the conflict is between mining and water quality.[267] Other conflicts are increasingly being reported in Arizona and Idaho, as well.[268]

5. All of the Above

The previous sections described opposition to specific types of climate infrastructure. Opponents to large-scale renewables are also proposing land-use regulations to impose broader obstacles.[269] For example, Columbia University's Sabin Center for Climate Change Law published a comprehensive report in 2021 detailing opposition to renewable energy facilities in the United States.[270] With separate sections for each state, the report identified 103 local policies designed

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[262] Endangered and Threatened Species: Designation of Critical Habitat for Tiehm's Buckwheat, 87 Fed. Reg. 6101 (proposed Feb. 3, 2022) (to be codified at 50 C.F.R. pt. 17).

[263] RHYOLITE RIDGE NEWSLETTER, IONEER (Aug. 2022), https://rhyolite-ridge.ioneer.com/wp-content/uploads/2022/08/RR-Quarterly-Newsletter_Q3_2022.pdf.

[264] *Ioneer Comments on Proposed Ruling to List Tiehm's Buckwheat as an Endangered Species*, IONEER (Oct. 4, 2021), https://rhyolite-ridge.ioneer.com/ioneer-comments-on-proposed-ruling-to-list-tiehms-buckwheat-as-an-endangered-species/.

[265] *See, e.g.*, *About*, POLYMET PERMITTING, https://polymet.mn.gov/about.html (last visited May 21, 2023).

[266] *Id.*

[267] Christina MacGillivray, *Northeast Minnesota's Fraught Choice: Precious Metals v. Precious Water*, MINN. REFORMER (July 7, 2022), https://minnesotareformer.com/2022/07/07/northeast-minnesotas-fraught-choice-precious-metals-v-precious-water/.

[268] *See, e.g.*, Jack Healy & Mike Baker, *As Miners Chase Clean Energy Minerals, Tribes Fear a Repeat of the Past*, N.Y. TIMES (Dec. 27, 2021), https://www.nytimes.com/2021/12/27/us/mining-clean-energy-antimony-tribes.html ("Across the American West, tribal nations are on the front lines of a new debate over how to balance the needs and costs of clean energy. . . . The choices are destined to grow more challenging as commodities like lithium, copper, cobalt, and antimony become more valuable, and critical to the nation's future."). This mine would produce antimony, a key mineral for batteries that now comes from China. *Id.* This poses conflicts between water quality and salmon runs important to the local Nez Perce tribe and minerals for EV batteries. *Id.*

[269] *See, e.g.*, Sabin Center, *supra* note 135.

[270] *Id.*

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to block, delay or restrict 165 renewable energy facilities.[271] As the authors described, "[t]hese include moratoria on wind or solar energy development; outright bans on wind or solar energy development; regulations that are so restrictive that they can act as de facto bans on wind or solar energy development; and zoning amendments that are designed to block a specific proposed project."[272]

As just one example, the state of Iowa relies on wind for the largest percentage of its energy, fifty-seven percent of the state's electricity.[273] Yet sixteen of the state's ninety-nine counties have passed ordinances that restrict wind power installations (including nine counties with moratoria).[274] Most of these were passed in the past three years.[275] As a result, analysts reported, wind development is no longer available in forty-nine to seventy-seven percent of the state.[276]

B. The Greens' Dilemma

Many of the examples described above are "green versus green conflicts," with opposition based on harm to the local environment.[277] Some of the opposition may well be "astroturf," not driven by sincere environmental interests but, rather, fossil fuel or NIMBY interests cloaking their real concerns in green respectability.[278] Nonetheless, often the green trade-offs are real. Building large solar arrays may require cutting down trees or clearing a meadow. These

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[271] *Id.* at 2.

[272] *Id.*; *see also* Steven Ferry, *Dislocating the Separation of Powers State 'Thumb' on the Biden Sustainability Initiatives & Law*, 54 ARIZ. ST. U. L. REV. 755, 800–11 (2023) (describing local zoning tools that can be used to limit siting of renewable power facilities). In 2023 the National Renewable Energy Lab identified 1800 local ordinances imposing some form of zoning restriction on wind power facilities and 800 for solar. Anthony Lopez et al., *Impact of Siting Ordinances on Land Availability for Wind and Solar Development*, NATURE ENERGY (2023), https://doi.org/10.1038/s41560-023-01319-3.

[273] CLEARPATH, HAWKEYE STATE HEADWINDS 26 (July 14, 2022), https://static.clearpath.org/2022/07/hawkeye-headwinds-report.pdf.

[274] *Id.* at 28.

[275] *Id.* at 5.

[276] *Id.* at 45.

[277] *See* Claire Burch et al., *The "Green on Green" Conflict in Wind Energy Development: A Case Study of Environmentally Conscious Individuals in Oklahoma, USA*, 12 SUSTAINABILITY 2 (2020), https://www.mdpi.com/2071-1050/12/19/8184.

[278] Molly Taft, *Republican Operatives Are Astroturfing Opposition to Solar Power*, GIZMODO (Feb. 21, 2023), https://gizmodo.com/citizens-for-responsible-solar-susan-ralston-npr-1850141936; Jim Motavalli, *The NIMBY Threat to Renewable Energy*, SIERRA CLUB (Sept. 20, 2021), https://www.sierraclub.org/sierra/2021-4-fall/feature/nimby-threat-renewable-energy.

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conflicts place environmental groups in a difficult position—hence the Greens' Dilemma.

Many of these groups were created expressly to block destructive development.[279] Few environmental groups have ever been created to operate, build, or facilitate infrastructure.[280] As political scientist Leah Stokes has observed, the environmental movement

> really excelled, especially in the Trump and Bush eras, at blocking things. Think about the big wins in climate lately: blocking the Keystone XL pipeline. Blocking development of the Arctic National Wildlife Refuge. It's often organized around saying no. A lot of people have structured their organizing and tactics and identities around blocking things. That creates conflict when you're trying to get to yes — to build the future.[281]

Columnist Ezra Klein has made similar points about environmental law more generally. As he observed,

> [t]hey're part of a broader set of checks on development that have done a lot of good over the years but are doing a lot of harm now. . . .These bills were built for an era when the issue was that the government was building too much, with too little environmental analysis. The core problem of this era is that the government is building too little, in defiance of all serious environmental analysis. This is the maddening inversion climate change imposes upon us: To conserve anything close to the climate we've had, we need to build as we've never built before, electrifying everything and constructing the green energy infrastructure to generate that electricity cleanly. [282]

Klein and Stokes are on to something. The reflex of the environmental movement toward infrastructure has historically been oppositional. Given the original conservation goals of the Sierra Club for the mountains and the Audubon Society for birds, it is not surprising that when climate change and conservation goals are in conflict these groups feel torn. As shown in the quotes from local groups in the previous section, it has become commonplace for environmental groups to explain that they favor rapid adoption of clean energy, of course, just not *this* project. In some instances, national entities have generally

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279 *See* Taft, *supra* note 258; Motavalli, *supra* note 258.

280 *See* Ezra Klein, *Government is Flailing, in Part Because Liberals Hobbled It*, N.Y. TIMES, (Mar. 13, 2022), https://www.nytimes.com/2022/03/13/opinion/berkeley-enrollment-climate-crisis.html.

281 *Id.*

282 *Id.*

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supported commercial-scale renewable energy while their local chapters oppose it.[283] Consider an article in the Sierra Club's magazine, reporting on the strength of opposition in Vermont to renewable projects: "In 2012, Vermont had at least a dozen wind projects in development . . . [t]oday, there are none."[284] To its credit, the article noted that the Vermont chapter of the Sierra Club had played a role killing some of the projects.[285]

As one frustrated observer has written, "[i]f you believe that climate change is an existential crisis, then you must be prepared to prioritize decarbonization over competing ideological objectives."[286] Yet this is not in the DNA of most environmental groups. Even if they want to adapt, it is a difficult sell to grassroots supporters and funders.

Michael Gerrard, a leading voice on this issue, has described the problem as "tradeoff denial."[287] As he describes, "[w]e have to acknowledge that we need to be in an era of triage, where we can save what we can but recognize that there are things we'll have to give up."[288] Gerrard is candid about the trade-offs. He argues that we may need "to intrude into critical habitat of an endangered species if that habitat is where we need to put our wind farms, solar arrays, transmission lines to carry the power, of the mines to extract the essential minerals" for renewables.[289] This does not mean giving up on finding better sites with less impact, but if conservation is harmed as a result of the construction, that is the challenge of triage policy. "Because if we don't make this choice, far more birds, bats, and much else will die from the ravages of climate change."[290] The same is true for mountain views and ocean landscapes. It's no surprise that environmental groups are hesitant to openly address these difficult choices.

We want to make clear again that environmental protection is a worthy policy goal, one we have pursued throughout our careers. But using this array of laws to block renewable energy, ostensibly in the interests of environmental protection, undermines the energy transition needed to abate climate change and

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283 Spence, *supra* note 127, at 382–83.

284 Motavalli, *supra* note 256.

285 *See id.*

286 Eric Levitz, *Once Again, Environmentalists Are Sabotaging Climate Progress*, N.Y. MAG. (Apr. 2, 2022), https://nymag.com/intelligencer/2022/04/environmentalists-are-sabotaging-climate-progress-again.html.

287 *A Time for Triage*, *supra* note 124, at 38.

288 *Id.* at 40.

289 *Id.*

290 *Id.*

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protect the very resources that are at stake for the long term. This irony has seemed to be lost on many of the antagonists.

IV. STREAMLINING STRATEGIES

Concerns over the delays created by compliance with and litigation over environmental laws are not recent. Both Republican and Democrat administrations have proposed so-called "streamlining" initiatives intended to speed up infrastructure development while (more or less) safeguarding the environment.[291] There have been several thoughtful reports on how to speed up infrastructure.[292] If one evaluates all these initiatives, it turns out there are just four basic tools in the streamlining toolkit—limiting coverage, centralizing decisions, establishing timelines, and increasing information. In the following discussion we describe this toolkit with brief examples. We show how the Manchin bill, the Inflation Reduction Act, relied on the very same tools to accelerate infrastructure permitting.

A. The Streamlining Toolkit

1. Limiting Coverage

This strategy uses line-drawing to identify what is covered and (more important) what is not. By establishing regulatory exemptions and carve-outs, infrastructure approval is streamlined because there are reduced opportunities to object.

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[291] *See, e.g.*, Exec. Order No. 13,274, 67 Fed. Reg. 59449 § 1 (Sept. 18, 2002) ("Environmental Stewardship and Transportation Infrastructure Project Reviews" issued by President George W. Bush in September 2002 to require agencies to "expedite environmental reviews of high-priority transportation infrastructure projects"); Memorandum on Speeding Infrastructure Development Through More Efficient and Effective Permitting and Environmental Review § 1, 2011 DAILY COMP. PRES. DOC. 00601 (Aug. 31, 2011) (directing agencies to expedite high-priority infrastructure projects and improve transparency by publishing information about the permitting timeline and process online); Exec. Order No. 13,807, 82 Fed. Reg. 40463 (Aug. 15, 2017) (issued by President Trump, established the "One Federal Decision" process that places a lead agency in charge of creating a single Record of Decision of the decisions of each agency with authorization or permitting responsibility and a goal for permitting of major infrastructure projects to take no more than two years).

[292] *See, e.g.*, THE ASPEN INST., BUILDING CLEANER, FASTER (2021), https://www.aspeninstitute.org/wp-content/uploads/2021/06/Building-Cleaner-Faster-Final-Report.pdf (a consensus report by a range of experts "to address the challenges of delay, uncertainty, and cost of our current environmental review and permitting system that threatens the build out of decarbonization infrastructure"). *See generally* PHILIP K. HOWARD, TWO YEARS, NOT TEN YEARS (2015) (proposals for a "dramatic reduction of red tape so that infrastructure can be approved in two years or less").

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a. Limiting Jurisdiction

Limiting the jurisdiction determines which projects must comply with the law and go through compliance and permitting. One path is through restricting definitions. For example, the Clean Water Act (CWA) prohibits the discharge of pollutants from a point source into waters[293] unless the EPA or a state has issued a permit.[294] CWA jurisdiction, though, is limited only to "navigable waters," which the Act unhelpfully defines as "waters of the United States" (popularly described as WOTUS).[295] Projects that impact any waters not considered WOTUS are not subject to CWA requirements and, therefore, exempted from applying for a permit under the CWA.[296] Not surprisingly, this speeds up the permitting and development process for those projects.[297]

The definition of WOTUS has long been the subject of litigation, with courts offering different interpretations over time, expanding or contracting the Act's jurisdiction.[298] In 2015, the Obama Administration promulgated a rule that interpreted WOTUS more expansively.[299] The Trump Administration's Navigable Waters Protection Rule in 2020 narrowed the definition.[300] The Biden administration replaced that with a more flexible rule, relying on the pre-2015 framework.[301] The viability of that rule is unclear after the Supreme Court's recent decision narrowing the jurisdictional scope of the CWA.[302]

Limiting jurisdiction can also be spatial, restricting the area where projects can be undertaken to avoid litigation or conflict. For example, in July 2021, the Maine legislature reached a compromise with the lobster fishing industry, which

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293 33 U.S.C. § 1311(a).

294 *Id.* § 1342(a)–(b).

295 *Id.* § 1362(7).

296 *Id.*

297 Sarah A. Slack et al., *Wetlands No More? U.S. Supreme Court Limits Federal Regulation of Wetlands in Sackett v. EPA Decision*, FOLEY (May 31, 2023). https://www.foley.com/en/insights/publications/2023/05/us-supreme-court-limits-fed-regulation-wetlands.

298 *See Waters of the United States: History*, PEER PUB. EMPS. FOR ENV'T RESP. (Jan. 1, 2019), https://peer.org/wotus-history/ (detailing the history of WOTUS); Sackett v. Env't Prot. Agency, 143 S. Ct. 1322 (2023) (defining WOTUS).

299 *See* Clean Water Rule, 80 Fed. Reg. 37053 (June 29, 2015).

300 The Trump-era rule removed case-by-case "significant nexus" determinations, as well as eliminating many smaller bodies of water from inclusion, such as "ephemeral" or seasonal streams, wetlands not adjacent to other bodies of water, and groundwater. Navigable Waters Protection Rule, 84 Fed. Reg. 56626 (Oct. 22, 2019); Coral Davenport, *Trump Removes Pollution Controls on Streams and Wetlands*, N.Y. TIMES (Jan. 22, 2020), https://www.nytimes.com/2020/01/22/climate/trump-environment-water.html.

301 *See* Revised Definition of "Waters of the United States," 88 Fed. Reg. 3004, March 20, 2023.

302 *See Sackett*, 143 S. Ct.

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had opposed offshore wind development.[303] The Maine law prohibited wind projects within three nautical miles of the coast in state waters,[304] where most of the lobster harvesting occurs.[305] This compromise allowed Maine to move forward with a floating wind research array.[306] It is hoped that future wind power projects in federal waters will face less opposition from the lobster industry and a quicker pathway for future wind projects.[307]

b. Limiting Analysis

Another way to speed up infrastructure is through limiting what must be analyzed and the depth of analysis. The Trump Administration's revisions to NEPA, for example, eliminated the requirement that agencies analyze indirect and cumulative effects that are "remote in time, geographically remote, or the result of a lengthy causal chain."[308] The Trump NEPA regulations also expanded the use of "categorical exclusions," classes of actions that federal agencies or the legislature determine "normally do not have a significant effect on the human environment, and therefore do not require preparation of an environmental assessment or environmental impact statement."[309] The regulations revised the definition of categorical exclusions[310] and allowed an agency to "adopt another agency's determination that a categorical exclusion applies to a proposed action."[311] As with the procedural reforms, the goal of the changes was explicit—increased reliance on categorical exclusions by agencies would "reduce excessive paperwork" and "reduce delays."[312]

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[303] Fred Bever, *Maine Prohibits Offshore Wind Projects in State Waters*, WBUR (July 8, 2021), https://www.wbur.org/news/2021/07/08/maine-offshore-wind.

[304] *Id.*; ME. STAT. tit. 35-A, § 3405 (2021).

[305] *Governor Mills Signs Legislation Prohibiting Offshore Wind Projects in State Waters*, OFF. GOVERNOR JANET T. MILLS (July 7, 2021), https://www.maine.gov/governor/mills/news/governor-mills-signs-legislation-prohibiting-offshore-wind-projects-state-waters-2021-07-08.

[306] Kevin Miller, *New Maine Law Prohibited Offshore Wind Farms in State Waters*, PORTLAND PRESS HERALD (July 7, 2021), https://www.pressherald.com/2021/07/07/new-law-prohibits-offshore-wind-in-state-waters/.

[307] *See id.*

[308] Update to Regulations Implementing the Procedural Provisions of the National Environmental Policy Act, 85 Fed. Reg. 43304, 43343 (July 16, 2020).

[309] 40 C.F.R. § 1501.4.

[310] Update to Regulations Implementing the Procedural Provisions of the National Environmental Policy Act, 85 Fed. Reg. 43304, 43360 (July 16, 2020).

[311] *Id.* at 43370.

[312] *Id.* at 43358–59. Agencies have already created some categorical exceptions for climate infrastructure projects and could be expanded to speed up these types of projects. *See The Role of Categorical Exclusions in Achieving Net-Zero by 2050*, BIPARTISAN POL'Y CTR. (Sept. 27, 2022), https://bipartisanpolicy.org/report/categorical-exclusions/.

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2. Centralizing Decisions

Consolidating decision making authority from different agencies or levels of government can reduce the time needed to make decisions and issue permits as well as limit opportunity for challenges. This can take the form of soft centralization (improved coordination) or hard centralization (preemption).

a. Improved Coordination

NEPA regulations provide that if "more than one federal agency either (1) proposes or is involved in the same action; or (2) is involved in a group of actions directly related to each other[,]" then a single lead agency will "supervise the preparation of an environmental impact statement."[313] This can streamline the process by centralizing leadership and coordination. As described by the Advisory Council on Historical Preservation with regards to the National Historic Preservation Act, which also requires a single lead agency, this type of consolidation can result in "increased efficiency in coordinating and communicating[,] . . . less duplicative analyses and paperwork, and more clarity and consistency in reaching findings and determinations."[314]

The Infrastructure Investment and Jobs Act of 2022 requires that the lead agency create only one interagency EIS and gives the lead agency more responsibility to coordinate a faster timeline with different agencies conducting permitting processes in parallel.[315] The Biden administration created the Infrastructure Implementation Task Force to coordinate the law's roll out.[316] Composed of Cabinet and other high-level officials, the group was charged to "break down barriers and drive implementation of infrastructure investments across all levels of government to realize the President's vision of rebuilding our

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[313] 40 C.F.R. § 1501.7.

[314] *Frequently Asked Questions About Lead Federal Agencies in Section 106 Review*, ADVISORY COUNCIL ON HIST. PRES., https://www.achp.gov/digital-library-section-106-landing/frequently-asked-questions-about-lead-federal-agencies (last visited Nov. 3, 2022).

[315] 23 U.S.C. § 139; Mary Salmonsen, *One Federal Decision Will Save Time, Money in Infrastructure Permitting*, CONSTR. DIVE (Dec. 15, 2021), https://www.constructiondive.com/news/one-federal-decision-construction-save-time-money-environmental-review-infrastructure-permit/611559/; *see also* Allan Marks, *Biden Signs Infrastructure Law: Here's How It Will Streamline $1 Trillion In Spending*, FORBES (Nov. 16, 2021), https://www.forbes.com/sites/allanmarks/2021/11/16/biden-signs-infrastructure-law-money-permits—public-private-partnerships/?sh=176857303e9d.

[316] *Fact Sheet: President Biden's Executive Order Establishing Priorities and Task Force for Implementation of the Bipartisan Infrastructure Law*, WHITE HOUSE (Nov. 15, 2021), https://www.whitehouse.gov/briefing-room/statements-releases/2021/11/15/fact-sheet-president-bidens-executive-order-establishing-priorities-and-task-force-for-implementation-of-the-bipartisan-infrastructure-law/.

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nation's infrastructure and positioning the U.S. to compete and win in the 21st century."[317]

b. Preemption

Perhaps the bluntest strategy to streamline projects involves the federal government preempting state and local jurisdictions that could deny permits or impose a slow or duplicative permitting process. In the energy context, for example, Section 7(c) of the Natural Gas Act of 1938 authorizes the Federal Energy Regulatory Commission (FERC) to issue certificates of "public convenience and necessity" for "the construction or extension of any facilities . . . for the transportation in interstate commerce of natural gas," and preempts state and local governments from preventing or duplicating the regulatory standards.[318] Similarly, "a well-known impediment" to long-distance, high-voltage electric transmission lines "is that state authority over transmission 'siting' . . . can be used by opponents to stop projects that are in the national interest."[319] The Energy Policy Act of 2005 gave the Department of Energy the authority to designate National Interest Electric Transmission Corridors and the FERC the authority to preempt state authority and issue permits for electric transmission projects sited in the corridors.[320] Although the provision was narrowly construed by courts,[321] the Infrastructure Investment and Jobs Act (IIJA), also known as the Bipartisan Infrastructure Law, amended the statue to confirm that FERC can override state permit denials[322] and FERC is engaged in rulemaking to implement that authority.[323] Legal scholars have pointed to examples of federal preemption outside the energy context as models for more robust federal preemption in support of renewable energy infrastructure.[324]

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317 *Id.*

318 15 U.S.C. § 717f(c); *see* also CONG. RSCH. SERV., R45329, INTERSTATE NATURAL GAS PIPELINE SITING: FERC POLICY AND ISSUES FOR CONGRESS (June 9, 2022) (explaining and discussing current developments).

319 Avi Zevin et al., *Building a New Grid without New Legislation: A Path to Revitalizing Federal Transmission Authorities*, 48 ECOLOGY L. Q. 169, 171 (2021).

320 Energy Policy Act of 2005 § 216, 16 U.S.C. § 824p.

321 Piedmont Env't Council v. FERC, 558 F.3d 304, 314 (4th Cir. 2009).

322 Infrastructure Investment and Jobs Act, Pub L. No. 117–58, 135 Stat. 429 (2021).

323 Applications for Permits to Site Interstate Electric Transmission Facilities, 88 Fed. Reg. 2770 (Jan. 17, 2023).

324 See Jim Rossi & Thomas Hutton, *Federal Preemption and Clean Energy Floors*, 91 N.C. L. REV. 1283 (2013) (pointing to environmental laws to propose federal preemption of state renewable energy policies by establishing minimum standards or "floors"); Stokes, *supra* note 41, at 1808–12 (pointing to the Telecommunications Act of 1996, which prohibits state and local governments from enacting regulations prohibiting wireless facilities such as cell towers, but allows regulation of their siting and construction).

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Preemption can also occur at the state level.[325] An early example comes from Texas.[326] Created by the legislature in 2005, the Texas Competitive Renewable Energy Zones (CREZ) project built 3,600 miles of new high-voltage power lines within a decade to connect the wind-generating Texas Panhandle area to the state's major metropolitan areas.[327] The CREZ lines have a transmission capacity of 18.5 GW.[328] What allowed such rapid construction? The Texas electricity grid, known as ERCOT, is separate from the national grid and thus not subject to regulation by FERC.[329] The Texas CREZ lines also crossed no federal lands for which federal land management agency approval would have been required.[330] In other words, Texas was in charge. Within the state, this meant the legislature was able to put the Public Utility Commission of Texas (PUCT) in charge.[331] Acting pursuant to the CREZ legislation, the PUCT process for approval of the transmission line locations was streamlined.[332] Texas has no state equivalent to NEPA, the ESA or other laws used to block other renewable energy projects.[333]

More recently, in 2020, New York adopted state legislation revamping the process under which large-scale renewable energy facilities and associated transmission lines receive state and local approvals.[334] A key feature is to consolidate permitting authority into one state agency and preempt local exercise of permitting controls.[335]

3. Establishing Timelines

The most direct way to speed infrastructure, is to establish meaningful short timelines for assessment and approval decisions. The Trump administration's

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[325] WARREN LASHER, THE TEXAS COMPETITIVE RENEWABLE ENERGY ZONES PROCESS (Aug. 11, 2014), https://www.energy.gov/sites/prod/files/2014/08/f18/c_lasher_qer_santafe_presentation.pdf.

[326] *See id.*

[327] *Id.*

[328] *Id*.

[329] R. Ryan Staine, Note, *CREZ II, Coming Soon to a Windy Texas Plain Near You?: Encouraging the Texas Renewable Energy Industry Through Transmission Investment*, 93 TEX. L. REV. 521, 532–33 (2014).

[330] *Id*. at 533.

[331] *Id*. at 526.

[332] *Id*. at 530–31.

[333] S*ee States and Local Jurisdictions with NEPA-like Environmental Planning Requirements*, NEPA, https://ceq.doe.gov/laws-regulations/states.html (last visited Aug. 26, 2023).

[334] Michael B. Gerrard & Edward McTiernan, *New York's New Statute on Siting Renewable Energy Facilities*, 263(93) N.Y. L.J. (2020), https://scholarship.law.columbia.edu/cgi/viewcontent.cgi?article=4032&context=faculty_scholarship.

[335] *Id.*

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NEPA revisions were explicitly intended "to facilitate more efficient, effective, and timely environmental reviews," and a faster overall development and permitting schedule for projects.[336] The regulations established "presumptive time limits for EAs of one year and for EISs of two years" and "presumptive page limits for EAs of 75 pages, and for EISs of 150 pages,"[337] thus limiting the amount of analysis that can be done both temporally and physically. Similarly, the Biden administration's Department of Interior issued a directive to establish a national Renewable Energy Coordination Office and field offices to expedite renewable energy permitting on federal lands.[338]

The Fixing America's Surface Transportation Act (FAST-41) was passed in 2015 to speed up infrastructure by integrating the permitting process.[339] FAST-41 created the independent Permitting Council of sixteen members, including the Director of the Office of Management and Budget, the Chair of the Council on Environmental Quality, and representatives from the thirteen Federal agencies that are responsible for environmental reviews and permitting for covered infrastructure projects.[340] The law sets out eighteen sectors that qualify as covered, including renewable energy production and carbon capture.[341] Projects must be subject to NEPA and likely require an investment over $200 million.[342] If the project qualifies, a comprehensive permitting timetable is established with intermediate and final completion dates for action on all federal environmental reviews and authorizations.[343] Importantly, while FAST-41 does not necessarily shorten timelines, it makes delayed timelines less likely.[344]

An important related issue is remedies, the "so what?" if timelines are not met. Mandating permit approval if an agency fails to meet the deadline is

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[336] Press Release, Exec Off. of the Pres., Council on Env't Quality, CEQ Issues Final Rule to Modernize Its NEPA Regulations (July 15, 2020), https://trumpwhitehouse.archives.gov/wpcontent/uploads/2020/01/20200716Final-NEPAPress-Release.pdf.

[337] Update to the Regulations Implementing the Procedural Provisions of the National Environmental Policy Act, 85 Fed. Reg. 43326, 43352 (July 16, 2020).

[338] *See* Consolidated Appropriations Act, H.R. 133, 116th Cong. § 3102 (2021), https://www.congress.gov/116/bills/hr133/BILLS-116hr133enr.pdf.

[339] FED. PERMITTING IMPROVEMENT STEERING COUNCIL, FAST-41 FACT SHEET (Sept. 13, 2022), https://www.permits.performance.gov/sites/permits.dot.gov/files/2022-09/FPISC_090922.pdf.

[340] *Id.*

[341] *Id.*

[342] *Id.*

[343] *See id.*

[344] *See* FED. PERMITTING IMPROVEMENT STEERING COUNCIL, BASELINE PERFORMANCE SCHEDULES FOR ENVIRONMENTAL REVIEWS AND AUTHORIZATIONS 17 (2019), https://www.permits.performance.gov/sites/permits.dot.gov/files/202004/FPISCRecommendedPerformanceSchedules2020_04062020.pdf.

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forceful but seems misplaced if the agency's funding is inadequate to carry out more rapid reviews.[345]

4. Increasing Information

Greater access to information facilitates more efficient coordination. For example, as part of the FAST-41 reforms, if a project qualifies, it is placed on the Permitting Dashboard and, within 21 days of Dashboard Posting, all relevant agencies are invited to participate.[346] Within 60 days of posting, the comprehensive permitting timetable for action on all federal environmental reviews and authorizations is also posted.[347] This ensures transparency throughout the permitting process.

[345] *See, e.g.*, Christopher S. Elmendorf & Timothy G. Duncheon, *When Super-Statutes Collide: CEQA, the Housing Accountability Act, and Tectonic Change in Land Use Law*, 49 ECOLOGY L. Q. 655, 664–65 (2023) (describing how CEQA time limits have been ineffective because they are practically unenforceable). Limits on litigation remedies may even warrant a separate category. *Id.* Strategies such as bonding requirements, harmless error rules, fee shifting, and "deemed approved" requirements could all reduce the attractiveness of NIMBY litigation. *Id.*

[346] FEDERAL PERMITTING IMPROVEMENT STEERING COUNCIL, FAST-41 FACT SHEET (Sept. 13, 2022), https://www.permits.performance.gov/sites/permits.dot.gov/files/2022-09/FPISC_090922.pdf.

[347] *Id.*

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The following table summarizes the toolkit techniques and examples of how they have been used to adjust trade-offs in environmental law since the Grand Bargain was first struck:

Streamlining Tool	Application	Example
Limiting coverage[348]	Limits on jurisdiction[349] Limits on analysis[350]	Waters of the United States rule[351] Greater use of the NEPA categorical exclusions[352]
Centralizing decisions[353]	Improved coordination[354] Preemption[355]	Single lead agency for historic preservation[356] FERC preemption authority for power lines[357]
Establishing timelines[358]	Set schedules[359]	Trump NEPA revisions[360]
Increasing information[361]	Permitting Dashboard[362]	FAST-41[363]

B. The Toolkit in Practice: The Manchin Bill and Inflation Reduction Act

In a compromise to ensure Senator Joe Manchin's support of the Inflation Reduction Act, the Senate leadership agreed to let him propose his bill to speed

348 *See* Part IV.A.1.
349 *See* Part IV.A.1.a.
350 *See* Part IV.A.1.b.
351 *See supra* notes 298, 301.
352 *See supra* notes 309–13 and accompanying text.
353 *See* Part IV.A.2.
354 *See* Part IV.A.2.a.
355 *See* Part IV.A.2.b.
356 *See supra* note 314.
357 *See* Part IV.A.2.b.
358 *See* Part IV.A.3.
359 *See* Part IV.A.3.
360 *See supra* note 336.
361 *See* Part.IV.A.4.
362 *See* Part.IV.A.4.
363 *See supra* note 339–47.

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energy infrastructure development.[364] Known as the "Energy Independence and Security Act of 2022" (EISA), the bill provides an excellent review of streamlining strategies because it makes use of all the streamlining tools set out above.[365]

Limiting Coverage. The bill would enhance the use of categorical exclusions under NEPA by requiring agencies to consider identified categorical exclusions and conduct a rulemaking process to adopt any new categorical exclusions.[366]

Centralizing decisions. The bill would require federal authorizations and reviews for a project to rely on a single environmental document prepared under NEPA by a lead agency, with other participating agencies cooperating to assist preparation of the document.[367] EISA preempts all opposition to the Mountain Valley Pipeline project, a 303-mile pipeline that extends from West Virginia to Virginia and is over ninety percent complete after seven years of litigation.[368] All relevant agencies must issue the necessary permits and other authorizations for the construction of the Mountain Valley Pipeline, and these actions are not subject to judicial review.[369] The bill provided that if FERC declared a proposed "electric transmission facility" to be in the "national interest," it could then issue a construction permit for specific natural interest facilities that would remove state authority in this context.[370]

Establishing timelines. EISA would amend section 401 of the CWA to require certifying agencies to review all CWA section 401 certification requests

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364 *See Democratic News Post: Manchin Releases Comprehensive Permitting Reform Text to Be Included in Continuing Resolution*, ENERGY SEN. GOV. (Sept. 21, 2022), https://www.energy.senate.gov/2022/9/manchin-releases-comprehensive-permitting-reform-text-to-be-included-in-continuing-resolution; Alexa Beyer, *Mountain State Spotlight Explains: Why Does The Mountain Valley Pipeline Need Joe Manchin to Change The Law?*, MOUNTAIN STATE SPOTLIGHT (Aug. 15, 2022), https://mountainstatespotlight.org/2022/08/15/mountain-valley-pipeline-joe-manchin-change-the-law/.

365 MAJORITY STAFFS SENATE ENERGY & NAT. RESS. COMM. & SENATE ENV'T & PUB. WORKS COMM., ENERGY INDEPENDENCE AND SECURITY ACT OF 2022 SUMMARY 1 (2022), https://www.energy.senate.gov/services/files/92E7EAA5-E7BC-48E1-8E7F-FE688AE43252.

366 *Id.* at 4.

367 *Id.* at 2.

368 MOUNTAIN VALLEY PIPELINE PROJECT, https://www.mountainvalleypipeline.info/ (last visited Nov. 3, 2022); CONG. RSCH. SERV., IN12032, MOUNTAIN VALLEY PIPELINE: PERMITTING ISSUES 1 (2022), https://crsreports.congress.gov/product/pdf/IN/IN12032; *see also* Sarah Vogelsong, *Federal Climate Deal Could Force Completion of Mountain Valley Pipeline*, VA. MERCURY (Aug. 2, 2022), https://www.virginiamercury.com/2022/08/02/federal-climate-deal-could-force-completion-of-mountain-valley-pipeline/.

369 *See* MOUNTAIN VALLEY PIPELINE: PERMITTING ISSUES, *supra* note 368.

370 Energy Independence and Security Act, S. 3714, 117th Cong. § 22(a) (2022).

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within a year of application.[371] Agencies that fail to meet these schedules or deadlines must notify the OMB and the Secretary concerned of their failure.[372] The law also seeks to speed up litigation, stating that if a federal agency issues or denies authorization of a project, there will be a deadline of 150 days after the authorization or denial to file a claim under federal law for judicial review.[373] Similarly, if a court remands a final agency action for a project, the agency has a deadline of 180 days to act on the remand unless a longer amount of time is necessary in order to comply with an applicable law.[374]

To speed up conflict resolution, EISA requires lead and cooperating agencies to work together to identify and resolve issues that could delay the project or result in any required authorization's denial.[375] It sets a fixed timeline, requiring an issue resolution meeting within thirty days of request and delineated processes if the issue is not resolved within a further thirty days following the meeting.[376] If the issue is still not resolved within 120 days of the initial issue resolution meeting, the issue is referred to the Council on Environmental Quality (CEQ), then the President.[377]

In another novel approach, EISA would require the President in consultation with the heads of Energy, Interior, EPA, and FERC to identify twenty-five projects within ninety days of enactment and to update the list of projects every 180 days thereafter for the next ten years.[378] The projects must cost more than $250 million, with priority given to those that will significantly advance a range of objectives, including reducing energy prices, reducing greenhouse gas emissions, and advancing emerging energy technologies, among others.[379] In a clear effort to satisfy different political interests, the twenty-five projects must be representative, with four for the mining, extraction, beneficiation, or processing of critical minerals; six for energy generation or storage without use of fossil fuels; two for electric transmission projects; etc.[380] The President must direct federal agencies to prioritize environmental reviews and authorizations for designated projects, including reviews or authorizations remanded or vacated

371 *Id.* § 21(a)(3)(D)(i)(I)(cc).
372 *Id.* § 12(g)(1)(G).
373 *Id.* § 12(k)(1).
374 *Id.* § 12(k)(2)(A).
375 *Id.* § 12(h).
376 *Id.*
377 *Id.*
378 *Id.* § 13(b).
379 *Id.* § 13(c).
380 *Id.* § 13(b).

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by courts.[381] The law sets a two-year target for NEPA reviews for those projects requiring a full EIS and a one-year target for projects requiring an environmental assessment.[382] All other permits must be issued within 180 days of finishing the NEPA process. [383]

Increasing Information. EISA would require agencies to use the Permitting Dashboard to make publicly available the "status, schedule, and progress of each major project with respect to compliance with the applicable requirements of NEPA, any authorization, and any other Indian Tribe, State, or local agency authorization required for the major project," as well as to make available a list of participating agencies for each major project.[384] The section also instructs agencies to establish reporting standards as necessary to meet the requirements for information on the permitting dashboard, including project tracking and status updates.[385] The law also instructs each agency to determine NEPA categorical exclusions and publish reports summarizing the exclusions.[386]

The recent IRA focused on supporting environmental reviews.[387] With the rest of the law, it acts through funding rather than substantive changes. The IRA allocates $350 million for the Federal Permitting Improvement Steering Council, $30 million to the CEQ, and $625 million to specific federal agencies.[388] While the details differ, the common goals are to strengthen environmental reviews across departments by accelerating information sharing, eliminating bottlenecks, and speeding issuance of environmental reviews.[389]

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381 *Id.* § 13(d).
382 *Id.* § 13(d)(2).
383 *Id.*
384 *Id.* § 12(l)(1).
385 *Id.*
386 *Id.* § 12(p).
387 *See* Guidebook to IRA, *supra* note 43, at 182.
388 *See id.*
389 *See id.* Focusing exclusively on NEPA, the debt limit legislation Congress adopted in June 2023 included amendments to NEPA using these tools to streamline the process. *See* Fiscal Responsibility Act of 2023, Pub. L. No. 118, Div. C, Tit. III, §§ 321–324, 137 Stat. 10, 38–49 (June 3, 2023). Although noteworthy given NEPA has not been amended since 1982, the streamlining measures themselves closely follow the approach used in the Manchin bill. *See* Lawson E. Fite, *Debt Ceiling Agreement Aims to Speed, Simplify NEPA Review*, MARTEN L. NEWS & INSIGHTS (June 12, 2023), https://www.martenlaw.com/news-and-insights/debt-ceiling-agreement-aims-to-speed-simplify-nepa-review. The CEQ proposed regulations to implement the statutory revisions, as well as make additional procedural streamlining measures, in July 2023. *See* National Environmental Policy Act Implementing Regulations Revisions Phase 2, 88 Fed. Reg. 49924 (July 31, 2023).

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V. MAKING TRADE-OFFS EXPLICIT

In Part I, we set out the need for climate infrastructure development at a scale and timeline not seen since World War II.[390] In Part II, we described how the Modern Era of environmental law represented a restructuring of infrastructure law and policy through the Grand Bargain. Uniform national standards, citizen suits, and procedural requirements worked in tandem to strengthen environmental protections.[391] As the permitting-litigation regime grew in scope and power, however, these environmental benefits came at the cost of more expensive and slower infrastructure development.[392] Passage of the IRA has provided billions of dollars to fund infrastructure but, as Part III explained, the Grand Bargain that created modern environmental law in the 1970s is not designed to facilitate large-scale renewables infrastructure.[393] Quite the opposite. Hence the current conflicts between the old green laws and new climate infrastructure, whether wind, solar, or transmission lines, present a difficult challenge for the environmental movement to shift from its natural posture of opposing development to facilitating some types of infrastructure. Yet there is growing acknowledgement among green interests focused on decarbonization that something has to be done to make the permitting-litigation regime work faster.[394] To inform what that reform initiative might entail, Part IV set out the different tools that have been used in the past to adjust the balance between environmental protection and infrastructure needs, such as permit process streamlining, albeit often triggering intense controversy. As of this writing, such initiatives have had limited traction and remain hotly contested in Congress.[395]

Supporters of bold climate infrastructure goals thus find themselves at a crossroads. The blunt question is whether we face a similar crisis to that of wide scale pollution in 1970. If this is the case—if climate change poses an existential crisis—then it is necessary to question whether we should reassess the trade-off between speed to develop and build decarbonization infrastructure, on the one hand, versus ensuring adequate environmental protection, distributional justice, and public participation on the other.

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390 *See* Part I.

391 *See* Part II.

392 *See* Part II.B.

393 *See* Part III.

394 *See* Part III.B.

395 Jeff Turcotte, *America's Infrastructure Permitting Process Needs Certainty and Predictability*, EPSA (Mar. 27, 2023), https://epsa.org/americas-infrastructure-permitting-process-needs-certainty-and-predictability/.

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In Part V we unpack that challenge by focusing on three possible trajectories based around the Grand Bargain. One is to stick with the *status quo*—the Grand Bargain's mosaic of federal, state, and local permitting-litigation regimes—and hope for the best. At the opposite extreme, the federal government could simply take over the entire process through maximizing its power of preemption, as it has done with the so-called Border Wall. This *maximize preemption* approach could also operate at the state level, as was the case in lesser degree with the Texas CREZ and in New York's new renewables siting statute. Between those two bookends is the strategy of using the streamlining toolkit outlined in Part IV to address the most pernicious pinch points in the permitting-litigation regime at both federal and local levels without altering its fundamental structures and processes. This *tweaking* approach could range from fine-tuning to more aggressive use of the toolkit, but the end result is a system that looks much like the status quo in its structural and procedural features.

Our goal in this exercise is not to identify the single best approach—in the final analysis, each of these paths forward has significant drawbacks. Rather, the first step in charting a path forward is to make clear the trade-offs that must be managed. There are no easy choices in the triage climate world. Refusing to recognize that difficult choices must be made, however, serves us poorly. The politics may not be present for some of the more ambitious options, but politics change, sometimes quickly. And there is serious interest in Congress right now on both sides of the aisle for permitting reform.[396]

The key point is to start a serious, grounded debate in Congress, state houses, in the environmental community, and the broader public over whether the time is ripe to consider a new bargain. Put simply, how should we think about resolving the Greens' Dilemma—the problem of the Green New Deal meeting the Old Green Laws?

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[396] *See* Kellie Lumney & Stephen Lee, *Energy Permitting 'Ripe' for Bipartisan Overhaul, Lawmakers Say*, BL (Feb. 15, 2023), https://news.bloomberglaw.com/environment-and-energy/energy-permitting-ripe-for-bipartisan-overhaul-lawmakers-say. House Natural Resources Chairman Bruce Westerman (R-Ark.) said "Republicans will use the BUILDER Act, a measure introduced in the last Congress by Rep. Garret Graves (R-La.), as the 'starting point' for permitting legislation in the House." *Id.* The BUILDER Act sought to update NEPA by expediting timeframes associated with reviews. *Id.* On the other side of the aisle Rep. Scott Peters (D-Calif.), a member of the Energy and Commerce Committee who is pursuing a bipartisan solution, said Congress "need[s] something that's going to appeal to both parties." *Id.* As of February 2023, roughly twenty-five Senate offices and sixty-five House offices were discussing "tailored changes to multiple laws in addition to NEPA, including the Endangered Species Act, Marine Mammal Protection Act, Rivers and Harbors Act, and Antiquities Act." *Id.*

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The initial effort should define the relevant metrics of success in managing the evident trade-offs. If we don't know what we are aiming for, we cannot know where to aim. We propose, therefore, five different metrics of success. There may well be other relevant measures but these seem the most significant and most in potential conflict.

Climate Impact	Whether the policy meaningfully reduces emissions
Speed	Whether the policy provides for faster infrastructure development
Conservation	Whether the policy protects habitats and ecosystems
Distributional Equity	Whether the policy promotes social justice
Public Participation	Whether the policy provides for meaningful stakeholder engagement

Simply reviewing this list should make clear that no approach will perform robustly across all these measures, but that's an important point—perhaps the essential point. If we are, indeed, having to make triage decisions, then we must be clear about the inherent trade-offs. If speed and climate impact must be elevated as goals, then this framework shows that something has got to give elsewhere in the metrics. The three options covered in this section have demonstrably different outcomes.

A. Status Quo

Retaining the status quo of the current permitting-litigation regime for infrastructure development of all types, including climate infrastructure, represents the easiest strategy. Beyond inertia, it offers practical and normative benefits. First, demands for public participation and environmental justice have grown over time in reaction to the failure of the Grand Bargain to fully account for them at its inception.[397] Speeding up the process for climate infrastructure could work against those interests, as well as the very environmental protection interests that motivated the Grand Bargain. Second, as a practical matter of

[397] *See supra* notes 119–20.

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politics, once some form of special treatment for climate infrastructure is put on the table for consideration there will likely follow a rush to provide special treatment for other forms of infrastructure deemed "critical" or of "national importance." This was evident in the Manchin bill's inclusion of pipelines and other fossil fuel infrastructure in the eligible infrastructure types.[398] Third, even if the concerns regarding the status quo are accurate, other major drags on infrastructure remain.[399] The lack of adequate funding, resources, and political support prevent the system from working as swiftly as it could and from gaining more unified support.[400] It is rushing to conclusions to tinker with or scrap the status quo without also addressing those factors. Put simply, the overall costs to changing the status quo may well exceed any benefits.

We agree that these are legitimate concerns and arguments, but that they should not end the discussion. Refusal to consider trade-offs does not make them go away. The fragmented and loosely coordinated architecture of the status quo creates multiple permitting-litigation pinch points that any interest in opposition to a project can seize to slow down or kill a project, whether it be a federal agency's NEPA process, a state endangered species permit, or local restrictive siting regulation.[401] This has already become the story for many climate infrastructure projects.[402]

To be sure, increased funding and galvanized political support would help—that is almost always the case for administrative agency performance efficiency—but they must happen at all the pinch points for the system as a whole to speed up. The entire system must be aligned and all interests on board. Expecting system-wide adequate funding and near universal support places unrealistic expectations in our politics and our interest group dynamics given past practice, and even more so given the scale and pace required for climate infrastructure.

The status quo approach is clearly evident in the "if you fund it, they will build it" model of the IRA.[403] Yet a growing chorus from supporters of climate infrastructure goals from both NGOs and progressive politicians, as we saw in the editorial that started this article, are arguing that even with massive funding

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398 *See, e.g.*, *supra* note 380 and accompanying text.

399 James McBride & Anshu Siripurapu, *The State of U.S. Infrastructure*, CFR (Nov. 8, 2021), https://www.cfr.org/backgrounder/state-us-infrastructure.

400 *Id.*

401 *See supra* Part II.B.

402 *See supra* Part III.A.

403 *See supra* notes 387–89 and accompanying text.

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the trade-offs must be acknowledged and managed.[404] Drawing a line in the sand to preserve the status quo of conservation, distributional equity, and public participation standards and processes places at risk the speed of climate infrastructure, and thus the very climate impact policy goals it is designed to achieve. Hoping that pouring money at agencies will open up an overdrive gear for the system, and thus refusing to consider significant reform, risks becoming a head-in-the sand response. Thus the Greens' Dilemma—whether to support reform for speed and climate impact while giving up ground on conservation, distributional justice, and public participation.

B. Tweaking

The response to the Greens' Dilemma in most policy dialogue thus far has been the tweaking strategy.[405] This makes sense from a political economy perspective. Any tweak adjusts a known quantity of the present balance of trade-offs and the interests affected. revealing how the change adjusts the trade-offs for each affected interest. Political compromise can reach a new equilibrium. Problem solved.

Much as with the status quo approach, however, tweaking must operate across the entire permitting-litigation regime system. Speeding up the NEPA review process does not speed up the Endangered Species Act permitting process or a local jurisdiction's zoning approval process.[406] As the system-wide scale of tweaking becomes more in focus, each tweak is its own political battle. Any failed tweak leaves that pinch point in place, ready to be seized upon by project opponents. Aggregating multiple tweaks into one legislative package only complicates the trade-off politics, as was evident in the rapid demise of the Manchin bill.[407] And if tweaks start to take hold and multiply, either incrementally or in packages, interests most concerned about a single trade-off metric, such as conservation or distributive justice, may perceive the system-wide aggregate adjustment of trade-offs as unacceptable.

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[404] *See* Ruhl & Salzman, *supra* note 21.

[405] *See* Gerrard, *supra* note 34 *passim* (suggesting numerous legislative and administrative reforms aimed at specific programs); Ruhl, *supra* note 32 (suggesting targeted administrative reforms for the Endangered Species Act); Salcido, *supra* note 34 (suggesting legislative and administrative reforms based on type of renewable energy source). As described above, the failed Manchin bill was a collection of targeted reforms, aimed mostly at NEPA. *See infra* Part IV.B.

[406] Sharon Zhang, *Manchin's "Dirty" Big Oil Giveaway Defeated Again After Progressive Opposition*, TRUTHOUT (Dec. 7, 2022), https://truthout.org/articles/manchins-dirty-big-oil-giveaway-defeated-again-after-progressive-opposition/.

[407] *See* Part IV.B.

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Over the long term, these political dynamics are likely to play out in favor of adopting relatively benign tweaks portrayed as involving little trade-off adjustment or even somehow advancing all the policy interests at the same time. For example, the Biden infrastructure plan promises the administration will use "smart, coordinated infrastructure permitting to expedite federal decisions while prioritizing stakeholder engagement, community consultation, and maximizing equity, health, and environmental benefits."[408] Who can argue with that? For increasing speed, this implies the kind of tools used in the FAST-41 program—e.g., more agency coordination; more public dashboard transparency; more attention to deadlines.[409] Such fine-tunings present the least threat to conservation, distributional justice, and public participation interests.

Similarly, the Manchin bill's imposition of a 150-day statute of limitations on NEPA lawsuits, clearly not a major tweak,[410] was not a target of opposition. By contrast, the bill's proposed adjustment to the operation of state water quality certification under CWA Section 401, which defined a limited set of state decisions and a one-year timeline,[411] was vilified as "slash[ing] the states' powers under the Clean Water Act's section 401 to object to federal projects" and a prominent provision in the "most significant environmental rollback in decades."[412] This intensity of opposition suggests that similar and more aggressive tweaks, such as adding to available general permits, adjusting substantive standards, and limiting court jurisdiction, will face concerted opposition.

It thus seems implausible, if not folly, to expect the tweaking strategy to produce more than an array of minor adjustments to the status quo. Even if applied across the entire permitting-litigation regime, it is not clear how much new-found speed that injects into the system. Assuming all federal, state, and local jurisdictions engage in this fine-tuning form of tweaking, it will take years to put the provisions into place politically and then more years to process climate infrastructure through them. If we get to 2040 and are still not on target, what then? Is it too late?

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[408] *Fact Sheet: The American Jobs Plan*, WHITE HOUSE, (Mar. 31, 2021), https://www.whitehouse.gov/briefing-room/statements-releases/2021/03/31/fact-sheet-the-american-jobs-plan/.

[409] FED. PERMITTING IMPROVEMENT STEERING COUNCIL, FAST-41 FACT SHEET (Sept. 13, 2022), https://www.permits.performance.gov/sites/permits.dot.gov/files/2022-09/FPISC_090922.pdf.

[410] See Energy Independence and Security Act, S. 3714, 117th Cong. § 12(k)(1) (2022).

[411] *Id.* § 21(a)(3)(D)(i)(I)(cc).

[412] Press Release, Ctr. for Biological Diversity, Manchin Pushes Most Significant Environmental Rollback in Decades (Sept. 21, 2022), https://biologicaldiversity.org/w/news/press-releases/manchin-pushes-most-significant-environmental-rollback-in-decades-2022-09-21/.

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C. Maximum Preemption

The fragmented structure of the existing permitting-litigation regime, which disperses pinch points throughout multiple statutory programs at federal, state, and local scales, is the biggest obstacle to accelerating climate infrastructure under the status quo and tweaking approaches. To illustrate the point, when Congress has prioritized building an infrastructure project above all other concerns, the strategy has been to bypass the permitting-litigation processes entirely through preemption.

The most extreme version of this "maximum preemption" approach is the legislation authorizing the so-called Border Wall along the border with Mexico.[413] Congress in 1996 directed the Attorney General to "install additional physical barriers and roads . . . in the vicinity of the United States border to deter illegal crossings in areas of high illegal entry into the United States."[414] The Illegal Immigration Reform and Immigrant Responsibility Act of 1996 (IIRIRA) authorized the Attorney General to waive the provisions of the ESA and NEPA to the extent "necessary to ensure expeditious construction of the barriers and roads" at the border.[415] With the creation of the Department of Homeland Security and consolidation of various authorities into its jurisdiction in response to growing concern about border security, Congress in 2005 amended Section 102 of IIRIRA to grant to the Secretary of Homeland Security "authority to waive *all* legal requirements such Secretary, in such Secretary's sole discretion, determines necessary to ensure expeditious construction of the barriers and roads."[416] Note "all" in front of "legal requirements"—Congress plainly intended the REAL ID Act waiver to extend far beyond the ESA and NEPA, to authorize waiver of any federal, state, or local legislation.[417] The provision also precludes all judicial review of a waiver except for claims alleging a constitutional violation.[418] Appeals from a district court's resolution of such constitutional challenges are limited to certiorari review by the Supreme Court.[419] The waiver power has been used sweepingly. For example, Homeland Security Secretary Michael Chertoff invoked the power in 2007 to waive a long

413 *See* Illegal Immigration Reform and Immigrant Responsibility Act of 1996 (IIRIRA), Pub. L. No. 104-208, div. C, tit. I, § 102(a), 110 Stat. 3009, 3009–554 (codified as amended at 8 U.S.C. § 1103).

414 *Id.*

415 8 U.S.C. § 1103(c) (Improvement of Barriers at Border).

416 REAL ID Act of 2005, Pub. L. No. 109-13, 119 Stat. 231, 306 (codified in scattered sections of 8 U.S.C. and 49 U.S.C.) (emphasis added).

417 *See* H.R. Rep. No. 109-72 at 171 (2005).

418 REAL ID Act of 2005, Pub. L. No. 104-208, Div. C, § 102(c) (2005) (codified at 8 U.S.C. 1103 note).

419 *Id.* § 102(c)(2)(A).

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list of federal, state, and local laws to facilitate construction of fencing along the Arizona border.[420] Secretary John Kelly issued similarly broad waivers, including of all state and local laws, in 2017.[421] These and less extreme waivers have withstood judicial challenges.[422]

Thus far there have been no serious proposals to map this maximum preemption model onto climate infrastructure.[423] It takes little analysis to assess the trade-off consequences. Speed (and thus climate impact) is prioritized, while conservation, distributional equity, and public participation are severely diminished, left to the discretion of the waiver-empowered agency.[424] While it is highly unlikely Congress would move this far now or in the foreseeable future, the point is that Congress can and has exercised preemption at this extreme degree.[425] We certainly do not endorse doing so for climate infrastructure, neither do we believe preemption should be entirely precluded from consideration.

Where does this leave the Greens' Dilemma? The table below shows how each approach described above scores along the five policy goals (from empty circle for least effective to full circle for most effective). The scoring makes clear that none of the three pathways resolves the inherent tension between speeding up important climate infrastructure and retaining robust conservation, distributional equity, and public participation. Keeping the fragmented structure of the permitting-litigation regime sacrifices speed and with it climate impact.

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[420] *See* Determination Pursuant to Section 102 of the Illegal Immigration Reform and Immigrant Responsibility Act, 72 Fed. Reg. 60870 (Oct. 26, 2007).

[421] *See* Determination Pursuant to Section 102 of the Illegal Immigration Reform and Immigrant Responsibility Act 82 Fed. Reg. 35984-01 (Aug. 2, 2017). This action was mirrored the next month by Secretary Elaine Duke. *See* Determination Pursuant to Section 102 of the Illegal Immigration Reform and Immigrant Responsibility Act, 82 Fed. Reg. 42829-32 (Sept. 12, 2017).

[422] *See* Defenders of Wildlife v. Chertoff, 527 F. Supp. 2d 119, 128–29 (D.D.C. 2007), *and cert. denied* 554 U.S. 918 (2008) (upholding Secretary Chertoff's 2007 waiver for construction along the Arizona border); Save Our Heritage Org. v. Gonzales, 533 F. Supp. 2d 58, 63–64 (D.D.C. 2008) (upholding a similar use of § 102 along the San Diego border); County of El Paso v. Chertoff, No. EP-08-CA-196 FM, 2008 WL 4372693 (W.D. Tex. Aug. 29, 2008) *1, *6–7 (finding that the use of § 102 did not violate the Presentment Clause of the Constitution). *See generally* Hope M. Babcock, *"Something There Is that Doesn't Love a Wall:" A Reflection on the Constitutional Vulnerabilities of the Southwest Border Wall*, 67 LOYOLA L. REV. 13 (2021) (reviewing Border Wall waivers and litigation).

[423] Even the Manchin bill proposal for Mountain Valley Pipeline does not preempt, but rather instructs agencies to "take all necessary actions to permit the construction and operation of the Mountain Valley Pipeline and give the DC Circuit jurisdiction over any further litigation." Sen. Joe Manchin, *Energy Permitting Provisions*, https://www.manchin.senate.gov/imo/media/doc/energy_permitting_provisions.pdf?cb (last visited Aug. 26, 2023).

[424] *See supra* note 422 and accompanying text.

[425] *Id.*

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At the same time, it bypasses the regime and sacrifices all the values the Grand Bargain has evolved to hold dear.

	Speed	Climate Impact	Conservation	Distributional Equity	Public Participation
Status Quo	◌	◒	●	●	●
Tweaking	◌	◒	◒	◒	◒
Maximum Preemption	●	●	◌	◌	◌

The three approaches compared above all share the assumption that the Grand Bargain's existing permitting-litigation regime remains intact. The status quo approach fully embraces the regime; tweaking tinkers with pinch points in an attempt to make the regime more efficient; maximized preemption, exemplified by the Border Wall, simply bypasses the regime altogether. If, as we argue, none of those looks promising, what's left? We turn to that question in Part VI.

VI. BEYOND TWEAKING: A NEW GRAND BARGAIN

We argue that the best way out of the Greens' Dilemma may be to reboot the Grand Bargain of the 1970s, to strike a New Grand Bargain explicitly focused on *decarbonization.* This strategy places speed and climate impact on par with (and potentially ahead of) conservation, distributional equity, and social justice. What might that look like? No one can say because there has been almost no public debate. Why bother when the tweaks proposed in the Manchin bill were politically dead-on-arrival? [426]

But that is precisely why we *should* be discussing this seriously right now. Political dynamics change.[427] Sometimes quickly, as is happening right now with a small but growing number of leading progressive environmental voices

[426] *See* Zhang, *supra* note 406.
[427] *See supra* notes 24–29 and accompanying text.

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saying we need to find ways to build climate infrastructure faster.[428] We believe the day may not be far off when there is a broad recognition that hard choices need to be made. And when that happens, the hard thinking about paths forward needs to have already happened with ideas already on the table. Thus Part VI lays the groundwork for the structural and procedural design options that could frame a New Grand Bargain, one aimed directly and exclusively at rapid decarbonization.

As a threshold matter, we start with two assumptions. First, unlike the Grand Bargain at its origins,[429] distributional equity and public participation must be integrated in the new regime at the outset, not bolted on later through piecemeal litigation and regulatory add-ons. At the same time, there would be no point in designing a New Grand Bargain if it did not substantially speed up important climate infrastructure. Hence, our second assumption is that speed and climate impact metrics must be the primary design drivers.

We also want to stress that we wish this exercise were unnecessary. We have devoted our academic careers—including through dozens of our co-authored publications—to strengthening conservation,[430] distributional equity,[431] and public participation[432] outcomes under environmental laws. We anticipate and do not look forward to the pushback likely to come from interests whose missions we admire, charging that we have put their goals on the chopping block. But climate changes everything, including the trade-offs inherent in building climate infrastructure. As Michael Gerrard aptly puts it, there is no more time to indulge in "tradeoff denial."[433]

We emphasize that what follows is an ambitious thought exercise to spur discussion about the future of critical climate infrastructure, not the detailed text of a law intended for immediate adoption. It is intentionally provocative and proposes substantial departures from the existing system. We are short on details and welcome critiques of the general proposals. In short, our premise is to go

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428 *See supra* notes 24–29 and accompanying text.

429 *See supra* Part II..

430 *See, e.g.*, James Salzman & J.B. Ruhl, *Currencies and the Commodification of Environmental Law*, 53 STAN. L. REV. 607 (2000) (evaluating the conservation effects of habitat trading programs).

431 *See, e.g.*, J.B. Ruhl & James Salzman, *Climate Change Adaptation Meets the Law of the Horse*, 62 DUKE L.J. 975 (2013) (arguing for a federal statute to promote climate change adaptation equity).

432 *See, e.g.*, J.B. Ruhl & James Salzman, *No Net Loss? The Past, Present and Future of Wetlands Mitigation Banking*, 73 CASE WESTERN RESERVE L. REV. 411 (2022) (arguing for greater public information and participation in the federal wetlands permitting program).

433 *A Time for Triage*, *supra* note 124, at 38.

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big or go home, and we hope by going big that others will improve upon our admittedly incomplete start.

A. Prioritizing Speed and Climate Impact

Our approach envisions a powerful alternative process to speed up constructing climate infrastructure only for the most important and impactful projects. We do not seek to throw out the status quo but, rather, create a new track for the climate infrastructure projects that "move the needle" on decarbonization. We set out the basic features below using the streamlining toolkit set out in Part IV—limiting coverage, centralizing decisions, establishing timelines, and increasing information.[434]

1. Limiting Coverage

As described in Part IV, streamlining through regulatory line drawing (such as the WOTUS rule) and exclusions (such as the NEPA categorical exclusions and CWA general permits)[435] work because they define the rules for determining whether a particular activity or project is covered or not—what's in and what's out? Our proposal calls for a specialized process available only to the most significant and impactful climate infrastructure projects. To decide which projects are covered by the alternative process requires determine what counts as eligible infrastructure and which projects of these should be chosen.

In an important respect, the Nation has been here before. Following the end of the Cold War, Congress realized that many military bases were no longer necessary.[436] Deciding which to close, though, was politically fraught.[437] Congress thus designed a clever statutory program to insulate the base closure selections from political influence and criteria slippage.[438] The initial 1988 legislation proved successful and has been modified several times to integrate lessons learned.[439]

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434 *See supra* Part IV.

435 *See supra* Part IV.

436 CHRISTOPHER T. MANN, CONG. RSCH. SERV., R45705, BASE CLOSURE AND REALIGNMENT (BRAC): BACKGROUND AND INFORMATION FOR CONGRESS 1, 12 (Apr. 25, 2019) [hereinafter BRAC Report], https://crsreports.congress.gov/product/pdf/R/R45705.

437 *See id.* at 1–2.

438 *Id.*

439 *Id.* at 1–2.

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The decision-making body, the Base Realignment and Closure Commission (BRAC), is appointed by the President, in consultation with congressional leadership and the advice and consent of the Senate.

> In general, the process has required the Secretary [of Defense] to submit a list of military installations recommended for closure or realignment to an independent, bipartisan BRAC commission. After analyzing the Secretary's recommendations, the commission may accept, reject, or modify the list. Upon completing its review, the commission forwards its final findings and recommendations to the President. Upon acceptance of commission's recommendations, the President then submits them to Congress. If the President does not submit the recommendations to Congress within the timeframe required under the Base Closure Act, the BRAC process is terminated. Upon receipt of the report from the President, Congress has the opportunity to disapprove of the recommendations *in toto* through the enactment of a joint resolution.[440]

The process ensures independent review of data provided about each project submitted for consideration and decisions based on "objective and uniform criteria" for evaluating project eligibility.[441] The linchpin of the scheme is the "up or down" nature of the final decision.[442] The entire group of bases slated for closure must be accepted or rejected.[443] No adding or dropping is possible.[444] This binary feature provided political cover for impacted members of Congress to vote against the proposal while the legislation still passed.

Adapting the key features of the BRAC process, one can envision a similar process for identifying climate infrastructure projects that merit faster construction. First, the enabling legislation would identify particular classes of infrastructure, such as those described in Part I, as eligible for coverage.[445] The statute would create a commission designed similar to the BRAC[446] and specify project nomination criteria that sponsors of projects in the eligible infrastructure categories would use to seek commission selection. The projects selected through the independent commission process would be required to score highly on objective parameters such as decarbonization impact, interstate footprint, or

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440 *Id.* at 2.
441 *Id.* at 2–3.
442 *See id.* at 3.
443 *Id.*
444 *Id.*
445 *See supra* Part I.
446 *See* BRAC Report, *supra* note 436.

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production and transmission capacity, among others. Projects essential to the interconnected timing needs of decarbonization—e.g., without this transmission line those renewable energy production projects don't help—would be prioritized.

A major benefit of this approach is that it protects environmental statutes from being legislatively weakened. A number of bills have already been introduced that would make wholesale changes to environmental laws, whether the projects affected were climate-related or not.[447] Creating simpler rules for a small subset of projects is very different than many of the current efforts in Congress that seek to undermine entire statutes, whether applied to climate infrastructure or not.

Of course, the devil is in the details of the project eligibility criteria. One concern is that the coverage could become overbroad, sweeping in projects that do not contribute to both of the twin goals of increasing speed and climate impact. The Manchin bill, for example, proposed a selection process but did so as a political horse trade, requiring natural gas pipelines to be included in the projects selected for coverage.[448] Even without such overt compromises, the slightest opening, such as a broad statutory definition of "decarbonization," can be gamed post-enactment to open wider.

One significant difference between the military base closure and climate infrastructure project selection processes is that the military bases existed and were being considered for closure and repurposing, whereas the climate infrastructure projects at the commission selection stage are merely proposed for construction and can be revised based on feedback.[449] The climate infrastructure selection process is thus a sorting mechanism to determine which track a project moves forward for further siting assessment and approval—the existing regime or the new specialized regime. That necessarily limits the information available to the commission, but also allows for more information gathering and

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[447] *See, e.g.*, Press Release, Kevin Cramer, EPW Republicans Unveil Comprehensive Permitting, Environmental Review Reforms (May 4, 20023), https://www.cramer.senate.gov/news/press-releases/sen-cramer-all-epw-republicans-unveil-comprehensive-permitting-and-environmental-review-reform-legislation (describing the RESTART Act's proposed amendments to NEPA, the ESA, the Clean Water Act, cost benefit analyses, among other changes). *See also* David E. Adelman, *Permitting Reform's False Choice* (2023), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4540734 (documenting instances of wind, solar, and transmission facilities requiring NEPA EISs or ESA permits and, of those, which involved post-approval litigation, and arguing that the low numbers identified in the study do not justify broad permitting reform of those statutes).

[448] *See supra* Part III.B.

[449] *See A Time for Triage*, *supra* note 124.

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assessment after the selection process. Commission selection is therefore only the first step on a project's assessment and approval process. It is up to the other streamlining tools to make that selection meaningful towards achieving the speed and climate impact goals.

2. Centralizing Decisions

Every pinch point in the existing permitting and litigation regime provides a potential drag on project speed.[450] Adding to the complexity, the distribution of pinch points is scattered throughout an authority structure fragmented across two axes—vertical (from federal to state to local) and horizontal (departments and agencies across each governmental level).[451] An obvious means to increase speed therefore is to reduce the number of pinch points. Preemption, either by federal of state and local authority, or by state of local authority, is the most effective way to simplify the current permitting-litigation regime on the vertical axis.[452] Consolidation of authority is the most effective way on each horizontal axis.[453]

Unlike the Border Wall maximum preemption approach, which reduces the number of pinch points to zero,[454] centralization for the climate infrastructure program is not a bypass mechanism. Rather, it is an alternative that replaces the existing regime with a more limited and focused set of pinch points. The key questions are: how limited and how focused? Given that the projects selected by the commission will identify the most important set of infrastructure projects for achieving national climate change policy goals (and therefore most deserving of acceleration), we propose the default position should be in favor of robust preemption and consolidation. Again, go big or go home.

Consolidation at the federal level would require a project selected for the new specialized regime to work with one federal agency and one assessment and permitting process, period. The process would consolidate the essence of the myriad impact assessment and approval criteria scattered throughout federal agencies and statutes into a single NEPA-like assessment and single permitting

450 *See supra* Part II.B.
451 *See supra* Part II.B.
452 *See supra* Part II.B.
453 *See supra* Part II.B.
454 *See supra* notes 413–23 and accompanying text.

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standards decision. The European Union recently proposed a similar approach.[455]

Unlike the Border Wall, therefore, the process is not void of impact assessments or permitting standards; rather, it concentrates them into one pinch point.[456] The policy interests distributed through the 60-plus federal statutes currently governing infrastructure project approval[457]—habitat, species, water quality, wetlands, historic preservation, impact mitigation, and a long list of others—would be consolidated into a single statutory program replacing and preempting all other federal laws for covered projects. It would also consolidate powers such as eminent domain and enforcement.

Importantly, if the centralized federal permitting agency ultimately approves a project under the applicable standards, litigation would be centralized in one court, possibly the D.C. Circuit or a standing panel of senior federal judges. All proceedings would be based on the administrative record under a deferential standard of review (e.g., "clearly erroneous" or "gross error").[458] Appeal without stay to the Supreme Court would probably be limited to alleged constitutional violations.[459]

This is unquestionably a radical change, going beyond any existing or proposed consolidation of federal authority for climate infrastructure.[460] Yet it

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[455] *EU to Set Out One-Year Permitting Rule for Renewables; Biden Directs Staff to Speed Up Approvals*, REUTERS RENEWABLES (May 18, 2022), https://www.reutersevents.com/renewables/wind/eu-set-out-one-year-permitting-rule-renewables-biden-directs-staff-speed-approvals ("The European Union executive will propose EU countries designate areas in which renewable energy permits must be awarded within one year of application . . . . The proposed rules will require EU members to identify 'go-to areas' areas on land and sea where renewable energy would have a low environmental impact . . . . An environmental assessment would be performed for these areas as a whole, removing the need for individual projects to go through the full process. The overall permitting process within these areas 'shall not exceed one year' . . . [though] this could be extended by three months in 'extraordinary circumstances.'").

[456] *Compare supra* notes 413–23 and accompanying text, *with id.*

[457] *See Federal Environmental Review and Authorization Inventory*, PERMITTING DASHBOARD https://www.permits.performance.gov/tools/federal-environmental-review-and-authorization-inventory (last updated Sept. 10, 2021).

[458] CONG. RSCH. SERV., LSB10558, JUDICIAL REVIEW UNDER THE ADMINISTRATIVE PROCEDURE ACT (APA) 2, 4 (Dec. 8, 2020), https://www.everycrsreport.com/files/2020-12-08_LSB10558_babd79c50d2e4d559e06c1e0a31490db815f7558.pdf.

[459] While this is a proposed system, for an example of a currently existing deferential standard of review *see* Axon v. FTC, No. 21-86, __ U.S. __ (2023).

[460] Our proposal shares with the Manchin bill the approach of selecting designated projects for alternative treatment, but from there the Manchin bill's alternative was a collection of tweaks to existing statutes, whereas our proposal envisions an entirely alternative program for selected projects. *See supra* Part III.B. Danielle Stokes' proposal for a centralized federal siting agency does not include consolidation and preemption of the

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is primarily structural and need not shortcut substance or rigor. Impact assessment factors such as species, wetlands, historic sites, water quality, community, and the long list of other environmental and socio-economic factors considered in the existing regime can be consolidated into a single assessment. The same holds for permitting standards, such as necessary mitigation of impacts and safety design standards. To be sure, this envisions a resource-intensive agency charged with a daunting task, but the current fragmented systems also expend massive agency resources and imposes substantial decision-making challenges. Through agency reassignments, expertise across the wide range of impact assessment factors and permitting standards can be consolidated into the single permitting agency and substantial funding provided to fulfill its mission.

There is a danger that the consolidation of authority into a single agency increases risk of industry capture.[461] But this is mitigated by the independent commission project selection process and the limited nature of the agency's regulatory function as a project-specific assessment and permitting authority with jurisdiction over a defined set of projects at any one time.[462] A robust internal independent inspector general could monitor for ethics compliance.

Overall, if speed is a premium and climate impact its beneficiary, we believe this or a similar reconfiguration of the federal system offers the best return-on-reform investment. That leads to what to do with state and local programs. The existing regime is, once again, a hodge-podge story of different federalism structures.[463] A dual federalism approach can result in identical federal and state programs running in parallel using similar but often not identical standards and processes. Under cooperative federalism approaches, a state may obtain delegation of a federal program by operating its parallel state program according to federal criteria. Some federal programs, whether preemptive or not, require federal agencies to seek input from states to inform federal decisions, varying in terms of what effect the state input has on the federal decision. And full federal preemption applies in yet other programs.

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full range of statutes applicable to climate infrastructure, such as NEPA and the Endangered Species Act. *See* Stokes, *supra* note 41, at 1815–24.

461 *See* Matthew D. Zinn, *Policing Environmental Regulatory Enforcement: Cooperation, Capture, and Citizen Suits*, 21 STAN. ENV'T L.J. 81, 109 (2022) ("By all accounts, the first prerequisite for capture is broad discretion given to an agency by its governing statutes.").

462 *See* ADVISORY COUNCIL ON HISTORIC PRESERVATION, *supra* note 314.

463 *See* Stokes, *supra* note 41, at 1769–804 (reviewing legal scholarship assessing federalism approaches for renewable energy, as well as a detailed explanation of the current structure for energy infrastructure permitting).

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Many legal scholars have weighed in on which approach works best for national energy policy generally.[464] Their assessments, however, focus on how to realign authority generally or for entire lines of energy infrastructure, such as utility-scale wind and solar, or more.[465] We concur that the federalism concerns in this context are multi-faceted and complex.[466] Our proposed alternative permitting regime differs in three key respects. First, it applies across all types of climate infrastructure. Second, it applies only to projects in those eligible infrastructure categories the commission selects as the most important to achieving national climate policy goals. Third, it has the driving goal of accelerating the construction of those projects. The federalism approach for this program—limited in scope of projects but intensely focused on a achieving a singular goal for those projects—should be designed to best effectuate that goal.

For that purpose, the greatest acceleration effect will come from full federal preemption of state and local processes. State and local governments would not have a veto power over a project or any of its attributes—that would add pinch points. The concern is whether this unduly reduces the voice of states and local jurisdictions in the federal decision process. Many if not all of the projects selected for the new specialized regime are likely to be substantial in magnitude with significant impacts on state and local interests. It seems necessary, then, that the federal agency have some form of obligation to respond to state and local concerns. This is a key difference from the maximum preemption approach. The difficult question is how to make this process meaningful. We explore this in more detail below in section B.

3. Establishing Timelines

Timelines must be a prominent feature of any regime intended to accelerate climate infrastructure.[467] The maximum number of days at any step in the process is less relevant to our proposal than identifying the critical phases and their degrees of urgency. First, the project nomination and selection process must move swiftly. Military bases can wait out an extended selection process; proposed infrastructure processes cannot.[468] Projects could be proposed on a rolling basis and the commission could release a batch of projects at defined intervals, such as every six or nine months. It would be helpful for the

464 *See id* at 1769–804.
465 *See, e.g.*, *id.* at 1815–24.
466 *See, e.g.*, *id.* at 1815–24.
467 *See* WORLEY, *supra* note 50.
468 *Compare* BRAC Report, *supra* note 436, *with id.*

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commission to provide a relatively early indication of a project's prospects so that projects receiving an unpromising indication can begin planning to work under the existing regime.

Once selected, key work products from the agency would include the impact assessment, permitting standards review, the government and public comments and response process outlined below, and other public participation processes. All of these will require defined timelines with set extensions for unforeseen circumstances. From selection to final decision, the process should have an outer bound deadline.

Any litigation challenging the final decision must be filed in the designated court (discussed above) within a set period, and the court must similarly render a decision within a set period. Any remedy must identify the agency's error and require the agency to repair the deficiencies within a specified time period.

We recognize that a pacing like this will require the commission, agency, and court to work at speed. All three entities will require significant funding, staffing, and resources. It is not clear, however, whether it will take more funding than would be expended on the projects under the existing regime over a longer time period.

4. Increasing Information

A centralized project selection and permitting regime will work most efficiently and effectively with access to centralized sources of information collection and access.[469] Currently, though, information about the status of climate infrastructure projects is scattered and often beyond the reach of the general public.[470] Federal agencies provide certain information about infrastructure such as funded solar power projects,[471] projects on public lands,[472] and wind turbine locations;[473] while private consulting companies and trade associations maintain more comprehensive proprietary (paywalled) data

[469] *See The Federal Permitting Improvement Steering Council*, FED. INFRASTRUCTURE PROJECTS, https://www.permits.performance.gov/fpisc-content/federal-permitting-improvement-steering-council (last updated Nov. 10, 2022).

[470] *See supra* Part IV.A.4.

[471] *See* Off. Energy Efficiency & Renewable Energy, *Solar Energy Research Database*, ENERGY.GOV, https://www.energy.gov/eere/solar/solar-energy-research-database (last visited Aug. 26, 2023).

[472] *See Active Renewable Projects*, BUREAU OF LAND MGMT. (May 1, 2023), https://www.blm.gov/programs/energy-and-minerals/renewable-energy/active-renewable-projects.

[473] *See Wind Turbine Database*, U.S. GEOLOGICAL SURV., https://eerscmap.usgs.gov/uswtdb/ (last visited Aug. 26, 2023).

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bases.[474] The FAST-41 Permitting Dashboard website identifies projects under federal jurisdiction, provides general information, and includes links to the appropriate agencies for each project.[475] It is the closest the public currently has available to explore the status of climate infrastructure projects, but is project-based and covers only FAST-41 projects.[476]

In addition to its one-stop permitting feature, the advantage of our proposed selection commission and centralized federal agency for critical climate infrastructure is that it can provide a centralized source of information transparency and access. The information collected and reviewed in the commission selection process would be transparent to public and private access. Thinking ahead to the next step of designing for conservation, equity, and participation, information gathering on those factors at the project eligibility selection stage will help expedite processing the project through the subsequent assessment and permitting standard decision steps of the new regime if the project is selected. Indeed, the projects likely to present the most controversy along the conservation and equity metrics arguably are the most appropriate for the specialized regime, as they are the most likely to get bogged down in the existing permitting-litigation system.[477]

The federal permitting agency would be charged with establishing a comprehensive, publicly accessible "war room" function for tracking the status and data for every climate infrastructure project under its jurisdiction. Going further, the enabling statute could require that all federal and state agencies provide data for any climate infrastructure projects not being processed under the specialized regime. Ultimately, the objective would be to provide an accessible data base tracking and mapping *all* climate infrastructure projects subject to state or federal assessment and permitting processes. In addition to the public information benefits, this will allow the selection commission to assess the importance of projects within holistic picture of nation-wide progress on decarbonization, as well as helping the federal permitting agency to track how the projects under its jurisdiction are affecting progress on other climate infrastructure.

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474 *See Renewable Power Mart*, FIRMOGRAPHS, https://www.firmographs.com/renewable-power-mart (last visited Aug. 26, 2023); *Major Solar Projects List*, SOLAR ENERGY INDUS. ASS'N, https://www.seia.org/research-resources/major-solar-projects-list (last visited Aug. 26, 2023).

475 *See* FED. INFRASTRUCTURE PROJECTS, *supra* note 469.

476 *See* FED. INFRASTRUCTURE PROJECTS, *supra* note 469.

477 *See generally supra* Parts II.B–C.

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For each project under its jurisdiction, the federal agency would create a publicly accessible web page to serve as a repository of all relevant documents, timeline history, projected milestone dates, public comment portals, and other relevant information. The agency would maintain and update this web page on a real-time basis. The agency would also prepare a written status report and update it every three months. Importantly, the status report would also identify and link to any other project with which the project is interdependent.

Some purposes of the "war room" and project status compilations, besides providing a single source of publicly available information, are to facilitate agency decisions, interproject coordination, and state and public participation (discussed below). Given the tight timelines we anticipate above, it will be important for all these purposes that the agency design its websites for easy access and real-time updating.

B. Accounting for Conservation, Equity, and Participation

The most challenging part of the New Grand Bargain will be meaningful consideration of local conservation, equity, and participation concerns. We start from the premise of triage, that prioritizing speed and impactful climate projects will require trade-offs against other goals. To say you cannot have it all, however, does not mean completely ignoring legitimate and important interests. Coming up with credible strategies requires creative thinking. This will be particularly important for progressives who emphasize both advancing climate policy goals and protecting traditionally under-represented groups.[478] The Greens' Dilemma is also their dilemma.

One could imagine a range of approaches. For starters, we can look to the practices of public participation in infrastructure projects from other countries such as Denmark and the United Kingdom.[479] For projects with certain types of disproportionate impacts to a state or local community (e.g., public health,

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[478] *See, e.g.*, WHITE HOUSE, *supra note* 408.

[479] *See Land Use and Transport Planning in Denmark*, CTR. FOR PUB. IMPACT (Sept. 2, 2019) https://www.centreforpublicimpact.org/case-study/land-use-and-transport-denmark (discussing public participation in land use and transport planning in Denmark); *Projects Library*, SCIENCEWISE, https://sciencewise.org.uk/projects-and-impacts/project-library/ (last visited Aug. 26, 2023). The United Kingdom's Sciencewise initiative, for example, structures deliberative public dialogues to inform policy development around divisive issues such as genetic engineering, carbon net zero goals, and conservation areas, among others. *See* SCIENCEWISE, *supra*. The program started in 2004 and has supported over fifty dialogues. *See id.* The Planning Act of 2008 requires public consultation on major infrastructure projects. NATIONAL INFRASTRUCTURE PLANNING, https://infrastructure.planninginspectorate.gov.uk/application-process/the-process/ (explaining the process of the Planning Act).

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vulnerable communities, critical resources), mediation before an independent entity, such as the selection commission, could be required. There could be an obligation to avoid, minimize, and mitigate the identified impact through reasonable measures (or some other standard). The consolidated process could provide for subnational interests to identify concerns at critical junctures (e.g., project selection, assessment report, proposed permit decision). A state representative entity could serve as a centralized forum for public participation at all these stages: compiling; summarizing; and channeling comments from local governments, community and business group, and other interest groups. Direct participation can also be provided through each project's website, which would include a public comment submission portal. The selection commission could also identify localized "hot spots" of concern and require additional forms of public input, such as local hearings or web forums. One can equally identify a wide range of opportunities for stakeholders to provide input on conservation, equity, and other concerns.

The hard question is what to do about these concerns. When does an impact on a vulnerable community or culturally significant resource or an endangered species rise to the level that requires the agency to take the concern into account its permitting decision? And what must it do? Below are five guiding principles.

First—and this is obvious—conservation, equity, and similar factors like those currently included in NEPA assessments will be spelled out in the enabling legislation as part of the project assessment. The New Grand Bargain regime is not a Border Wall bypass mechanism. For the most important projects, it replaces the existing process *and* includes consideration of competing interests.

Second, there must be no third-party vetoes. The selection commission can screen out projects that raise significant concerns and do not contribute meaningfully to the climate impact goal, leaving those in the existing regime. The consolidated agency process can also require project modifications to avoid and minimize acute concerns, and can deny a permit if it becomes clear conservation and equity concerns are so severe that even the climate impact benefits of the project do not justify going forward. As described above, however, its decisions in this realm would be subject to a deferential standard of judicial review.

Third, the agency will need leeway to make substantial use of mitigation as a means of accounting for impacts. The so-called avoid-minimize-mitigate hierarchy can provide a guide for resolving conflicts, but speed of build may

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require more use of mitigation than might be the case under the existing regime when time is not of the essence.

Fourth, it will be important to bear in mind the system-wide importance of any project selected for the alternative permitting program. A trade-off analysis limited to project-specific impacts—e.g., of a major transmission line on local habitat—would not account for the benefits that project delivers to interdependent system components such as renewable power generation projects and to electrification goals for vehicles and buildings.

Lastly, this process will require creative thinking and compromise. Some interest groups will argue, fully in good faith, that a covered project does not move the needle enough to justify harm to endangered species, sacred sites, or vulnerable communities, or even that the trade-offs at the system-wide level simply aren't worth it. If other major emitter nations are not similarly reducing emissions, why should our national goals of conservation, distributional equity, and public participation pay the price for speeding up our climate infrastructure? From their vantage, they may well be right. But one thing is clear—given experience to date, we can't have it both ways. Our Nation has set ambitious climate policy goals. Trade-off denial and blaming other nations are not the paths forward to meeting them.

CONCLUSION

There will inescapably be winners and losers in the New Grand Bargain. We argue that the risks of severe climate change and exigency to decarbonize require prioritizing speed and impact—but those who will be disadvantaged by the new process will most certainly push back. Our proposal asks people to put a lot of faith in our conclusion that the status quo, even with tweaks, will fall short of meaningfully addressing the climate crisis quickly enough. It equally asks people to accept that the costs to conservation, distributional equity, and public participation under our proposed new regime are worth the benefits. Unable to know the future, how can we weigh these choices?

At least this much is known today: First, we know the stated national climate policy goals and the climate outcomes they hope to achieve. Second, we have a very good handle on the scale and urgency of climate infrastructure needed to achieve those goals. Third, we know processing that climate infrastructure initiative through the existing permitting-litigation system is an unprecedented proposition. Fourth, we know, or at least have strong reason to believe, that speeding up that system, if we choose that as a goal, is unlikely to be met at no

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cost to other goals such as conservation, distributional equity, and public participation. Lastly, and most important, we know that not achieving the climate outcomes stated in our policies risks dire economic, social, and environmental consequences.

Knowing all that, the Greens' Dilemma is a gamble: either (1) stay with the existing system in the hope that, perhaps with some tweaks along the way, it will work fast enough to meet the policy goals—in which case we will not know if it does until after it is too late, or (2) accept the trade-offs needed to move today to a system purposefully designed to work faster—in which case no one will ever know if the status quo would have worked out. Either option involves risk. Our article has set out the stakes and possible rules for a game we need to play now.[480]

[480] As a final punctuation point to our theme, shortly prior to publication of this Article, the Princeton REPEAT Project concluded that even if all the infrastructure funded in the legislation were built, we will fall short of the nation's goal of a 50% emissions reduction below 2005 levels by 2030, attaining only a thirty-seven to forty-one percent reduction. PRINCETON UNIV. ZERO LAB, CLIMATE PROGRESS AND THE 117TH CONGRESS: THE IMPACTS OF THE INFLATION REDUCTION ACT AND INFRASTRUCTURE INVESTMENT AND JOBS ACT 6 (July 2023), https://repeatproject.org/docs/REPEAT_Climate_Progress_and_the_117th_Congress.pdf (The Princeton REPEAT Project has been analyzing the climate and energy system impacts of legislation passed in the 117th Congress). The extensive analysis in the report also confirms the scale and pace assessment we present in Part I *See, e.g.*, *id*. at 13 ("To achieve the maximum emissions reduction under Current Policies, U.S. transmission capacity must expand roughly fifty percent faster through 2035 than the recent historical rate. The pace of transmission expansion under the Net-Zero Pathway exceeds the historical 1978-1999 rate and is twice as fast as the more recent 2004–2016 period."). In short, meeting the nation's emissions reduction goals will require thinking both bigger *and* faster.

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