Tomorrow's Climate Law, Today

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The prospects for domestic legislation or international treaties that would require governments, businesses, and individuals to stop emitting the greenhouse gases that cause global climate change are particularly bleak these days. Even as the United States has recently passed its most ambitious climate legislation to date in the Inflation Reduction Act and related "green industrial policy" legislation, these successes were ultimately a compromise with politicians who refused to consider more direct controls on emissions. Assuming they survive the second Trump Administration, the green subsidies and nudges contained in these laws, coupled with a groundswell of private environmental governance, will do much to put the United States on a better course to reach Paris Climate Agreement targets. But forcing emitters of greenhouse gases to internalize the costs of their emissions — politically difficult as it may be — will also be necessary to avert a climate catastrophe.

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When put to a vote, calls for these kinds of direct controls of emissions almost always yield the same, predictable answer: not today.

In this Article, I explore a potential change of approach that holds promise for surmounting these persistent political roadblocks to climate regulation and paving the way for binding limits on greenhouse gas emissions. The strategy builds on a well-known but underutilized device: sunrise lawmaking. Instead of writing laws and regulations that bind in the present, legislators using a sunrise deliberately delay the onset of any consequences for a significant period of time and, in so doing, buy political flexibility to take public-regarding action. This device holds enormous promise for dealing with climate law's inherent intertemporal public choice problem — the fact that the costs of climate action land today while the benefits are realized only far in the future, when many present-day policymakers may not even be alive. While these dynamics doom most ordinary climate regulations right out of the gate, a climate sunrise sidesteps the present-day costs of action but starts a ticking clock that will culminate in stringent decarbonization obligations and steep penalties for noncompliance at some point in the future. Moreover, although a climate sunrise could always be rescinded, the same political cushion that enables enactment would serve as a buffer to rescission until closer to the sunrise, allowing the sunrise critical time to become entrenched in politics, economics, and law.

The climate sunrise device is not only well suited to evade the political strictures that predictably stall climate regulation; it is also a useful way of structuring and properly incentivizing an industrial transition. While a climate sunrise would not formally require any mitigation action until later in time, the incentives would be to prepare for the possibility of an eventual sunrise and to not save all compliance until the last minute. Moreover, simply encoding society's expectations of a zero-emissions future would harness law's expressive powers, leading to better coordination of needed transitions. In sum, there is much that a climate sunrise would do to complement existing industrial policy strategies for decarbonization even before it formally binds. Given the constraints on more present-oriented lawmaking to address the climate crisis, policymakers would do well to turn at least some of their efforts toward defining tomorrow's climate law today.

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INTRODUCTION

Judging by much contemporary climate law scholarship, we have progressed almost all of the way through Elisabeth Kubler-Ross's five stages of grief as we have come to terms with the climate crisis.[1] Previously, there was a time of denial.[2] Denial eventually turned to anger.[3] That anger spurred some ill-fated attempts to bargain with the emerging reality that we were moving too slow.[4] We now find ourselves

[1] *See generally* ELISABETH KÜBLER-ROSS, ON DEATH AND DYING (1969) (laying out the author's canonical theory of the stages of grief). Lest there be any doubt, climate change is a crisis, even for the United States, *see generally* Allison R. Crimmins, Alexa K. Jay, Christopher W. Avery, Travis A. Dahl, Rebecca S. Dodder, Benjamin D. Hamlington, Allyza R. Lustig, Kate Marvel, Pablo A. Méndez-Lazaro, Mark S. Osler, Adam Terando, Emily Weeks & Ariela Zycherman, *The Fifth National Climate Assessment*, U.S. GLOB. CHANGE RSCH. PROGRAM (2023), https://nca2023.globalchange.gov/ [https://perma.cc/FG27-QMHP] (collecting information on the ongoing and future impacts of climate change in the United States), but especially for the poorest nations, who "are expected to bear the brunt of the impact of climate change" and will be subject to a "devastating combination of adverse impacts . . . both because of geography and low income." Kemal Dervis, *Devastating for the World's Poor: Climate Change Threatens the Development Gains Already Achieved*, U.N. CHRON. (June 1, 2007), https://www.un.org/en/chronicle/article/devastating-worlds-poor-climate-change-threatens-development-gains-already-achieved [https://perma.cc/6PEC-5V6F]; *see also* INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, CLIMATE CHANGE 2023: SYNTHESIS REPORT 62 (2023), https://www.ipcc.ch/report/ar6/syr/downloads/report/IPCC_AR6_SYR_LongerReport.pdf [https://perma.cc/DP6W-WR8G] ("Without effective mitigation and adaptation, losses and damages will continue to disproportionately affect the poorest and most vulnerable populations.").

[2] *See generally* Nathaniel Rich, *Losing Earth: The Decade We Almost Stopped Climate Change*, N.Y. TIMES MAG. (Aug. 1, 2018), https://www.nytimes.com/interactive/2018/08/01/magazine/climate-change-losing-earth.html [https://perma.cc/VJ8V-57Z2] (noting that the climate crisis was well understood early on and that "nothing stood in our way — nothing except ourselves"). Of course, climate denialism is hardly a problem of the past. By saying that there was previously a time of denial, I simply mean that it took some time for climate change to reach the mainstream and permeate its way onto policy agendas.

[3] *See* Emma Marris, *The Utility of White-Hot Rage*, ATLANTIC (Jan. 25, 2022), https://www.theatlantic.com/science/archive/2022/01/why-im-staying-angry-about-climate-change/621358/ [https://perma.cc/VLW2-TGHK] (reflecting on how the climate crisis inspires "blood sizzling" anger).

[4] *See* Lindsay Maizland, *Global Climate Agreements: Successes and Failures*, COUNCIL ON FOREIGN RELS., https://www.cfr.org/backgrounder/paris-global-climate-change-agreements (last updated Dec. 5, 2023, 2:46 PM) [https://perma.cc/CFG7-7DQX] (discussing failed efforts, including in the Paris Climate Agreement, to impose binding

somewhere between the final two stages of Kubler-Ross's framework: depression, as manifested by the rise of climate "doomerism,"[5] and acceptance, where we "adapt to a new reality" that we are likely not going to come anywhere close to meeting the Paris Climate Agreement's nonbinding goal of keeping warming to no more than 2º Celsius above preindustrial levels.[6] Looking back, it is increasingly hard to deny that hopes of enacting binding emissions limitations in the near-term future at either the national or international level are on life support, if not already dead.

If you disagree with this pessimistic perspective, consider the facts. Leading scholars are now focusing much of their energy not on advancing binding regulatory approaches to carbon emission mitigation, but on developing principles to guide our adaptation to a warmer, and inevitably more catastrophic, world, as if it was a *fait accompli*. J.B. Ruhl and Robin Craig recently concluded that "it is highly unlikely that the world will achieve its 'below 2ºC' goals for global average warming," and they therefore urge policymakers to focus more attention on "anticipatory governance" for a world where warming comes closer to 4º Celsius.[7]

emissions limitations); Jeffrey Pierre & Scott Neuman, *How Decades of Disinformation About Fossil Fuels Halted U.S. Climate Policy*, NPR (Oct. 27, 2021, 10:35 AM), https://www.npr.org/2021/10/27/1047583610/once-again-the-u-s-has-failed-to-take-sweeping-climate-action-heres-why [https://perma.cc/6D8L-VCV3] (providing a sweeping history of failed international and domestic efforts to enact binding emissions limitations).

[5] Shannon Osaka, *Why Climate 'Doomers' Are Replacing Climate 'Deniers,'* WASH. POST (Mar. 24, 2023), https://www.washingtonpost.com/climate-environment/2023/03/24/climate-doomers-ipcc-un-report (noting that a "grim view of the planet's future is becoming more common" and noting that "[t]he problem with climate 'doom' — beyond the toll that it can create on mental health — is that it can cause paralysis").

[6] *See* U.N. ENV'T PROGRAMME, BROKEN RECORD: EMISSIONS GAP REPORT 2023, at xvi (2023), https://www.unep.org/emissions-gap-report-2023 [https://perma.cc/K2S8-KRJB] (documenting the "emissions gap" between Paris targets and nations' plans, and concluding that a "[f]ailure to bring global GHG emissions in 2030 below the levels implied by current NDCs will make it impossible to limit warming to 1.5ºC with no or limited overshoot and strongly increase the challenge of limiting warming to 2ºC").

[7] J.B. Ruhl & Robin Kundis Craig, *4ºC*, 106 MINN. L. REV. 191, 197, 203 (2021). To be clear, Ruhl and Craig make it quite clear that they do not encourage a wholesale shift away from mitigation. *Id.* at 198 n.31; *see also* Robin Kundis Craig, *"Stationarity Is Dead" — Long Live Transformation: Five Principles for Climate Change Adaptation Law*, 34 HARV.

Others have begun the cleanup work of reconciling existing areas of law, such as torts, property, insurance, and public benefits, with a radically destabilized world.[8] Scholars and policymakers alike have devoted increasing attention to inevitable challenges of equitably relocating populations affected by sea level rise and other effects of climate change.[9] There was a time when discussing adaptation was somewhat taboo — the fear being that too much focus on adaptation might lessen the imperative to curb emissions.[10] Those days are now long past; adaptation is what serious people spend their time on.

The public policy agenda on climate change also took a sharp turn in the Biden Administration. A decade and a half ago, climate scholars

ENV'T L. REV. 9, 18-22 (2010) (discussing the need to balance mitigation strategies with adaptation strategies).

[8] *See, e.g.*, Christopher C. French, *America on Fire: Climate Change, Wildfires & Insuring Natural Catastrophes*, 54 UC DAVIS L. REV. 817 (2020) (discussing insurance markets); Michael B. Gerrard, *Waste and Chemical Management in a 4ºC World*, 53 ENV'T L. REP. 10114 (2023) (discussing conventional environmental law); Andrew Hammond, *On Fires, Floods, and Federalism*, 111 CALIF. L. REV. 1067 (2023) (discussing public benefits laws); Mark Nevitt, *The Legal Crisis Within the Climate Crisis*, 76 STAN. L. REV. 1051, 1057-59 (2024) (discussing private law).

[9] *See, e.g.*, ALICE C. HILL & LEONARDO MARTINEZ-DIAZ, BUILDING A RESILIENT TOMORROW: HOW TO PREPARE FOR THE COMING CLIMATE DISRUPTION 171 (2020) (drawing attention to the need to improve resilience of infrastructure and services); Alice Kaswan, *Seven Principles for Equitable Adaptation*, 13 SUSTAINABLE DEV. L. & POL'Y 41 (2012) (urging greater attention to adaptation challenges associated with climate change).

[10] *See* Miriam Remshard, *Does Preparing for Global Warming Mean We've Given Up? Why Climate Change Adaptation and Mitigation Go Hand-in-Hand*, YALE ENV'T REV. (Sept. 22, 2022), https://environment-review.yale.edu/does-preparing-global-warming-mean-weve-given-why-climate-change-adaptation-and-mitigation-go-hand [https://perma.cc/TK4Q-S8RC]. There is a robust experimental literature on the so-called "moral hazard" of framing climate change in adaptation or technosolutionist terms. *See, e.g.*, P. Sol Hart, Victoria Campbell-Arvai, Kimberley S. Wolske & Kaitlin T. Raimi, *Moral Hazard or Not? The Effects of Learning About Carbon Dioxide Removal on Perceptions of Climate Mitigation in the United States*, 89 ENERGY RSCH. & SOC. SCI. 102656 (2022) (finding a potential moral hazard effect of presenting information about carbon dioxide removal to political conservatives); Rachel A. Howell, Stuart Capstick & Lorraine Whitmarsh, *Impacts of Adaptation and Responsibility Framings on Attitudes Towards Climate Change Mitigation*, 136 CLIMATIC CHANGE 445 (2016) (finding that mitigation framings are more engaging for people who are already concerned about the climate crisis, but that adaptation framings are more engaging for people who are not, in part because they make the risks of climate change more salient).

expressed confidence that regulatory climate legislation was just around the corner.[11] However, hopeful discussions about reviving regulatory climate legislation from the Obama years, such as the failed Waxman-Markey cap-and-trade plan,[12] have been replaced by an explicit emphasis on "industrial policy" in the recently passed Inflation Reduction Act ("IRA") and Infrastructure Investment and Jobs Act ("IIJA").[13] These more recent laws dole out billions of dollars in subsidies and support for established clean industries and upstart moonshots alike — an attempt to supercharge a transition to a clean economy.[14] Nobody would deny

[11] *See, e.g.*, Victor B. Flatt, *Taking the Legislative Temperature: Which Federal Climate Change Legislative Proposal Is "Best"?*, 102 NW. U. L. REV. 123, 123 (2007) ("The United States will almost certainly enact federal legislation designed to reduce emissions of greenhouse gases within the next two years.").

[12] For a retrospective on the failed Waxman-Markey plan, see Jonas J. Monast, *The Ends and Means of Decarbonization: The Green New Deal in Context*, 50 ENV'T L. 21, 30 (2020) (describing the Waxman-Markey legislation as the "high-water mark for the federal climate policy debate"). As Monast explains, there has been no shortage of "cap-and-dividend" proposals introduced in Congress. *Id.* at 23 & n.2. However, none of these proposals has grown legs.

[13] Daniel A. Farber, *Turning Point: Green Industrial Policy and the Future of U.S. Climate Action*, 11 TEX. A&M L. REV. 303, 304 (2024) [hereinafter Farber, *Turning Point*]; Marianne Lavelle, *After 25 Years of Futility, Democrats Finally Jettison Carbon Pricing in Favor of Incentives to Counter Climate Change*, INSIDE CLIMATE NEWS (Aug. 12, 2022), https://insideclimatenews.org/news/12082022/after-25-years-of-futility-democrats-finally-jettison-carbon-pricing-in-favor-of-incentives-to-counter-climate-change/ [https://perma.cc/CW85-DV9B]. To some degree this reflects the ascendance of the "Green New Deal" and its rejection of "traditional" means of environmental regulation. *See* Monast, *supra* note 12, at 23. However, it also reflects the fact that more traditional means of environmental regulation were deemed unacceptable by pivotal legislators. *See, e.g.*, Zack Budryk, *5 Times Joe Manchin Changed the Course of Climate Policy in the Senate*, HILL (Nov. 9, 2023 4:42 PM), https://thehill.com/policy/energy-environment/4302952-five-times-joe-manchin-changed-climate-policy-senate/; Coral Davenport & Luke Broadwater, *Democrats Weigh Carbon Tax After Manchin Rejects Key Climate Provision*, N.Y. TIMES, https://www.nytimes.com/2021/10/16/climate/democrats-carbon-tax-climate.html (last updated Nov. 9, 2021) (discussing Senator Joe Manchin's rejection of Democrats' proposals for a "clean electricity program" and raising doubts about whether Manchin would support an alternative framed as a carbon tax).

[14] *See* WHITE HOUSE, BUILDING A CLEAN ENERGY ECONOMY: A GUIDEBOOK TO THE INFLATION REDUCTION ACT'S INVESTMENTS IN CLEAN ENERGY AND CLIMATE ACTION 9-11 (2023), https://www.whitehouse.gov/wp-content/uploads/2022/12/Inflation-Reduction-Act-Guidebook.pdf [https://perma.cc/8JX5-AXQR] (summarizing clean energy subsidies in the IRA).

that these are the most important climate policies that the United States, maybe any nation, has ever enacted,[15] although even these measures will face a test in the second Trump Administration.[16]

At the same time, though, these green industrial policy laws notably do not impose any significant carbon emissions controls that guarantee

[15] *See* William Brangham, Shoshana Dubnow & Ethan Dodd, *Are the Inflation Reduction Act's Climate and Clean Energy Policies Working*?, PBS (Aug. 17, 2023, 6:50 PM), https://www.pbs.org/newshour/show/are-climate-change-and-clean-energy-policies-included-in-inflation-reduction-act-working; Leslie Kaufman, *Why the Bipartisan Infrastructure Law Is Biden's Other Climate Bill*, BLOOMBERG (Nov. 21, 2023), https://www.bloomberg.com/news/articles/2023-11-21/why-the-bipartisan-infrastructure-law-is-biden-s-other-climate-bill#xj4y7vzkg [https://perma.cc/N5PS-YFA4]. We are just beginning to study the impact these laws are having on emissions, but the modeled impacts are impressive. *See, e.g.*, John Bistline, Geoffrey Blanford, Maxwell Brown, Dallas Burtraw, Maya Domeshek, Jamil Farbes, Allen Fawcett, Anne Hamilton, Jesse Jenkins, Ryan Jones, Ben King, Hannah Kolus, John Larsen, Amanda Levin, Megan Mahajan, Cara Marcy, Erin Mayfield, James McFarland, Haewon McJeon, Robbie Orvis, Neha Patankar, Kevin Rennert, Christopher Roney, Nicholas Roy, Greg Schivley, Daniel Steinberg, Nadejda Victor, Shelley Wenzel, John Weyant, Ryan Wiser, Mei Yuan & Alicia Zhao, *Emissions and Energy Impacts of the Inflation Reduction Act*, 380 SCI. 1324, 1324 (2023) (modeling the effects of the IRA and finding it will lead to economy-wide emissions reductions of 43–48 percent below 2005 levels by 2035). Moreover, industrial policy approaches may have built-in political advantages over alternatives that make them easier to pass and more resilient to political retrenchment. *See, e.g.*, Farber, *Turning Point*, *supra* note 13, at 303 (discussing how industrial policy creates supportive constituencies); Jonathan S. Gould, *A Republic of Spending*, 123 MICH. L. REV. 209, 213 (2024) (same); Amy Kapczynski & Joel Michaels, *Administering a Democratic Industrial Policy*, 18 HARV. L. & POL'Y REV. 279, 297 (2024) (same).

[16] *See* Asma Khalid, *Trump Won. Here Are 3 Biden Priorities Under Scrutiny*, NPR (Nov. 7, 2024, 6:00 AM), https://www.npr.org/2024/11/07/nx-s1-5179834/trump-president-biden-climate-ukraine [https://perma.cc/8LHZ-WP3C]; Kelsey Tamborinno, *Trump Vows to Pull Back Climate Law's Unspent Dollars*, POLITICO (Sept. 5, 2024, 3:48 PM), https://www.politico.com/news/2024/09/05/trump-inflation-reduction-act-00177493. *But see* Ann Carlson, *Trump Can't Stop the Clean Energy Transformation*, LEGALPLANET (Nov. 4, 2024), https://legal-planet.org/2024/11/04/trump-cant-stop-the-clean-energy-transformation/ [https://perma.cc/4HCX-5LVQ] (noting that unrolling the IRA is more difficult in light of the fact that subsidies are "flowing to Republican Congressional districts and red states," making at least some Republicans wary about a wholesale rescission of the law). As this Article goes to print, it is unclear whether Republicans have enough support to undo the IRA's tax credits for renewable energy. *See* David Gelles, *The Republicans Pushing Trump to Save Biden's Clean Energy Tax Credits*, N.Y. Times (Mar. 17, 2025), https://www.nytimes.com/2025/03/17/climate/biden-clean-energy-tax-credits-trump.html.

mitigation.[17] While carbon taxes and cap-and-trade programs have long been championed by public policy scholars and economists as a means of internalizing the societal costs polluters foist on us all by failing to curb emissions,[18] these market-based approaches to mitigation are now on the backburner as climate advocates have changed their strategy to making industrial policy as successful as it can be.[19] This change of strategy has major implications: our national industrial climate policy leaves the door wide open to continued emissions well into the future[20]

[17] *See* AM. BAR. ASS'N, GLOBAL CLIMATE CHANGE AND U.S. LAW 24 (Michael B. Gerrard, Jody Freeman & Michael Burger eds., 3d ed. 2022) (noting that the IRA, the IIJA, and the CHIPS Act "are based on financial assistance and subsidies; none enact or modify any climate-related regulatory programs (though the Inflation Reduction Act contains a fee on methane emissions)"); Maya Domeshek & Dallas Burtraw, *Adding an Emissions Cap to the Inflation Reduction Act Would Help Meet US Climate Goals*, RES. (Nov. 9, 2023), https://www.resources.org/common-resources/adding-an-emissions-cap-to-the-inflation-reduction-act-would-help-meet-us-climate-goals/ [https://perma.cc/E7GM-ZTH5] (arguing that "instituting an emissions cap alongside the IRA would improve the efficiency of the IRA, increase the law's benefits for health, and lock in US emissions reductions"). The closest the IRA got to regulating carbon dioxide emissions was to change the language of the Clean Air Act in order to make it clear that carbon dioxide falls within the definition of "air pollutant." *See* David D. Doniger, West Virginia*, the Inflation Reduction Act, and the Future of Climate Policy*, 53 ENV'T L. REP. 10553, 10570 (2023). This change solidifies the holding in *Massachusetts v. EPA* that the U.S. Environmental Protection Agency ("EPA") has authority to regulate carbon dioxide emissions. *Id.* at 10556. However, it does not address the many other problems that have otherwise stood in the way of EPA regulation of greenhouse gas emissions. *See, e.g.*, Greg Dotson & Dustin J. Maghamfar, *The Clean Air Act Amendments of 2022: Clean Air, Climate Change, and the Inflation Reduction Act*, 53 ENV'T L. REP. 10017, 10028 (2023) (noting that the "new language in the IRA does not mean that every mention of 'air pollutant' in the CAA will be interpreted to apply to GHGs").

[18] *See*, *e.g.*, BARRY G. RABE, CAN WE PRICE CARBON? (2018) (discussing greenhouse gas emissions as an externality and recapping proposals for carbon taxes and cap-and-trade programs).

[19] *See* Noah Kaufman, *Should the Inflation Reduction Act End the Dream of a National Carbon Price?*, COLUM. CTR. ON GLOB. ENERGY POL'Y (Jan. 26, 2023), https://www.energypolicy.columbia.edu/should-the-inflation-reduction-act-end-the-dream-of-a-national-carbon-price/ [https://perma.cc/35F4-37LN].

[20] *See* Shelley Welton & Conor Harrison, *Lessons in Climate Derisking: The United States' Failed Nuclear Renaissance*, 173 U. PA. L. REV. 705, 778 (2025) ("Almost nothing in the IIJA or IRA makes this [oil and natural gas] pricing predictably and steadily higher to reflect social costs — as would, for example, a carbon tax or some other tangible disincentive on fossil fuel production. These laws rest, instead, on an abiding (but

— at least until there is no profit left to be made from the extraction and burning of fossil fuels[21] — and relies heavily on private environmental governance movements to foment voluntary mitigation of emissions that remain after subsidized green industry has grown as much as it can.[22] For its part, international climate law has similarly shifted energy to cheerleading these national efforts.[23]

perhaps misguided) faith that clean energy will — with just a little financial help — be able to outcompete fossil fuels on economic terms alone over the next decade.").

[21] Although "[e]stimates of [technically recoverable resources] are highly uncertain," the U.S. Energy Information Administration estimates that the United States "has enough dry natural gas to last about 86 years" at the same rate of production from 2021. *See Frequently Asked Questions* (*FAQs*), U.S. ENERGY INFO. ADMIN., https://www.eia.gov/tools/faqs/faq.php?id=58&t=8 (last visited Mar. 11, 2025) [https://perma.cc/3WUJ-PY76]. These numbers would have been very different in advance of the hydraulic fracturing revolution in the oil and gas industry, *see* Thomas W. Merrill & David M. Schizer, *The Shale Oil and Gas Revolution, Hydraulic Fracturing, and Water Contamination: A Regulatory Strategy*, 98 MINN. L. REV. 145, 156 (2013), which is a testament to the difficulty of putting an expiration date on fossil fuels.

[22] There is a massive, and growing, literature on private environmental governance and related concepts, which generally sees opportunity to protect the environment in the actions of private individuals and organizations. *See generally* Joshua Ulan Galperin, *Private, Environmental, Governance*, 9 GEO. WASH. J. ENERGY & ENV'T L. 1 (2018) (defining and analyzing the concept of private environmental governance); Sarah E. Light & Eric W. Orts, *Parallels in Public and Private Environmental Governance*, 5 MICH. J. ENV'T & ADMIN. L. 1 (2015) (same); Aseem Prakash & Matthew Potoski, *Collective Action Through Voluntary Environmental Programs: A Club Theory Perspective*, 35 POL'Y STUD. J. 773 (2007) (same); Michael P. Vandenbergh, *Private Environmental Governance*, 99 CORNELL L. REV. 129 (2013) [hereinafter Vandenbergh, *Private Environmental Governance*] (same).

[23] *See generally* SIMONE TAGLIAPIETRA, GREEN INDUSTRIAL POLICY: A GLOBAL PERSPECTIVE 3 (2022), https://financing.desa.un.org/sites/default/files/2023-05/Green_Industrial_Policy_Final%20Paper.pdf [https://perma.cc/GFQ6-33R7] (calling the enactment of national green industrial programs a "challenge of great importance"). That said, there have been some criticisms of national industrial policy from an international perspective — namely, that national industrial policy is inherently protectionist and likely to lead to undesirable effects on efforts to negotiate an international climate solution. *See* Gabriel Weil, Climate Nationalism 15-16 (Nov. 12, 2024) (unpublished manuscript) (on file with author); Noah Kaufman, Sagatom Saha & Christopher Bataille, *Green Trade Tensions*, FIN. & DEV. MAG., https://www.imf.org/en/Publications/fandd/issues/2023/06/green-trade-tensions-kaufman-saha-bataille (last visited Mar. 11, 2025) [https://perma.cc/Y37D-WWZM]; Joseph E. Stiglitz, *Western Industrial Policy and International Law*, PROJECT SYNDICATE (May 31, 2023), https://www.project-syndicate.org/commentary/us-europe-industrial-policies-international-law-level-playing-field-by-joseph-e-stiglitz-2023-05 [https://perma.cc/9V6F-877Y]. *But see* Jane Flegal,

Both of these trends — a shift toward acceptance of climate change and adaptation to that reality, as well as a shift toward non-prescriptive industrial policy and private environmental governance — mark a growing consensus that the ship has sailed on comprehensive, binding emissions controls at the national or international level.[24] To be sure, efforts continue at the subnational level,[25] and environmental agencies, such as the U.S. Environmental Protection Agency ("EPA"), continue to explore regulatory options under their existing, but limited, statutory authority.[26] We are also increasingly seeing litigation framed around

Industrial Policy Synergies: Industrial Policy + Climate Policy, ROOSEVELT INST. (Apr. 25, 2023), https://rooseveltinstitute.org/publications/industrial-policy-synergies-industrial-policy-climate-policy/ [https://perma.cc/6C5C-SZUR] ("There has been some criticism of national climate industrial policy as inherently protectionist. While one should not diminish the importance of global action to tackle climate, a uniform carbon price is not the only — or even most likely — way to accelerate global decarbonization.").

[24] *See* Michael P. Vandenbergh & Kaitlin T. Raimi, *Climate Change: Leveraging Legacy*, 42 ECOLOGY L.Q. 139, 141 (2015) ("In the face of the difficulties confronted by governments at the international and national levels, policy analysts have begun to relax the assumption that the principal response should be a comprehensive international and national effort to price carbon . . . .").

[25] *See* Katrina M. Wyman, *From* Why *to* How *Subnational Jurisdictions Are Mitigating Climate Change*, 83 OHIO ST. L.J. ONLINE 63, 67 (2022). California, in particular has long been a leader, promulgating a cap-and-trade program, an aggressive renewable portfolio standard, a low-carbon fuel standard for automobiles, green building codes, and a program to promote zero emission vehicles. *See California Climate Policy Dashboard*, U.C. BERKELEY L., https://www.law.berkeley.edu/research/clee/research/climate/climate-policy-dashboard/ (last visited Dec. 24, 2024) [https://perma.cc/MWK8-SC6N]. Subnational action sometimes extends beyond state borders: for instance, California's Advanced Clean Cars rules have been adopted by several other states, and several Northeastern states have joined together to run their own cap-and-trade program for electric power. *See generally Elements of RGGI*, REG'L GREENHOUSE GAS INITIATIVE, https://www.rggi.org/program-overview-and-design/elements [https://perma.cc/XP6K-ZDWE] (discussing the Regional Greenhouse Gas Initiative). All subnational (and probably even national) solutions to climate change run into concerns about "leakage" and "resource shuffling," where reductions of emissions within the regulated jurisdiction are simply offset by increased emissions elsewhere. *See* Jim Rossi & Andrew J.D. Smith, *Electric Power Resource "Shuffling" and Subnational Carbon Regulation: Looking Upstream for a Solution*, 5 SAN DIEGO J. CLIMATE & ENERGY L. 43, 44, 46 (2014).

[26] For instance, EPA in 2021 finalized a rule phasing out hydrofluorocarbons — a replacement for ozone-depleting substances that turned out to be potent greenhouse gases themselves — over a fifteen-year period. *See* Phasedown of Hydrofluorocarbons: Establishing the Allowance Allocation and Trading Program Under the American

ancient common law nuisance and public trust principles, arguing that oil companies and others should be liable for past emissions of greenhouse gases.[27] Similarly, we have seen a proliferation of public and private "net zero" commitments that seem to substitute for binding emissions limits, just with none of the bite.[28] Ultimately, though, these efforts are no substitute for new federal regulatory legislation or binding international agreements.[29] On this latter front, we keep getting the same answer we have always gotten: not today.

In what follows, I suggest an intervention that has the potential to revive hope for new legislation or international agreements to directly

Innovation and Manufacturing Act, 86 Fed. Reg. 55116 (Oct. 5, 2021) (codified at 40 C.F.R. pts. 9, 84). It has also moved to curb tailpipe emissions from both light-duty and heavy-duty vehicles. *See* Greenhouse Gas Emissions Standards for Heavy-Duty Vehicles — Phase 3, 88 Fed. Reg. 25926 (Apr. 27, 2023) (codified at 40 C.F.R. pts. 1036, 1037, 1054, 1065, 1074). EPA has also begun to pick up the pieces after the Supreme Court's vacatur of the Clean Power Plan in *West Virginia v. EPA*, 597 U.S. 697 (2022), proposing a suite of more traditional technological controls of emissions at new and existing power plants. *See* New Source Performance Standards for Greenhouse Gas Emissions from New, Modified, and Reconstructed Fossil Fuel-Fired Electric Generating Units; Emission Guidelines for Greenhouse Gas Emissions from Existing Fossil Fuel-Fired Electric Generating Units; and Repeal of the Affordable Clean Energy Rule, 88 Fed. Reg. 33240 (May 23, 2023) (codified at 40 C.F.R. pt. 60). Finally, EPA has just recently finalized rules that aim to curb methane emissions from oil and gas operations, including existing sources. *See* Standards of Performance for New, Reconstructed, and Modified Sources and Emissions Guidelines for Existing Sources: Oil and Natural Gas Sector Climate Review, 89 Fed. Reg. 16820, 16822-24 (March 8, 2024) (codified at 40 C.F.R. pt. 60).

[27] *See* Albert C. Lin, *Dodging Public Nuisance*, 11 U.C. IRVINE L. REV. 489, 501 (2020) (discussing ongoing litigation invoking state public nuisance causes of action to hold emitters liable); *see, e.g.*, Don C. Smith, Held v. Montana*: The Beginning of a Climate Change Lawsuit Trend in U.S. State Courts or a One-Shot Wonder?*, 41 J. ENERGY & NAT. RES. L. 369 (2023) (discussing *Held v. Montana* and *Juliana v. United States*, which both invoke constitutional rights of young people to a future inhabitable earth). Similar litigation has had some success abroad. *See, e.g.*, Michael B. Gerrard, *Climate Litigation Scores Successes in the Netherlands and Pakistan*, 47 TRENDS 7 (2016) (discussing *Urgenda v. Netherlands* and *Leghari v. Fed'n of Pakistan*).

[28] *See* Daniel C. Esty & Nathan de Arriba-Sellier, *Zeroing in on Net-Zero: From Soft Law to Hard Law in Corporate Climate Change Pledges*, 94 U. COLO. L. REV. 635, 643 (2023); Albert C. Lin, *Making Net Zero Matter*, 79 WASH. & LEE L. REV. 679, 692 (2022). For a critique of the rise of net zero commitments, see Shelley Welton, *Neutralizing the Atmosphere*, 132 YALE L.J. 171, 175-76 (2022).

[29] *See infra* Part I.D.

regulate carbon emissions. At the root of prior failures to enact regulatory climate legislation is a fundamental political reality: such policies are typically structured to impose immediate costs on powerful industries that rely on fossil fuels, while at the same time most of the societal costs of climate change will not be borne by these industries or indeed by anyone living today.[30] This is a core reason why scholars have referred to climate change as a "super wicked problem."[31] Unlike ordinary wicked problems, super wicked problems have several additional complexities due to the long timescale of the problem.[32] Most regulatory policy solutions run headlong into this political thicket by imposing immediate costs on polluters for the benefit of future generations. From there, a familiar collective action problem emerges: the potentially regulated industries organize to oppose these costs, and the diffuse public fails to similarly organize politically, which in turn leads politicians to see little advantage to imposing regulation on industry.[33] Although perceptive cost-benefit analysis might, through the adoption of a social cost of carbon metric or lower discount rates, level the playing field between immediate costs and long-term benefits,[34]

[30] *See infra* Part I.

[31] Richard J. Lazarus, *Super Wicked Problems and Climate Change: Restraining the Present to Liberate the Future*, 94 CORNELL L. REV. 1153, 1159 (2009).

[32] *See id.* at 1160 (noting three "exacerbating features" of super wicked problems, each of which plays on the long time scale of the crisis); Kelly Levin, Benjamin Cashore, Steven Bernstein & Graeme Auld, *Overcoming the Tragedy of Super Wicked Problems: Constraining Our Future Selves to Ameliorate Global Climate Change*, 45 POL'Y SCIS. 123, 123, 129 (2012).

[33] *See infra* Part I.B.

[34] *See* Richard L. Revesz & Matthew R. Shahabian, *Climate Change and Future Generations*, 84 S. CAL. L. REV. 1097, 1100 (2011). The Biden Administration has made substantial strides in valuing future benefits and avoided costs through its efforts to raise the social cost of carbon estimates and get agencies to adopt it in their cost-benefit analyses, *see* Ben German, *Feds Urged by Biden to Widen Use of "Social Cost" on Climate Change*, AXIOS (Sept. 22, 2023), https://www.axios.com/2023/09/22/biden-social-cost-climate, as well as through the adoption of a new, lower discount rate for review of economically significant regulatory actions, *see* Lee Harris, *Washington Tweaks How It Prices the Future*, AM. PROSPECT (Nov. 22, 2023), https://prospect.org/economy/2023-11-22-washington-tweaks-how-it-prices-future/ [https://perma.cc/M3ZW-J3JV]. I do not mean to diminish these important efforts to correct for the political asymmetry I document, but these efforts need to be understood as fundamentally limited in the political arena where comprehensive climate action will have to come from.

these technical solutions are unlikely to sway politicians (as opposed to regulatory agencies) to muster up the courage to serve future generations at the expense of current constituents. As Thomas Hale notes in a recent book, climate change is perhaps the quintessential example of a "long problem," and long problems carry with them vexing political economy problems that hamper regulatory solutions.[35]

Climate policy needs to work around these constraints rather than against them. In order to overcome the political barriers to comprehensive greenhouse gas emission controls, we need to think somewhat creatively about the temporal dynamics of legislation.[36] Paradigmatically, when a bill passes through Article I, Section 7's bicameralism and presentment processes,[37] it immediately and permanently (at least until repeal) becomes the law of the land. But in reality, legislation is a much more flexible instrument than this paradigm suggests because of legislators' ability to use time as a policymaking tool. For instance, many laws contain a delay between passage and implementation to allow regulated parties time to adjust to a new legal status quo.[38] Likewise, some laws have so-called "sunsets": essentially, expiration dates for policies, at which point policy reverts to

[35] THOMAS HALE, LONG PROBLEMS: CLIMATE CHANGE AND THE CHALLENGE OF GOVERNING ACROSS TIME 22 (2024) (identifying three such problems — what Hale refers to as "shadow interests," "institutional lag," and, most importantly, an "early action paradox").

[36] Throughout this Article, I frequently default to speaking of domestic policy in the United States, as this is the terrain that I am most familiar with. However, nothing in principle prevents the application of the climate sunrise idea at other levels of government, although there may be practical limitations to the ability to credibly commit to enforcement at the international level. *See infra* Part III.B.3.

[37] U.S. CONST. art. I, § 7.

[38] *See, e.g.*, Congressional Accountability Act, Pub. L. No. 104-1, § 210, 109 Stat. 13 (1995) (codified at 2. U.S.C. § 1331) (extending ADA coverage to certain entities in 1997, almost two years after the enactment of the statute). Many states have default effective dates for legislation that sometimes build in delays in the absence of language indicating a different date. *See Bill Effective Dates*, STATESCAPE, https://www.statescape.com/resources/legislative/bill-effective-dates/ (last visited Mar. 11, 2025) [https://perma.cc/29XK-G9NJ]. The U.S. Congress appears to default to an effective date that matches the date of enactment. *See Frequently Asked Questions and Glossary*, OFF. OF THE L. REVISION COUNS., https://uscode.house.gov/faq.xhtml#:~:text=Unless%20otherwise%20provided%20by%20law,date%20note%20under%20the%20section (last visited Mar. 11, 2025) [https://perma.cc/YR4S-T7P2].

the status quo ante.[39] Less familiar are legislative "sunrises," which trigger the legal effect of statutes at a much later point in time than the routine delays that sometimes accompany legislation.[40]

This Article argues that sunrises, in particular, have a greatly underappreciated upside for climate policy. Applied in the climate setting, sunrises would prescribe regulatory conditions that come into effect at some point in the distant future — for instance, the legislature might direct regulators to implement a stringent carbon tax or performance standards in thirty years' time, but in the meantime, these mechanisms would not be assessed at all.[41] I aim to show that a "climate sunrise" would chart a plausible course around the toxic political dynamics that have repeatedly thwarted the passage of regulatory climate legislation and would provide arguably the best-case scenario for climate mitigation policy moving forward.[42] Indeed, some climate policymaking in recent years has implicitly embraced the core logic of

[39] For an overview of the literature on sunset legislation (aka "temporary" legislation), see Ittai Bar-Siman-Tov, *The Lives and Times of Temporary Legislation and Sunset Clauses*, 66 AM. J. COMP. L. 453, 453 (2018) (reviewing ANTONIOS E. KOUROUTAKIS, THE CONSTITUTIONAL VALUE OF SUNSET CLAUSES: AN HISTORICAL AND NORMATIVE ANALYSIS (2017)), and Jacob E. Gersen, *Temporary Legislation*, 74 U. CHI. L. REV. 247, 247 (2007).

[40] Unlike the literature on sunsets, the literature on sunrises is incredibly sparse. The principle treatments are Frank Fagan, Response, *Political Paralysis and Timing Rules*, 91 N.Y.U. L. REV. ONLINE 43 (2016) (responding to Daniel Herz-Roiphe & David Singh Grewal, *Make Me Democratic, but Not Yet: Sunrise Lawmaking and Democratic Constitutionalism*, 90 N.Y.U. L. REV. 1975 (2015)); Daniel E. Herz-Roiphe & David Singh Grewal, *Make Me Democratic, but Not Yet: Sunrise Lawmaking and Democratic Constitutionalism*, 90 N.Y.U. L. REV. 1975 (2015); Rebecca M. Kysar, *Dynamic Legislation*, 167 U. PA. L. REV. 809, 827 (2019) [hereinafter Kysar, *Dynamic Legislation*]; Sofia Ranchordás, *Constitutional Sunrise*, *in* THE FOUNDATIONS AND TRADITIONS OF CONSTITUTIONAL AMENDMENT (Richard Albert, Xenophon Contiades & Alkmini Fontiadou eds., 2017); Sofia Ranchordás, *Innovation Experimentalism in the Age of the Sharing Economy*, 19 LEWIS & CLARK L. REV. 871, 920-24 (2015); Rebecca M. Kysar, *Sunrise Legislation* (unpublished manuscript) (on file with author) [hereinafter Kysar, *Sunrise Legislation*]. For a more detailed discussion of sunrises, see Part II.A.1 *infra*.

[41] *See infra* Part II.A.1.

[42] Although a popular climate activist group has adopted the "sunrise" label, *see* Cinnamon P. Carlarne, *Climate Courage: Remaking Environmental Law*, 41 STAN. ENV'T L.J. 125, 166 (2022) (discussing the "Sunrise Movement" as "epitomiz[ing]" a "new form of environmental mobilization"), as far as I can tell, that group does not advocate for a climate sunrise in the sense that I speak of it here.

the sunrise strategy and has had more success than other efforts to institute policymaking, although these efforts have not come close to maximizing the potential payoff of sunrises in climate law.[43]

The political utility of a climate sunrise is immediately apparent: because it would not impose any costs now — and indeed may never impose costs if it is repealed — there is little immediate political risk to politicians and a great deal of upside in passing a climate sunrise.[44] However, the policy utility of a climate sunrise is much less self-evident. On the surface, a climate sunrise might be formally indistinguishable from not passing legislation at all, at least in the short run, since regulated parties would have no legally enforceable duty to curb emissions until the sunrise occurs. Skeptics might say that such delayed legislation would accomplish nothing until the law becomes legally binding. Moreover, because the legislature, acting through ordinary statutes, cannot bind future Congresses, there is always a risk that the climate sunrise would be repealed before it took effect. These responses, however, oversimplify the matter. A substantial contribution of this Article is establishing the policy utility of the device.[45]

First, a climate sunrise would permanently change the politics of climate action and would entrench the movement to mitigate carbon emissions. As I will demonstrate, it would change the policy default and shift the political burden to opponents of climate action to mobilize for repeal and bear the political costs of doing so.[46] In light of our veto-gated legislative process, this shift would make it more likely that a national climate mitigation policy would, in fact, exist than if the policy default was inaction.[47] In a very real sense, a climate sunrise would turn collective action problems that ordinarily conspire against climate policy in favor of it. Moreover, if it was properly designed, the climate sunrise could leverage "policy feedback" dynamics to build a politics of retention of the climate sunrise that could combat efforts to undo the

[43] *See infra* Part II.A.1.

[44] *See infra* Part II.A.3.

[45] *See infra* Part II.B.

[46] *See infra* Part II.B.

[47] *See infra* Part II.B.1.

law and could even build momentum for the cause, making other climate actions more politically conceivable.[48]

On top of this, shifting the policy default through a climate sunrise would also have impacts on voluntary mitigation activities well before the climate sunrise takes effect.[49] For instance, climate sunrises would catalyze private environmental governance approaches to mitigating carbon emissions, as rational firms would treat the uncertainty around whether the sunrise could be repealed as a parameter in their individual decision-making about whether and how to curb emissions.[50] While firms already factor in uncertainty about future regulation, a climate sunrise would formalize the uncertainty by shifting the burden to opponents to organize politically to change the policy default encoded in the sunrise. For those who are already inclined toward taking voluntary action, a climate sunrise might harness the "expressive power of law" in favor of climate policy, providing a focal point for social coordination.[51] To be sure, the sunrise device is not uncontroversial — a fact which partially explains the paucity of ambitious sunrises in American public law. Yet, as I show, many of the arguments against sunrises do not apply with much force in the climate context and are substantially outweighed by the potential upside of a climate sunrise.[52]

The argument develops in three parts. Part I sets the stage by identifying the precise mechanisms that have conspired to block serious emission limitations. My account grounds this failure in well-established public choice dynamics, but I also show how climate change exacerbates the situation by introducing intertemporal distributions of the costs and benefits of climate action — what I call "climate law's politics problem."[53] In the heart of this Article in Part II, I develop the case for a "climate sunrise" as a strategy for passing binding mitigation policies that could force polluters to stop emitting greenhouse gases. I show that, by substantially delaying the effective date of a stringent climate policy, policymakers could avoid blame for the imposition of

[48] *See infra* Part II.B.1.

[49] *See infra* Part II.B.2.

[50] *See infra* Part II.B.2.

[51] *See infra* Part II.B.2.

[52] *See infra* Part II.C.

[53] *See infra* Parts I.A.–B.

costs, claim credit for the creation of benefits, and ultimately take more public-regarding action than conventional political restrictions would allow,[54] all while achieving more than we can expect to achieve with our current lack of law.[55] Finally, Part III turns to some of the nitty gritty questions that the designer of a climate sunrise would need to consider, such as how to optimize potential tradeoffs between political feasibility, durability, and behavioral impact as the length of the sunrise increases; how to write clear, prescriptive law for the distant future; and how to credibly commit to enforcement of the law when the sunrise occurs.[56]

The regulation of carbon emissions is not dead — we need not accept that reality just yet. But seeing these policies through does require a substantially different approach that grapples with the political and practical difficulties of governing "long problems,"[57] and this Article seeks to chart out the basic contours, tradeoffs, and potential of one such promising tack.

I. CLIMATE LAW'S POLITICS PROBLEM

We know the script well by now. A new presidential administration takes office with high hopes of shepherding climate legislation through Congress; proposals emerge and are vetted by all the relevant veto players; hints are dropped through media reports about the status of negotiations; and, at the end of the day, Congress blinks. This certainly describes the historical arc of the false-start Waxman-Markey cap-and-trade bill in 2010[58] and, more recently, President Biden's Build Back Better plan, which originally contained a "Clean Electricity Performance Program" that "would have paid utilities for selling clean power and penalized those that did not," among other climate regulatory tools.[59]

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[54] *See infra* Part II.A.

[55] *See infra* Part II.B.

[56] *See infra* Part III.

[57] HALE, *supra* note 35, at 1.

[58] American Clean Energy and Security Act of 2009, H.R. 2454, 111th Cong. (2009).

[59] Benjamin Storrow & E&E News, *Senate Passes Historic Climate Bill — Here's What Comes Next*, SCI. AM. (Aug. 8, 2022), https://www.scientificamerican.com/article/senate-passes-historic-climate-bill-heres-what-comes-next/ [https://perma.cc/FBK9-67F8]; *see* Yvonne McIntyre & Derek Murrow, *House Proposes Strong Clean Electricity Performance Program*, NAT. RES. DEF. COUNCIL (Sept. 14, 2021), https://www.nrdc.org/bio/yvonne-

Both failed to garner the support of pivotal legislators for core climate regulatory proposals. A similar script also plays out on the international level. Each new meeting of the Conference of Parties to the United Nations Framework Convention on Climate Change offers fresh optimism that this time — unlike at Kyoto, Paris, Glasgow, and, presumably, Dubai — the parties will agree to binding limits on national emissions of greenhouse gases.[60] Every time, these hopes are dashed.

Understanding why this keeps happening — and why it will always happen — is the first step to a more constructive approach to climate policy. In this Part, I suggest that the root of this eternal recurrence is quite simple: climate change action, and particularly the kind that would put hard limits on the ability to emit greenhouse gases into the atmosphere, has a politics problem. I start this Article with a discussion of climate law's politics problem in part to diagnose where we are, but also to set the stage for the intervention I propose in Part II, which is explicitly designed as a workaround for these political strictures.

A. The Intertemporal Incidence of the Costs and Benefits of Climate Mitigation

Climate change is primarily caused by society's emissions of greenhouse gases.[61] This climate change, if left unabated, will cause catastrophic ecological and societal harms.[62] In theory, society could

mcintyre/house-proposes-strong-clean-electricity-performance-program [https://perma.cc/NA97-LQUD].

[60] *See COP-28: Rekindling Optimism*, SYNERGIA FOUND. (Dec. 2, 2023), https://www.synergiafoundation.org/insights/analyses-assessments/cop-28-rekindling-optimism [https://perma.cc/VMR2-358R]; *Optimism, Hope for Progress Palpable at COP28*, S&P GLOB. (Dec. 4, 2023), https://www.spglobal.com/esg/podcasts/tetris-pioneer-turned-environmentalist-talks-climate-optimism-at-cop28.

[61] *See* INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, *supra* note 1, at 42 ("Human activities, principally through emissions of greenhouse gases, have unequivocally caused global warming, with global surface temperature reaching 1.1°C above 1850–1900 in 2011–2020."); *see also* ROBERT HENSON, THE THINKING PERSON'S GUIDE TO CLIMATE CHANGE 7-10 (2d ed. 2019) (discussing the increasingly certain assessments of the IPCC about human contributions to climate change).

[62] These harms are already occurring, *see* INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, *supra* note 1, at 46-51, but they are also poised to grow more extreme over time. How extreme is a matter of debate, and there is great uncertainty about tipping points and "fat tails" the farther out into the future one tries to predict effects. *See id.* at 68-81.

require the emitters of greenhouse gases to stop, which would provide certain benefits to those harmed by the emitters' activities. Society would presumably do this if the benefits to society clearly outweighed the costs incurred by the emitters to cease their emissions.[63] However, there is a major complicating factor when it comes to climate change: the intertemporal incidence of the costs and benefits of climate mitigation.[64]

For most social problems, the bulk of mitigation costs essentially co-occur with the realization of benefits. For instance, reducing lead in gasoline led to rapid decreases in blood levels of lead in the population, greatly improving public health almost overnight.[65] But this is not the case with mitigation of the pollutants that cause climate change. Carbon dioxide and other greenhouse gasses remain in the atmosphere for an extremely long time.[66] Moreover, it can take an extremely long time for

See GERNOT WAGNER & MARTIN L. WEITZMAN, CLIMATE SHOCK: THE ECONOMIC CONSEQUENCES OF A HOTTER PLANET 11-14 (2015).

[63] *See* CASS R. SUNSTEIN, THE COST-BENEFIT REVOLUTION 189-90 (2018) (suggesting that climate change could and should be considered through a cost-benefit lens). In general, cost-benefit analysis, as opposed to the "precautionary principle," is how the United States typically decides whether to proceed with major regulatory initiatives. *Id.* at 190.

[64] Michael Vandenbergh and Kaitlin Raimi label this the "socio-temporal trap." *See* Vandenbergh & Raimi, *supra* note 24, at 145. In focusing on the intertemporal incidence of costs and benefits, I do not mean to downplay the challenges posed by the geographical distribution of costs and benefits, which has been a major stumbling point for international climate negotiations over the years. *See, e.g.*, DAVID G. VICTOR, GLOBAL WARMING GRIDLOCK: CREATING MORE EFFECTIVE STRATEGIES FOR PROTECTING THE PLANET (2011) (giving close attention to distributional debates implicated by the fact that nations are at different stages of economic development and bear differential responsibility for the climate crisis).

[65] *See* Timothy Dignam, Rachel B. Kaufmann, Lauren LeStourgeon & Mary Jean Brown, *Control of Lead Sources in the United States, 1970–2017: Public Health Progress and Current Challenges to Eliminating Lead Exposure*, 25 J. PUB. HEALTH MGMT. & PRAC. 13 (2019) (reporting a 93.6 percent decline in the geometric mean blood lead level in the wake of regulation, but also acknowledging inequitable distributions of benefits that remain a problem to this day).

[66] *See* HENSON, *supra* note 61, at 34 (noting that carbon dioxide remains in the atmosphere for a "long time"); WAGNER & WEITZMAN, *supra* note 62, at 15 (noting that "outflow" of greenhouse gases is much slower than the current "inflow"). This is why "[g]lobal warming will continue to increase in the near term in nearly all considered

the effects of atmospheric greenhouse gas concentrations to manifest in tangible societal harms.[67] As a result, most of the benefits of mitigating climate change accrue in the long-range future. In fact, few of us living today would reap all the benefits of climate mitigation action taken today. Substantial warming is already locked in,[68] and every moment delayed adds to the future costs of climate change (and therefore the forgone benefits of doing something about it).[69]

On the flip side, while they will likely be justified in the long run if we factor in all of the "shadow interests" of the future denizens of the world,[70] the substantial costs of mitigation are frontloaded.[71] In part

scenarios and modelled pathways." INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, *supra* note 1, at 68.

[67] *See* INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, *supra* note 1, at 68-69 (discussing how "[c]ontinued [greenhouse gas] emissions will further affect all major climate system components, and many changes will be irreversible on centennial to millennial time scales"); *id.* at 77 (noting the possibility of "abrupt and irreversible changes" such as loss of biodiversity).

[68] *See* Brad Plumer & Henry Fountain, *A Hotter Future Is Certain, Climate Panel Warns. But How Hot Is up to Us*, N.Y. TIMES, https://www.nytimes.com/2021/08/09/climate/climate-change-report-ipcc-un.html (last updated Sept. 13, 2023) ("Nations have delayed curbing their fossil-fuel emissions for so long that they can no longer stop global warming from intensifying over the next 30 years, though there is still a short window to prevent the most harrowing future, a major new United Nations scientific report has concluded.").

[69] *See* INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, *supra* note 1, at 70 (showing how, "[w]ith every increment of global warming, regional changes in mean climate and extremes become more widespread and pronounced").

[70] HALE, *supra* note 35, at 29.

[71] Integrated assessment models produce a range of estimates that generally show up-front costs. One such study estimated the costs necessary for Paris-compliant mitigation at 1–7 percent of GDP per year, although these costs are sensitive to socio-economic or technological changes that reduce costs. *See* Shinichiro Fujimori, Ken Oshiro, Tomoko Hasegawa, Junya Takakura & Kayo Ueda, *Climate Change Mitigation Costs Reduction Caused by Socioeconomic-Technological Transitions*, 2 CLIMATE ACTION 1, 2 (2023). McKinsey estimates that capital spending and physical assets needed for a net-zero transition by 2050 would cost $9.2 trillion per year, which is, in 2020 terms, "half of global corporate profits, one-quarter of total tax revenue, and 7 percent of household spending." MEKALA KRISHNAN, HAMID SAMANDARI, JONATHAN WOETZEL, SVEN SMIT, DANIEL PACTHOD, DICKON PINNER, TOMAS NAUCLÉR, HUMAYAN TAI, ANNABEL FARR, WEIGE WU & DANIELLE IMPERATO, THE NET-ZERO TRANSITION: WHAT IT WOULD COST, WHAT IT COULD BRING, at viii (2022), https://www.mckinsey.com/~/media/mckinsey/business%20functions/sustainability/our%20insights/the%20net%20zero%20transition%20what%2

because of the time lag between emissions and effects, mitigation must occur sooner rather than later to be maximally effective.[72] If we know that climate action is economically justified, the best case is for action now. But mitigation imposes costs on those who are presently enjoying rights to free pollution of the global commons.[73] They will need to either cease emitting greenhouse gases or pay someone else to reduce emissions for them. Further, they will incur these costs of mitigation without immediately (or ever) benefitting from their personal share in the future benefits of a world with less warming. Meanwhile, the future interests of those who would benefit from present action in the distant future are typically weighted nearly as much as present interests.[74]

Economists and policymakers often attempt to adjust for the intertemporal incidence of costs and benefits of climate action through discounting.[75] While there is some debate about the correct discount rate,[76] and even about whether cost-benefit analysis could ever be an appropriate decision-making tool for a problem with such an intergenerational dimension,[77] a low enough discount rate makes the cost-benefit case for aggressive climate regulation in the present quite

oit%20would%20cost%20what%20it%20could%20bring/the-net-zero-transition-what-it-would-cost-and-what-it-could-bring-final.pdf [https://perma.cc/GEF7-BG72].

[72] *See* WAGNER & WEITZMAN, *supra* note 62, at 15-17 (showing why a "[w]ait and see" approach "might as well be called 'give up and fold'").

[73] *See* WILLIAM NORDHAUS, THE CLIMATE CASINO: RISK, UNCERTAINTY, AND ECONOMICS FOR A WARMING WORLD 6 (2013) (noting that greenhouse gas emissions pose a classic externality problem — a situation where "those who produce the emissions do not pay for that privilege, and those who are harmed are not compensated" — albeit one that is "particularly thorny" because "it is global and extends for many decades into the future").

[74] *See* HALE, *supra* note 35, at 29.

[75] *See* NORDHAUS, *supra* note 73, at 182-94; SUNSTEIN, *supra* note 63, at 55 (stating in plain language the case for some sort of discounting, but also noting that people may gravitate towards an "implausibly high discount rate" that leads to "insufficient concern for a potentially catastrophic risk").

[76] *See* David A. Weisbach & Cass R. Sunstein, *Climate Change and Discounting the Future: A Guide for the Perplexed*, 27 YALE L. & POL'Y REV. 433, 434 (2009).

[77] *See, e.g.*, DOUGLAS A. KYSAR, REGULATING FROM NOWHERE: ENVIRONMENTAL LAW AND THE SEARCH FOR OBJECTIVITY 110 (2010) (critiquing cost-benefit analysis).

strong.[78] Most available models predict that the future quantifiable harms of climate change are likely to be disruptive enough to future generations that they would easily justify far more substantial mitigation today than society is currently undertaking. To some degree the United States has now recognized this by developing a higher "social cost of carbon" than has been employed in the past,[79] as well as lower discount rates in regulatory decision-making more generally.[80]

Nevertheless, current understandings of the long-range benefits of incurring climate costs now have not been translated to action sufficient to provide these benefits. To understand why this has been the case, we have to consider how politics interact with the intertemporal incidence of the costs and benefits of climate action.

B. The Intertemporal Public Choice Dynamics of Climate Change Mitigation

While very basic, the intertemporal incidence of costs and benefits goes a long way in explaining the failure to enact strong greenhouse gas mitigation measures. It leads inexorably to certain intertemporal public choice dynamics that raise the political difficulty of passing even clearly socially beneficial climate mitigation policies.

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[78] *See* MICHAEL A. LIVERMORE & RICHARD L. REVESZ, REVIVING RATIONALITY: SAVING COST-BENEFIT ANALYSIS FOR THE SAKE OF THE ENVIRONMENT AND OUR HEALTH 65 (2020); Oliver Gordon, *Can a 2% "Social Discount Rate" Transform Global Climate Policy?*, ENERGY MONITOR (July 28, 2023), https://www.energymonitor.ai/finance/regulation-policy/can-a-2-social-discount-rate-transform-global-climate-policy/ [https://perma.cc/BF8M-NT5W].

[79] *See* Coral Davenport, *Biden Administration Unleashes Powerful Regulatory Tool Aimed at Climate*, N.Y. TIMES (Dec. 2, 2023), https://www.nytimes.com/2023/12/02/climate/biden-social-cost-carbon-climate-change.html (discussing EPA's announcement of a new "social cost of carbon" priced at $190 a ton, up from $5 a ton during the first Trump Administration). For background on how the social cost of carbon is constructed through integrated assessment models, see Gilbert E. Metcalf & James H. Stock, *Integrated Assessment Models and the Social Cost of Carbon: A Review and Assessment of U.S. Experience*, 11 REV. ENV'T ECON. & POL'Y 80 (2017).

[80] *See* Stuart Shapiro, *OMB Just Did Something Boring but Important*, HILL (Nov. 27, 2023, 6:30 PM), https://thehill.com/opinion/finance/4329892-omb-just-did-something-boring-but-important/ (discussing recent revisions to OMB Circular A-4 which adopted a lower discount rate for agency cost-benefit analyses, all but guaranteeing that "the tabulated benefits of many regulations, particularly those involving climate change" will go up).

Public choice is a "family of concepts and approaches" rather than a single theory,[81] but what unites these concepts and approaches is "the conviction that well-organized groups, seeking to advance their members' self-interest at someone else's cost, tend to win out in the public policy market."[82] The key is the insight that "organizing is costly," which means that motivations to organize are driven by individual evaluations of whether the benefits of organizing outweigh the costs.[83] As Mancur Olson showed, this willingness to pay the costs of political organizing is unevenly distributed in society — those with the largest stakes in a policy are the most likely to participate politically.[84] Because public choice theories think of public policy in market terms, this skew in participation is hypothesized to lead to persistent skews in outcomes. James Q. Wilson formalized these insights by combining two dimensions into a typology (Table 1).[85] Depending on whether the costs of the policy in question are distributed or concentrated, as well as whether the benefits of the policy in question are distributed or concentrated, the shape of political lobbying could be roughly predicted.[86]

TABLE 1: WILSON'S TYPOLOGY OF POLITICAL ORGANIZATION OVER PUBLIC POLICY

	Distributed Costs of Policy	**Concentrated Costs of Policy**
Distributed Benefits of Policy	*Majoritarian Politics*	*Entrepreneurial Politics*
Concentrated Benefits of Policy	*Client Politics*	*Interest-Group Politics*

[81] Cynthia R. Farina & Jeffrey J. Rachlinski, *Getting Beyond Cynicism: New Theories of the Regulatory State*, 87 CORNELL L. REV. 267, 279 (2002).

[82] *Id.* at 268. We could go up one level of abstraction, as Jerry Mashaw does: what unites all public choice theory is a hypothesis that all political outcomes are a "function of self-interested individual behaviors." JERRY L. MASHAW, GREED, CHAOS, AND GOVERNANCE: USING PUBLIC CHOICE TO IMPROVE PUBLIC LAW 11 (1997).

[83] Farina & Rachlinski, *supra* note 81, at 279.

[84] MANCUR OLSON, THE LOGIC OF COLLECTIVE ACTION: PUBLIC GOODS AND THE THEORY OF GROUPS 60-65 (1965).

[85] JAMES Q. WILSON, THE POLITICS OF REGULATION 364-72 (1980).

[86] *See id.*

By far the most important prediction for climate change is in the upper right quadrant. Because the benefits of averting additional warming are widely distributed (i.e., the individual value of the benefits is low and equal to everyone else), and because the costs of mitigation are concentrated on those who disproportionately emit greenhouse gases, the prevailing mode of politics is entrepreneurial.[87] In this mode, which typifies many regulatory issues, the policy is designed to impose compliance costs on a concentrated and well-organized segment of society in order to realize more diffuse benefits for a likely poorly organized society.[88] The politics are termed entrepreneurial because the likely result of this matchup is a failure to enact this type of policy *unless* a policy entrepreneur successfully rallies the diffuse public around the cause.[89] It takes a special kind of thought leader and a bit of luck to successfully engage in entrepreneurial politics; the norm is for entrepreneurial politics to fail and for concentrated interests to block public policies that would threaten them.[90] Discerning readers may note the connection to capture theory: when costs are concentrated but benefits are distributed, what likely results is "corrosive capture."[91] This form of capture is tantamount to the failure to establish an entrepreneurial politics favoring the diffuse and unorganized public. By contrast, if costs are distributed but benefits are concentrated, what likely results is classic anti-competitive capture of the kind predicted by Stigler, Peltzman, Bernstein, and others.[92]

[87] *Id.* at 370 ("[A] policy may be proposed that will confer general (though perhaps small) benefits at a cost to be borne chiefly by a small segment of society. When this is attempted, we are witnessing *entrepreneurial politics*.")

[88] *See id.*

[89] *Id.* (noting that entrepreneurial politics depend on "the efforts of a skilled entrepreneur who can mobilize latent public sentiment (by revealing a scandal or capitalizing on a crisis)"). Wilson's prototype is Ralph Nader, who figures largely in political histories of regulation and the administrative state. *See* PAUL SABIN, PUBLIC CITIZENS: THE ATTACK ON BIG GOVERNMENT AND THE REMAKING OF AMERICAN LIBERALISM 104-26 (2021).

[90] WILSON, *supra* note 85, at 370.

[91] DANIEL CARPENTER & DAVID A. MOSS, PREVENTING REGULATORY CAPTURE: SPECIAL INTEREST INFLUENCE AND HOW TO LIMIT IT 16 (2014).

[92] *Id.* at 9-10; *see also* Christopher Carrigan & Cary Coglianese, *Capturing Regulatory Reality: Stigler's* The Theory of Economic Regulation, 2 (Univ. Pa. Inst. For L. & Econ. Rsch. Paper, Paper No. 16-15, 2016), https://scholarship.law.upenn.edu/cgi/viewcontent.

Public choice has serious limits, both theoretical and empirical. Scholars have, for instance, questioned how it is possible, if public choice is generally accurate, that so much public-minded regulatory legislation passed in the 1960s and 1970s. Similarly, they have puzzled over the fact that sectors regulated inefficiently as public utilities (the quintessential form of client politics and anti-competitive capture) such as aviation and trucking were able to deregulate and open themselves up for market competition.[93] These results belie the predictions offered by public choice theory. However, like all theories, public choice is useful if it offers a framework for analysis and prediction, and on that front, public choice may be exceptionally helpful when it comes to analyzing how the intertemporal incidence of costs and benefits of climate mitigation form politically available options.

To see why, we can zoom in on just the upper right quadrant of Wilson's typology but also add in a third dimension — the timing of benefits and costs of the policy. In Table 2, we hold the distribution of costs and benefits constant (we are dealing only with entrepreneurial politics, where the costs of policy are high for a concentrated segment of society but the benefits are widely distributed among the diffuse public), but we separate out whether these concentrated costs and distributed benefits occur now or at some point in the distant future. Arraying these dimensions, we can make out some high-level predictions.

cgi?article=2651&context=faculty_scholarship [https://perma.cc/T7UZ-4ZLH] (discussing the intellectual history of anti-competitive capture critique).

[93] *See* STEVEN P. CROLEY, REGULATION AND PUBLIC INTERESTS: THE POSSIBILITY OF GOOD REGULATORY GOVERNMENT 26-52 (2008).

TABLE 2: INTERTEMPORAL PUBLIC CHOICE DYNAMICS IN THE ENTREPRENEURIAL POLITICS SPACE

	Concentrated Costs/Near-Term	**Concentrated Costs/Long-Term**
Distributed Benefits/Near-Term	*Moderately Difficult Path to Enactment*	*Easiest Path to Enactment*
Distributed Benefits/Long-Term	*Most Difficult Path to Enactment (Past Efforts to Pass Mitigation Policy)*	*Moderately Easy Path to Enactment*

First, the world we live in — the one where the enormous benefits to society of climate mitigation accrue in the long-term future, but the concentrated costs of mitigation land in the near-term — is likely to be a difficult situation for climate policy. The time lag for the benefits of climate action makes it ever harder for diffuse beneficiaries to organize, while the short timeframe for the imposition of costs sharpens incentives for the regulated to organize and oppose such policy. In essence, the temporal dimension exacerbates the difficulty of organizing, thereby exaggerating the predictions of the entrepreneurial model. It may be possible for an entrepreneur to rally the diffuse public when those beneficiaries are at least alive, but it is much harder to do so when many of these beneficiaries are not yet born. Perhaps a policy entrepreneur could succeed in appealing to current inhabitants of the world using a moral appeal relating to the importance of preserving the earth for future generations, but this is difficult work.

Second, across the board, the shift to near-term incidence of the distributed benefits of mitigation would be helpful for enacting the policy. The path would be easiest, of course, if this shift was coupled with a strategy for shifting the concentrated costs of compliance to the long-term future, but even with concentrated costs in the near-term future, the policy battle is more even than it is when distributed beneficiaries must organize around future benefits. The problem with all of this is that there is no easy way to transform climate mitigation

benefits into near-term benefits.[94] An aggressively low discount rate in cost-benefit analysis might help when it comes to discrete regulatory decisions within existing legal frameworks,[95] but it is too abstract to become the kind of political activator that would be needed to influence the passage of new mitigation policies by national or international policymaking bodies. There's no getting around the fact that most of the benefits of mitigation will become tangible only in hindsight, well after we have gone over the climate cliff.

This leaves a third possibility — shifting the concentrated costs from near-term costs to long-term costs. While this would still leave challenges (costs are still costs, and they are concentrated, while long-term benefits are still distributed among the diffuse public), it would reduce some of the incentives polluters have to resist the imposition of controls. Even for actors that would be required to incur the costs of compliance with a mitigation policy, a delay in the imposition of those legal duties would render those costs less salient and tangible. The element of time introduces many uncertainties.[96] Firms evolve over time, and that evolution may translate to opportunities for competitive advantage. Suppose, for instance, that a firm anticipates that it will be able to decarbonize its operations at some distant point in the future while some of its competitors may struggle. Such a firm might well support the imposition of mitigation policy in the future, even as they would not support the same controls if they were imposed right now. In other words, with the delay of the concentrated costs of a mitigation policy, the well-known pathology of firms using law and regulation to

[94] One interesting proposal that does attempt to create more immediate benefits is the idea of a climate legacy registry, which may impart present reputational benefits to organizations that record substantial investments in their legacy (though of course part of the idea is also to create a class of long-term benefits for industry that would induce action now). *See, e.g.*, Vandenberg & Raimi, *supra* note 24 (laying out this proposal). Another idea along these lines would seek to create markets for climate action, and much action on shareholder climate activism and climate risk disclosure can be understood within that frame. *See* Felix Mormann & Milica Mormann, *The Case for Corporate Climate Ratings: Nudging Financial Markets*, 53 ARIZ. ST. L.J. 1209, 1220-34 (2021).

[95] *See supra* notes 75–80 and accompanying text.

[96] *See infra* Part II.B.

stifle competition and innovation[97] would be turned on its head so that enterprising firms would benefit relative to their laggard peers.[98] Concentrated polluting interests are currently likely to be united in their opposition to immediate mitigation policy, due in large part to the intertemporal incidence of the costs and benefits of climate action, and to organize effectively to nix any attempt by distributed beneficiaries to impose such a policy. But delaying compliance holds potential to divide and conquer this blockade by presenting an opportunity for innovative decarbonizers to outrace their foes to the finish line and gain a larger market share.[99]

So far, the focus has been on the interests that would directly bear the concentrated costs of a climate mitigation policy, but a shift from near-term to long-term concentrated costs would also likely affect the decision-making of the politicians who would have the ultimate say on policy. On a public choice account, politicians of course take into account the political pressure that lobbying groups put on them, but they also have their own institutional and professional incentives.[100] For

[97] *See* BRINK LINDSEY & STEVEN M. TELES, THE CAPTURED ECONOMY: HOW THE POWERFUL ENRICH THEMSELVES, SLOW DOWN GROWTH, AND INCREASE INEQUALITY 8-9 (2017) (discussing the dynamics of rent-seeking and how they generally slow innovation and increase inequality).

[98] CHARLES F. SABEL & DAVID G. VICTOR, FIXING THE CLIMATE: STRATEGIES FOR AN UNCERTAIN WORLD 8-9 (2022) (discussing the idea of a penalty default, which sets a future goal that "reward[s] leaders" for "bet[ting] on change" and punishes "laggard[s]"). These ideas are somewhat related to the literature on technology-forcing regulation, which was a strategy most famously deployed by the Clean Air Act Amendments of 1970. *See* Note, *Forcing Technology: The Clean Air Act Experience*, 88 YALE L.J. 1713, 1718-19 (1979). Technology-forcing regulation involves government setting performance standards that exceed the possibilities for efficient compliance but induce a spiral of innovation that leads to more efficient methods of compliance. While technology-forcing regulation is less in vogue today than it once was, it is arguably a key strategy behind California's zero-emission vehicle mandate. *See* J.H. Wesseling, J.C.M. Farla & M.P. Hekkert, *Exploring Car Manufacturers' Responses to Technology-Forcing Regulation: The Case of California's ZEV Mandate*, 16 ENV'T INNOVATION & SOCIETAL TRANSITIONS 87, 101 (2015).

[99] *See infra* Part II.B.1.b (discussing this potential and linking it as well to favorable "policy feedback" dynamics that can help entrench the kind of climate sunrise I advocate for in this Article).

[100] *See* MASHAW, *supra* note 82, at 15.

many, this boils down to the imperative to achieve reelection.[101] Achieving reelection, especially when addressing a policy domain like climate law that benefits the diffuse public over a long timeframe, can be a tightrope walk balancing the need to prove to voters (mostly diffuse beneficiaries of regulation) that politicians are doing something against the need to avoid angering the concentrated interests that would incur the costs of these policies. Public choice predicts that policymakers will seek opportunities for credit claiming with the former constituency while avoiding any serious negative impacts on the latter.[102] With respect to climate mitigation policy, policymakers would find an attractive option in being able to claim credit for passing climate policies while also assuring concentrated targets of regulation that costs will not be assessed any time soon.

In sum, from a public choice perspective, the intertemporal incidence of costs and benefits of climate mitigation policy presents both a challenge and opportunity. How policymakers choose to navigate the politics of the situation can dramatically alter the viability and durability of climate policy.[103]

C. The Shift to Politically Neutral Climate Policy

One good reason to think about climate politics as a problem of intertemporal public choice is because it helps explain why climate policy has gone where it has: in the direction of green industrial policy ("GIP") and private environmental governance ("PEG"). Both of these strategies help neutralize concentrated political opposition and are therefore obvious candidates for prioritization over more direct

[101] DAVID R. MAYHEW, CONGRESS: THE ELECTORAL CONNECTION 16-17 (1974); *see also* Gary C. Jacobson, *The Electoral Connection, Then and Now*, *in* GOVERNING IN A POLARIZED AGE: ELECTIONS, PARTIES, AND POLITICAL REPRESENTATION IN AMERICA 35, 36 (Alan S. Gerber & Eric Schickler eds., 2017) (concluding that the "electoral connection, although refashioned, remains as potent as ever").

[102] *See* MORRIS P. FIORINA, CONGRESS: KEYSTONE OF THE WASHINGTON ESTABLISHMENT 67 (2nd ed. 1989).

[103] *E.g.*, David Robinson, *US Federal Energy and Climate Change Legislation: Some Lessons to Be Learned from the Waxman-Markey Bill*, 4 CARBON & CLIMATE L. REV. 127, 132 (2010) (concluding, in the wake of the failed Waxman-Markey legislation, that the incidence of mitigation costs (and the failure of policymakers to justify those costs), played a role in dooming the legislation).

mitigation policies, which run headlong into the public choice problems discussed in Part I.B.

Industrial policy "refers to government actions to alter the structure of an economy, encouraging resources to move into particular sectors that are perceived as desirable for future development."[104] GIP is a riff on industrial policy where "climate change mitigation becomes a binding constraint in the overall social welfare policy objective."[105] This is usually achieved by directly or indirectly subsidizing desirable technologies, such as the green technologies that would be essential to a decarbonizing transition, as opposed to controlling undesirable activities through regulation.[106] Although in the not-too-distant past industrial policy was "out of fashion," it has quickly become central to policymaking.[107] For instance, President Biden has "gone large on industrial policy" in laws like the CHIPS Act, as well as the Inflation Reduction Act ("IRA"), which has been billed as "America's biggest ever piece of legislation to combat climate change."[108] The IRA contains extensive subsidies for firms that contribute to a decarbonized economy — renewable energy producers, carbon capture firms, electric vehicle

[104] Tilman Altenburg & Dani Rodrik, *Conceptual Foundations*, *in* GREEN INDUSTRIAL POLICY: CONCEPT, POLICIES, COUNTRY EXPERIENCES 2 (Tilman Altenburg & Claudia Assmann eds., 2017), https://drodrik.scholar.harvard.edu/files/dani-rodrik/files/altenburg_rodrik_green_industrial_policy_webversion.pdf [https://perma.cc/JV6Q-76SG].

[105] Simone Tagliapietra & Reinhilde Veugelers, *Fostering the Industrial Component of the European Green Deal: Key Principles and Policy Options*, 56 INTERECONOMICS 305, 305 (2021).

[106] *See* Dani Rodrik, *Green Industrial Policy*, 30 OXFORD REV. ECON. POL'Y 469, 470-71 (2014).

[107] John Van Reenan, *The Case for Green Industrial Policy*, PROMARKET (Feb. 14, 2023), https://www.promarket.org/2023/02/14/the-case-for-green-industrial-policy/ [https://perma.cc/8HPB-JRE5].

[108] *Id.*; *see also* Nicholas S. Bryner, *Green Transitions in a COVID Economy*, 42 PACE ENV'T L. REV. 37, 51-2 (2022); Charles J. Reid, Jr., *The Return of Public Goods: Introduction to a Symposium*, 16 U. ST. THOMAS J.L. & PUB. POL'Y 1, 1-2 (2022); Paul Krugman, Opinion, *How to Think About Green Industrial Policy*, N.Y. TIMES (May 9, 2023), https://www.nytimes.com/2023/05/09/opinion/climate-inflation-reduction-act-biden.html ("Despite its deliberately misleading name, the act was mostly a climate bill.").

manufacturers and purchasers, and much more.[109] That is just the tip of a very large iceberg.[110]

The political advantages of GIP are plain to see.[111] Such strategies avoid the imposition of immediate concentrated costs of mitigation and focus instead on creating a new class of immediate beneficiaries — the subsidized sectors of the economy. As the Roosevelt Institute puts it, "Deliberate climate industrial strategy — investments that shift the material interests of key industries, reduce the costs of clean energy, and generate political buy-in — can lock in climate action."[112] Subsidized firms are obviously invested in the policy and will organize to see that it is passed through the legislative process. They will be joined by a sizeable portion of the diffuse tax base who, despite footing the bill in the long-term future, can hold out hope that investments in innovative technologies will strengthen economic growth for the nation in the future.[113] Advocates hope that a "cross-partisan political coalition" will foment a "green spiral," where prior investment in green industries

[109] *See generally* Doniger, *supra* note 17 (discussing the various subsidies in the Inflation Reduction Act and their advantages over conventional administrative law in a world where courts are highly skeptical of regulation).

[110] *See* Garrett Donnelly, Note, *Green Industry, Procurement, and Trade: Refining International Trade's Relationship with Green Policy*, 98 N.Y.U. L. REV. 282, 284-85 (2023) (collecting examples of green industrial policy in the United States).

[111] Krugman, *supra* note 108 ("The Inflation Reduction Act, unlike earlier proposed industrial policies, isn't an attempt to accelerate economic growth by picking winners. It is instead about reshaping the economy to limit climate change. The main reason for doing this via subsidies and industrial policy, rather than through Econ 101-recommended policies like carbon taxes, is political. Emissions taxes were never going to pass an evenly divided Senate in which Joe Manchin had effective veto power, but legislation that would lead to a surge in manufacturing — which is already happening, by the way — was, if only barely, within the realm of the politically possible.").

[112] Jane Flegal, *Industrial Policy + Climate Policy*, *in* INDUSTRIAL POLICY SYNERGIES: REFLECTIONS FROM BIDEN ADMINISTRATION ALUMNI 19, 21 (Roosevelt Inst. ed. 2023), https://rooseveltinstitute.org/publications/industrial-policy-synergies-industrial-policy-climate-policy/ [https://perma.cc/52BZ-BSTU].

[113] *See* Aurelia Glass & Karla Walter, *How Biden's American-Style Industrial Policy Will Create Quality Jobs*, CTR. FOR AM. PROGRESS (Oct. 27, 2022), https://www.americanprogress.org/article/how-bidens-american-style-industrial-policy-will-create-quality-jobs/ (noting that industrial policy actions "support the creation of good jobs" and make "needed investments in growing industries that will drive future economic growth in a way that promotes quality American jobs").

begets further investment.[114] In some sense, non-subsidized sectors are disadvantaged relative to the firms that benefit from industrial policy, but these missed subsidies are likely not nearly as easy for these firms to organize around as are direct impositions of mitigation costs.[115] The result is a dramatic reconfiguration of climate politics that leans into public choice and makes it work for a green transition. Green, just like greed, is good.

PEG accomplishes much the same feat. It refers to a "new model of legal and extralegal influences on the environmentally significant behavior of corporations and households" in which "private-private" interactions "play the standard-setting, implementation, monitoring, enforcement, and adjudication roles traditionally played by public regulatory regimes."[116] This model emerged in response to the persistent institutional roadblocks to traditional public governance approaches (i.e., legislation and regulation), which made it impossible for the public's pro-environmental preferences to be realized in public law.[117] While PEG efforts are multifarious, they harness a variety of approaches to try to change economic incentives of market actors. Pressure on corporations to pick up the slack, such as that brought by the Carbon Disclosure Project's reporting and rating process or shareholder activism, may resolve information asymmetries that lead to market-based improvements even in the absence of much government action.[118] Scholars have also documented the many ways that environmental non-governmental organizations and corporations have collaborated to improve the carbon emissions associated with supply chains[119] and to improve the disclosure of environmentally relevant

[114] Flegal, *supra* note 112, at 21.

[115] This likely follows from a cognitive bias towards valuing what one already has (and is losing) more than what one might gain — a phenomenon that has been called the "endowment effect" or "loss aversion." *See* Christine Jolls, Cass R. Sunstein & Richard H. Thaler, *A Behavioral Approach to Law and Economics*, 50 STAN. L. REV. 1471, 1480 (1998).

[116] Vandenbergh, *Private Environmental Governance*, *supra* note 22, at 133.

[117] *See id.*

[118] *See* Mormann & Mormann, *supra* note 94, at 1245-46, 1227-34.

[119] LeRoy Paddock & Natasha Rao, *Green Supply Chain Management: A Perspective on Best Practices in GSCM Design*, 71 ARK. L. REV. 487, 489 (2018).

information to consumers through labeling practices.[120] Similarly, there has been an explosion of emphasis on disclosure of environmental, social, and governance ("ESG") factors in finance, such that many of the largest private equity firms, like BlackRock, are directing more of their capital to businesses that take these factors seriously.[121] These pressures have in turn led to a wave of net zero commitments from businesses[122] as well as entire industries devoted to offering offsets or credits to firms that wish to demonstrate achievement of these goals.[123] At the individual level, consumers are demanding more energy-efficient products and services,[124] more sustainable foods,[125] and more corporate accountability for environmental harms, including greenhouse gas emissions.[126]

[120] *See* Michael P. Vandenbergh, *Disclosure of Private Climate Transition Risks*, 63 WM. & MARY L. REV. 1695, 1703 (2022).

[121] Madison Condon, *Market Myopia's Climate Bubble*, 2022 UTAH L. REV. 63, 65-66. These trends will likely be boosted by ongoing regulatory efforts by the U.S. Securities and Exchange Commission ("SEC"), *see* Jon McGowan, *SEC Climate Disclosure Rule Most Likely Not Final Until 2024, Effective 2026*, FORBES (Oct. 26, 2023), https://www.forbes.com/sites/jonmcgowan/2023/10/26/sec-climate-disclosure-rule-most-likely-not-final-until-2024-effective-2026/?sh=5298cb3f3434 [https://perma.cc/M7KR-QLDR], as well as other non-governmental organizations, such as the Task Force on Climate-Related Financial Disclosures. *See* Mormann & Mormann, *supra* note 94, at 1220-27.

[122] Esty & Arriba-Sellier, *supra* note 28, at 637-44; Lin, *supra* note 28, at 681-84.

[123] Lin, *supra* note 28, at 739-42.

[124] *See, e.g.*, Todd Aagaard, *24/7 Clean Energy*, 94 U. COLO. L. REV. 571 (2023) (discussing the rise of consumer contracts for renewable energy and demand for renewable energy credits); Alexandra B. Klass & Elizabeth J. Wilson, *Remaking Energy: The Critical Role of Energy Consumption Data*, 104 CALIF. L. REV. 1095 (2016) (highlighting growing demand for energy efficiency); Gina S. Warren, *1-Click Energy: Managing Corporate Demand for Clean Power*, 78 MD. L. REV. 73 (2018) (noting the increasing interest of businesses in renewable energy supplies for their power needs).

[125] *See, e.g.*, Lingxi Chenyang, *Is Meat the New Tobacco? Regulating Food Demand in the Age of Climate Change*, 49 ENV'T L. REP. 10344 (2019) (noting that consumers may be open to changed norms of consumption of meat); Jason J. Czarnezki, *The Future of Food Eco-Labeling: Organic, Carbon Footprint, and Environmental Life-Cycle Analysis*, 30 STAN. ENV'T L.J. 3 (2011) (discussing trends in green labeling for food products); Jedediah Purdy & James Salzman, *Corn Futures: Consumer Politics, Health, and Climate Change*, 38 ENV'T L. REP 10851 (2008) (noting growing appreciation of the problems with a corn-based diet).

[126] *See* Mormann & Mormann, *supra* note 94, at 1235-41 (discussing the divestment movement).

As Michael Vandenbergh and Jonathan Gilligan suggest with the title of their book on PEG, *Beyond Politics*, all of these developments in private-private interactions avoid the imposition of costs on concentrated opponents, resulting in less political resistance to environmental progress.[127] While many PEG actions by corporations and other private entities may not exactly be voluntary, given that they ultimately respond to consumer and investor pressure and might not be undertaken (at least not in every case) without such pressure, they are at least consensual. Businesses often see advantages to getting ahead of consumer sentiment and being leaders in this field, and they may even see potential profits and new business models.[128] In short, PEG is almost entirely politically innocuous.[129]

D. The Ongoing Need for Emissions Regulation

The trends described in Part I.C towards GIP and PEG have helped overcome political gridlock on climate policy. They have been, and will continue to be, major sites of important climate policymaking. They are also not enough.

GIP has a slew of built-in limitations as a comprehensive response to climate change.[130] For one thing, it is a fundamentally indirect approach to what is ultimately a negative externality problem.[131] The theory

[127] MICHAEL P. VANDENBERGH & JONATHAN M. GILLIGAN, BEYOND POLITICS: THE PRIVATE GOVERNANCE RESPONSE TO CLIMATE CHANGE 3-4 (2017).

[128] Michael Vandenbergh, *The Drivers of Corporate Climate Mitigation*, 29 ENV'T F. 1, 29 (2018).

[129] *But see* Mormann & Mormann, *supra* note 94, at 1236 (noting that "the divestment movement is not uncontroversial"). Indeed, much of the political pushback against PEG comes not from business but from environmental and climate activists, who sometimes claim that elements of PEG are "greenwashing." *See* Light & Orts, *supra* note 22, at 67.

[130] For an excellent overview of the "complementary and conflictual dynamics between industrial policy and environmental policy in both domestic and international climate policy making," see Jonas Meckling, *Making Industrial Policy Work for Decarbonization*, 21 GLOB. ENV'T POL. 134, 137-42 (2021).

[131] *See* NORDHAUS, *supra* note 73, at 6. Dani Rodrik describes the failure to price carbon as a "second-best" reason for green industrial policy, meaning that many of the problems that green industrial policy solves (a lack of incentives to invest in innovative decarbonizing technologies) are caused by an unregulated externality. *See* Rodrik, *supra* note 106, at 470.

behind GIP is to make non-emitting economic activity comparatively more advantageous than emitting economic activity as the economy as a whole grows.[132] This strategy may work, but perhaps inefficiently if subsidies support activities that turn out not to be the best way to decarbonize.[133] Industrial policy works well when preferred sectors are on the verge of displacing unpreferred sectors, such that relatively small subsidies can tip the balance dramatically toward the preferred sector.[134] Many forms of renewable energy fit the bill, as they are now cost-competitive with fossil-fueled energy sources and, with subsidies, can quickly and relatively cheaply become the only reasonable choice for developers.[135] But many sources of greenhouse gases — agriculture, aviation, transportation, heavy shipping, and heavy industry — are farther away from being revolutionized the way that electric power production has been.[136] Smart GIP can lay the groundwork for changes in these hard-to-decarbonize sectors,[137] but it is anything but a sure bet and there will likely be mistakes made on the route to decarbonization

[132] *See supra* notes 111–114 and accompanying text.

[133] Patrik Söderholm, *The Green Economy Transition: The Challenges of Technological Change for Sustainability*, 3 SUSTAINABLE EARTH 1, 4-5 (2020).

[134] STEVEN K. VOGEL, LEVEL UP AMERICA: THE CASE FOR INDUSTRIAL POLICY AND HOW TO DO IT RIGHT 9-10 (2021).

[135] *See 2023 Levelized Cost of Energy+*, LAZARD (Apr. 12, 2023), https://www.lazard.com/research-insights/2023-levelized-cost-of-energyplus/ [https://perma.cc/KZ2J-CC6K] (reporting figures on the levelized cost of energy, including both subsidized and unsubsidized comparisons); Carly Wanna, *Replacing US Coal Plants with Solar and Wind is Cheaper Than Running Them*, BLOOMBERG, https://www.bloomberg.com/news/articles/2023-01-30/new-us-solar-and-wind-cost-less-than-keeping-coal-power-running?leadSource=uverify%20wall (last updated Feb. 2, 2023) [https://perma.cc/4HUL-LBBS].

[136] Mekala Krishnan, Hamid Samandari, Lola Woetzel, Sven Smit, Daniel Pacthod, Dickon Pinner, Tomas Nauclér, Humayan Tai, Annabel Farr, Weige Wu & Danielle Imperato, *Sectors Are Unevenly Exposed in the Net-Zero Transition*, MCKINSEY SUSTAINABILITY (Jan. 25, 2022), https://www.mckinsey.com/capabilities/sustainability/our-insights/sectors-are-unevenly-exposed-in-the-net-zero-transition [https://perma.cc/RZ6C-8F28].

[137] Auburn Bell & Mike Williams, *The Pathway to Industrial Decarbonization*, CTR. FOR AM. PROGRESS (Oct. 26, 2022), https://www.americanprogress.org/article/the-pathway-to-industrial-decarbonization/ [https://perma.cc/ZX4R-XCST]; Amory Lovins, *Decarbonizing Our Toughest Sectors — Profitably*, MIT SLOAN MGMT. REV. (Aug. 4, 2021), https://sloanreview.mit.edu/article/decarbonizing-our-toughest-sectors-profitably/ [https://perma.cc/MXP8-JQ9X].

in these areas.[138] Some might classify Texas's new constitutional amendment subsidizing natural gas power plants as green industrial policy compared to dirtier alternatives, but that does not necessarily mean that investing in natural gas now is good for decarbonization.[139] Ultimately, because GIP is an indirect means of achieving internalization of pollution, the operationalization leaves many opportunities for missteps.[140]

For another thing, green industrial policy imposed at the nation-state level can be, and already has been, perceived as protectionist and retaliated against by other nation states.[141] This retaliation could be a good thing in the case of a race-to-the-top in terms of subsidies,[142] but it is just as likely to be a race-to-the-bottom where non-participating nation states rush to bolster their own economic situations by attracting emitting industries.[143] Thus, GIP is subject to many of the same emissions leakage problems that insufficiently comprehensive regulations are plagued by. Ultimately, green industrial policy has the potential to leave the door open to substantial emissions even under very aggressive support for green industries — indeed, COP28 president Sultan al Jaber could out of one side of his mouth support green

[138] Rodrik, *supra* note 106, at 472 (noting that "once governments are in the business of supporting this or that industry, they invite rent-seeking and political manipulation by well-connected firms and lobbyists," but arguing that these concerns can be managed, if not eliminated, by "appropriate institutional design").

[139] *See* Robert Walton, *Texas Voters Approve $10B Energy Fund, with Most Going to Build Gas-Fired Power Plants*, UTIL. DIVE (Nov. 8, 2023), https://www.utilitydive.com/news/texas-voters-approve-energy-fund-gas-power-plants-proposition-7/699110/ [https://perma.cc/JQG4-AFNY].

[140] *See* Meckling, *supra* note 130, at 139-40.

[141] Weil, *supra* note 23, at 9-12; Van Reenan, *supra* note 107.

[142] Krugman, *supra* note 108; *see* Julian Spector, *Suddenly, the US is a Climate Policy Trendsetter*, CANARY MEDIA (Apr. 7, 2023), https://www.canarymedia.com/articles/clean-energy-manufacturing/suddenly-the-us-is-a-climate-policy-trendsetter [https://perma.cc/K3B6-ACLS].

[143] Adam Forrest, *Jeremy Hunt Unveils Green Technology Plan with Swipe at Joe Biden*, INDEPENDENT (Mar. 30, 2023, 3:36 AM), https://news.yahoo.com/jeremy-hunt-unveils-green-technology-065833101.html?guccounter=1 [https://perma.cc/CX6B-NUC3].

industrial policy while simultaneously chastising advocates of a phase-out of fossil fuels.[144]

PEG also has a ceiling. For PEG, the prospects are very much limited by the concept of the "energy-efficiency gap."[145] Consumers drive PEG, but not all consumers are willing to sacrifice money in support of climate goals. Instead, they are interested in win-win efficiency gains that have the potential to both reduce emissions and save money. The energy-efficiency gap refers to the aggregated opportunities for such improvements.[146] As long as the efficiency gap remains, PEG's job — coordinating private action to realize these gains — remains fairly easy. Beyond the energy-efficiency gap — when consumer or investor pressure starts to atrophy due to tradeoffs — the work of PEG is much harder. Certain other pressures, such as "reputation, employee recruitment and morale, investor and lender pressure, anticipation of future regulations, and social and personal norms," can still drive some PEG, "but the magnitude of the private opportunity is reduced if the efficiency gap is small."[147]

The energy-efficiency gap is probably sizable, somewhere on the order of a billion tons of carbon dioxide emissions per year,[148] but it is not coextensive with the total amount of emissions of greenhouse gases. Yet, to keep warming below 2º Celsius, carbon budget calculators suggest that emissions of greenhouse gases will have to end (or be

[144] Jon Gambrell & Seth Borenstein, *Analysis: Emirati Oil CEO Leading UN COP28 Climate Summit Lashes Out as Talks Enter Toughest Stage*, ASSOCIATED PRESS, https://apnews.com/article/cop28-un-climate-talks-sultan-al-jaber-women-comments-94495fe0317f405933966c677c101f56 (last updated Dec. 4, 2023, 6:43 PM) [https://perma.cc/67GR-DNWJ].

[145] Michael P. Vandenbergh, *Motivating Private Climate Governance: The Role of the Efficiency Gap*, 71 ARK. L. REV. 349, 353 (2018) [hereinafter Vandenbergh, *Efficiency Gap*].

[146] *Id.* ("[T]he energy-efficiency gap is the difference between the energy-efficiency measures that corporations and households could take at negative cost and the measures that they have actually taken to date.").

[147] *Id.* at 354.

[148] *See* VANDENBERGH & GILLIGAN, *supra* note 127, at ch. 1 (concluding that private initiatives can reduce global carbon emissions by a billion tons per year over the next decade); Vandenbergh, *Efficiency Gap*, *supra* note 145, at 362.

completely offset) by 2050.[149] According to the International Energy Agency, globally there were 36.8 billion tons of energy-related carbon dioxide emissions in 2022 alone.[150] During the COVID-19 pandemic, the world economy was forced into unprecedented and painful austerity, yet the reduction in greenhouse gas emissions was less than ten percent, which quickly evaporated once strict lockdown protocols were lifted.[151] It therefore "appears unlikely that private governance alone can reduce emissions enough to stabilize the climate," even if it "does have the potential to reduce emissions sufficiently and quickly enough to buy time for enacting more comprehensive public governance measures."[152] It remains the case that most emissions of greenhouse gases are highly efficient for the polluter — and ultimately consumers — in the absence of some method of internalizing the social costs of the pollution.

In order to completely address climate change, some form of regulation of emissions must exist alongside GIP and PEG to ensure that free pollution rights do not continue to distort and slow the transitions that are underway. A wide range of options have been explored in the literature (and sometimes tried on a small scale), with some falling within the category of "traditional" regulatory controls (e.g., performance standards) and some falling more on the "market-

[149] *For a Livable Climate: Net-Zero Commitments Must Be Backed by Credible Action*, U.N., https://www.un.org/en/climatechange/net-zero-coalition (last visited Dec. 21, 2024) [https://perma.cc/K2X9-AGNV].

[150] *Global CO2 Emissions Rose Less Than Initially Feared in 2022 As Clean Energy Growth Offset Much of the Impact of Greater Coal and Oil Use*, INT'L ENERGY AGENCY (Mar. 2, 2023), https://www.iea.org/news/global-co2-emissions-rose-less-than-initially-feared-in-2022-as-clean-energy-growth-offset-much-of-the-impact-of-greater-coal-and-oil-use [https://perma.cc/A7C8-KCDC].

[151] P. Bhanumati, Mark de Haan & James William Tebrake, *Greenhouse Emissions Rise to Record, Erasing Drop During Pandemic*, IMF BLOG (June 30, 2022), https://www.imf.org/en/Blogs/Articles/2022/06/30/greenhouse-emissions-rise-to-record-erasing-drop-during-pandemic [https://perma.cc/D4RK-4VNT]; Jeff Tollefson, *COVID Curbed Carbon Emissions in 2020 — But Not by Much*, NATURE (Jan. 15, 2021), https://www.nature.com/articles/d41586-021-00090-3 [https://perma.cc/R6FH-KXTL].

[152] Jonathan M. Gilligan & Michael P. Vandenbergh, *A Framework for Assessing the Impact of Private Climate Governance*, 60 ENERGY RSCH. & SOC. SCI. 1, 1 (2020); *see* Vandenbergh, *Efficiency Gap*, *supra* note 145, at 352.

based regulation" side of the spectrum.[153] We know a great deal about the comparative advantages and disadvantages of many of these regulatory instruments, such as the tradeoffs between carbon taxes and cap-and-trade programs,[154] as well as tradeoffs between market-based regulatory approaches and more traditional forms of emissions controls.[155] Even once these choices are made, many more exist around specific design choices.

But a lack of knowledge about regulatory policy options has never been the real problem — the barrier to rounding out existing strategies with government action to control emissions directly is political.[156] As

[153] *See* Nathaniel O. Keohane, Richard L. Revesz & Robert N. Stavins, *The Choice of Regulatory Instruments in Environmental Policy*, 22 HARV. ENV'T L. REV. 313, 313-14 (1998); Jonas Meckling & Steffen Jenner, *Varieties of Market-Based Policy: Instrument Choice in Climate Policy*, 25 ENV'T POL. 853, 853-54 (2016).

[154] *See, e.g.*, RABE, *supra* note 18 (discussing such tradeoffs); ROBERT N. STAVINS, CARBON TAXES VS. CAP AND TRADE: THEORY AND PRACTICE (2019), https://www.enelfoundation.org/content/dam/enel-foundation/topics/2019/11/heep/Stavins%20HPCA-Enel%20Found%202019%20paper%20191104.pdf [https://perma.cc/U42L-K5BU] (same); Reuven S. Avi-Yonah & David M. Uhlmann, *Combating Global Climate Change: Why a Carbon Tax Is a Better Response to Global Warming Than Cap and Trade*, 28 STAN. ENV'T L.J. 3, 32 (2009) (same); Jeremy Carl & David Fedor, *Tracking Global Carbon Revenues: A Survey of Carbon Taxes Versus Cap-and-Trade in the Real World*, 96 ENERGY POL'Y 50, 51 (2016) (same); Noah Kaufman, *Carbon Tax vs. Cap-and-Trade: What's a Better Policy to Cut Emissions?*, WORLD RES. INST. (Mar. 1, 2016), https://www.wri.org/insights/carbon-tax-vs-cap-and-trade-whats-better-policy-cut-emissions [https://perma.cc/DQ92-6Y7Y] (same).

[155] Arguably, the field of environmental regulation has been dominated for several decades by the perspective that market-based instruments are superior to "command and control" regulation. *See, e.g.*, Jody Freeman & Charles D. Kolstad, *Prescriptive Environmental Regulations Versus Market-Based Incentives*, *in* MOVING TO MARKETS IN ENVIRONMENTAL REGULATION: LESSONS FROM TWENTY YEARS OF EXPERIENCE 3, 3 (Jody Freeman & Charles D. Kolstad eds., 2007) (discussing the dominance of the market-based model); Richard B. Stewart, *Models for Environmental Regulation: Central Planning Versus Market-Based Approaches*, 19 B.C. ENV'T AFFS. L. REV. 547 (1992) (discussing differences between command control and market-based models). However, concerns about the "political viability" of market-based approaches has led to a revival of performance standards and other traditional regulatory instruments in the climate space. *See* Kayla M. Young, Kayla Gurganus & Leigh Raymond, *Framing Market-Based Versus Regulatory Policies: A Comparative Analysis*, 39 REV. POL'Y RSCH. 798, 815 (2022).

[156] *See* ALEXANDER F. GAZMARARIAN & DUSTIN TINGLEY, UNCERTAIN FUTURES: HOW TO UNLOCK THE CLIMATE IMPASSE 7 (2023); Steffen Kallbekken, Comment, *Research on Public*

Parts I.A and I.B showed, emissions control policies imposed on reluctant or unwilling polluters on behalf of an unorganized mass of public beneficiaries are among the hardest types of policies to pass through the legislative or treaty process.[157] Such policies are even harder in a context marked by intertemporal incidence of the costs and benefits of emissions controls.[158]

II. FLIPPING THE SCRIPT WITH A CLIMATE SUNRISE

When policymakers and scholars have dared to contemplate an emissions control policy, they have almost uniformly assumed a presentist policymaking paradigm: that is, the policy is formally promulgated, and emissions controls are more or less immediately imposed and backed by threat of penalties.[159] This assumption makes perfect sense — in order to control emissions, we needed to start yesterday, and starting today is the next best thing. But it also walks headlong into climate law's politics problem.[160] By curbing emissions now, the costs of the policy are immediately felt, and yet most of the benefits of the policy will not materialize until much later. The unquestioned embrace of the presentist lawmaking paradigm in the context of climate change greatly increases the risk of persistent failure.

In this Part, I suggest that failure is not inevitable because the presentist policymaking paradigm is not inevitable. Scholars and policymakers have overlooked the possibilities that emerge when we relax the assumption that policies must take effect immediately. One such possibility is what I call a "climate sunrise." The basic idea is simple: instead of passing climate law for today, we would pass

Support for Climate Policy Instruments Must Broaden Its Scope, 13 NATURE CLIMATE CHANGE 206, 206 (2023).

[157] *See supra* Part I.B.

[158] *See supra* Part I.A.

[159] The only exception is a chapter in an edited volume authored by Frank Fagan and Saul Levmore that puts forth the idea of a sunrise carbon tax before largely rejecting it. *See* Frank Fagan & Saul Levmore, *Legislative Sunrises: Transitions, Veiled Commitments, and Carbon Taxes*, *in* THE TIMING OF LAWMAKING 130, 130 (Frank Fagan & Saul Levmore eds., 2017). As I will discuss later, Fagan and Levmore's concerns about the sunrise device are misplaced in the climate space, as they even seem to admit in the waning paragraphs of their essay. *See infra* note 331 and accompanying text.

[160] *See supra* Part I.

aggressive climate laws for the distant future with no immediate compliance obligation.[161] Such an inversion of the presentist policymaking paradigm may feel alien — indeed, although some modest sunrise lawmaking has occurred in the real world, we have never seen truly maximalist operationalizations of the idea in the real world, and certainly not when it comes to climate policy. But, as I show below, the climate sunrise idea is perfectly suited to overcoming the extremely daunting barriers to enacting binding mitigation policies, and it would be far better than doing more of the same in the emissions control space (i.e., next to nothing).[162]

The argument proceeds in three parts. In Part II.A, I lay out the basic mechanics of sunrises, both in general and with regard to the idea of a climate sunrise. In Part II.B, I explain why this alternative approach helps to solve climate law's politics problem and why it can be expected to meaningfully curb emissions even before the sunrise actually occurs. In Part II.C, I deal with generalized objections to sunrises on democratic grounds and show that those objections largely miss the mark when it comes to sunrises keyed to the climate challenge.

A. Introducing Climate Sunrises

Law always has a temporal dimension, even if it is often ignored or overlooked as a design element.[163] For instance, when policymakers enact policies, they typically assume without much thought that the policy will take effect more or less immediately and continue in effect indefinitely until it is formally rescinded. Implicitly, such policies decline to implement an alternative design in which the policy is programmed to "sunset" after a certain period of time.[164] Sunsets are

[161] *See infra* Parts II.A.1.–2.

[162] *See infra* Part II.A.3.

[163] Fagan & Levmore, *supra* note 159, at 130 ("Time is a lawmaking tool, and one that is available to all lawmakers.").

[164] *See* Gersen, *supra* note 39, at 247 (considering sunset clauses as part of a wider inquiry into "what might be termed *temporary legislation* — statutes containing clauses limiting the duration of their own validity"); Kysar, *Dynamic Legislation*, *supra* note 40, at 824 (defining sunset provisions as "laws that expire by their own terms without further action by Congress"). In theory, sunsets might be thought to make it easier to pass legislation by reducing anticipated political disagreement and delimiting the

fairly rare in modern federal law,[165] though they have been deployed in some high-profile instances, including with the USA PATRIOT Act, assault weapons bans, and certain tax legislation.[166] Their existence, even if isolated, tacitly recognizes that choices about the temporal dimension of policymaking are unavoidable and ubiquitous. In fact, whether policymakers and scholars are aware of it or not, they have made a similar implicit choice by attempting to craft carbon emissions policies that take legal effect immediately or in the short-term future. This approach implicitly rejects the possibility of allowing the policy to "sunrise" in the long-term future.[167]

Policymakers should not ignore this choice; in fact, they should lean into it by passing greenhouse gas emissions limitations with a significantly delayed onset — what I am calling "climate sunrises." In Part II.B below I explain why structuring emissions limitations this way

universe of relevant information. *See* Gersen, *supra* note 39, at 248. However, it must be acknowledged that some scholarship argues these advantages of sunsets may be somewhat illusory, Rebecca M. Kysar, *Lasting Legislation*, 159 U. PA. L. REV. 1007, 1009 (2011); Manoj Viswanathan, *Sunset Provisions in the Tax Code: A Critical Evaluation and Prescriptions for the Future*, 82 N.Y.U. L. REV. 656, 658 (2007), and recent experimental evidence suggests that sunsets might asymmetrically make conservative policies more acceptable without any concomitant effect for liberal policies. *See* Kristen Underhill & Ian Ayres, *Sunsets Are for Suckers: An Experimental Test of Sunset Clauses*, 59 HARV. J. ON LEGIS. 102, 105-106 (2022), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3518487 [https://perma.cc/DQ92-6Y7Y].

[165] As Jacob Gersen has shown, sunsets historically have played a significant role in American lawmaking, and, "if anything, historical documents suggest a bias in favor of temporary legislation." Gersen, *supra* note 39, at 250. Sunsets are slightly more common in the states in contemporary lawmaking. *See* BRIAN BAUGUS & FELER BOSE, MERCATUS RSCH., SUNSET LEGISLATION IN THE STATES: BALANCING THE LEGISLATURE AND THE EXECUTIVE 3 (2018) (noting that the "sunset process is used almost exclusively at the state level"). Of course, as Rebecca Kysar notes, appropriations are made on an annual basis, and these ubiquitous laws are, in a sense, sunset laws. *See* Kysar, *Dynamic Legislation*, *supra* note 40, at 824.

[166] Gersen, *supra* note 39, at 249 & n.4 (discussing the USA PATRIOT Act and Section 110105 of the Violent Crime Control and Law Enforcement Act of 2005); Kysar, *Dynamic Legislation*, *supra* note 40, at 825 (noting that the 2017 Tax Cuts and Jobs Act "sunsetted most of the provisions affecting individuals in order to comply with budget rules and pressures"); Rebecca M. Kysar, *The Sun Also Rises: The Political Economy of Sunset Provisions in the Tax Code*, 40 GA. L. REV. 335, 370 (2006) (detailing sunsets in the tax legislation of the George W. Bush administration).

[167] *See infra* Part II.A.1.

would advance climate policy now, despite the structural delay of legally binding implementation of the law. In the rest of this Section, I want to first ensure that the conceptual machinery of climate sunrises is clear. Part II.A.1 lays out the basic model of a climate sunrise and the conditions that I argue are essential for a law to be considered a climate sunrise. Part II.A.2 then differentiates this model from other proposals in the literature on climate law and policy that, in various ways, address the intertemporal challenges of climate change policymaking. Part II.A.3 then highlights the political rationale for the climate sunrise idea and suggests that a climate sunrise is the kind of binding climate regulatory policy that could pass even in our present political situation.

1. The Basic Mechanics of Climate Sunrises

The kind of climate sunrise that this Article argues for is essentially a special application of the more general concept of sunrise lawmaking.[168] If a sunset provision is best understood as an interim policy change followed by a reversion to a status quo ante,[169] sunrises are essentially the opposite: they choose to maintain the status quo for the time being, followed by a specified change of policy at some point in the future.[170] In other words, the essential feature of all sunrises is "the postponement of the consequences of lawmaking."[171] Sunrises in this respect bear some facial similarity to grandfathering,[172] but are in fact

[168] The concept of legal sunrises that this Article builds on must be distinguished from another concept popular in state government — sunrise reviews — which are "a specific, data-informed analysis completed before proposed regulations are considered by a state legislature." *Sunrise Review Processes by State*, NAT'L CTR. FOR INTERSTATE COMPACTS (Dec. 7, 2020), https://compacts.csg.org/sunrise-review-processes-by-state/ [https://perma.cc/HK7A-3FYA]. Such sunrise reviews are particularly associated with occupational licensing regulation.

[169] *See supra* notes 164–166 and accompanying text.

[170] Fagan & Levmore, *supra* note 159, at 130 ("[W]e define sunrise legislation as statutory lawmaking that intentionally, or even dramatically, begins at some future time, even though it would be easy enough to begin at an earlier point."); Herz-Roiphe & Grewal, *supra* note 40, at 1983.

[171] Fagan and Levmore, *supra* note 159, at 130.

[172] Grandfathering is the deliberate exemption of certain actors or activities from the scope of regulation, typically on a permanent basis. *See* Maria Damon, Daniel H. Cole, Elinor Ostrom & Thomas Sterner, *Grandfathering: Environmental Uses and Impacts*, 13

clearly distinguishable in that they contemplate an end to exemption — sunrise lawmaking might therefore be fruitfully viewed as *temporary* grandfathering.

Real sunrises are quite rare in the law,[173] but they are not purely hypothetical either. For instance, in one notable use of a sunrise in actual legislation, the Affordable Care Act delayed its implementation of a new tax on high-cost insurance plans (so-called "Cadillac Plans") by eight years.[174] Likewise, sunrises of new taxes were built into several provisions of the 2017 Tax Cuts and Jobs Act.[175] In the environmental space, the Biggert-Waters Flood Insurance Reform Act of 2012 recently delayed certain premium increases until 2014, followed by twenty percent increases from 2014 to 2019.[176] Further back, the Clean Air Act Amendments of 1970 required a ninety-percent reduction in emissions from new automobiles by 1975, giving automobile manufacturers about five years to figure out how to come into compliance.[177] One can also see

REV. ENV'T ECON. & POL'Y 23, 23 (2019). For instance, the Clean Air Act grandfathered existing power plants, insulating them from the duties that applied to new power plants. These kinds of permanent grandfathers can have highly distortive effects, as exemplified by the Clean Air Act. *See* Jonathan Remy Nash & Richard L. Revesz, *Grandfathering and Environmental Regulation: The Law and Economics of New Source Review*, 101 NW. U. L. REV. 1677, 1708 (2007). Grandfathering led to an "old plant effect" whereby owners prolonged the life of extremely old and inefficient power plants in order to take advantage of the regulatory exemption built into the Act.

[173] Herz-Roiphe & Grewal, *supra* note 40, at 1980. Of course, they are only rare if one insists on a *substantial* delay before implementation. Shorter delays are ubiquitous, even at the level of administrative rulemaking. *See* 5 U.S.C. § 553(d).

[174] Kysar, *Sunrise Legislation*, *supra* note 40, at 1.

[175] *See, e.g.*, 26 U.S.C. § 174(a) (providing for a sunrise); *id.* § 163(j) (same); *id.* § 59A(b)(2) (same).

[176] FED. EMERGENCY MGMT. AGENCY, BIGGERT-WATERS FLOOD INSURANCE REFORM ACT OF 2012 (BW12) TIMELINE 2 (2023), https://www.fema.gov/sites/default/files/2020-07/timeline-bigger-waters-flood-insurance-act-2012.pdf [https://perma.cc/GU83-MDAW]. For reasons discussed *infra* notes 182–192 and accompanying text, I would not count the phase-in period as part of a sunrise on the definition I follow, but the two-year delay for *any* increase arguably would qualify.

[177] Joseph E. Aldy, Maximilian Auffhammer, Maureen L. Cropper, Richard D. Morgenstern & Arthur G. Fraas, *Looking Back at 50 Years of the Clean Air Act of 1970*, RES. (June 15, 2020), https://www.resources.org/archives/looking-back-50-years-clean-air-act-1970/ [https://perma.cc/XRW9-7GZH]; RICHARD K. LATTANZIO, CONG. RSCH SERV., RL 30853, CLEAN AIR ACT: A SUMMARY OF THE ACT AND ITS MAJOR REQUIREMENTS (2023),

analogues to the sunrise device in property law. When a change to zoning regulations renders an existing use "nonconforming," it is common for local zoning boards to couple the change of zoning with a phase-out period during which the nonconforming use will be tolerated.[178]

The sunrise device can be adapted for the climate change problem.[179] Applied to greenhouse gas emissions controls, a climate sunrise would entail a specific prescription on the emission of greenhouse gases — anything from a ban to a performance standard[180] — that would be enacted in the present but would not take effect as binding law until some point in the distant future. Between enactment and sunrise, the policy would go through a dormancy period during which the law would have no effect. After the sunrise date, the full force of the law would immediately take effect, and violators of the regulatory standard would be subject to stiff penalties, up to and including a revocation of the social license to operate.[181] The basic model is depicted graphically in Figure 1.

https://crsreports.congress.gov/product/pdf/RL/RL30853#:~:text=The%201970%20amendments%20established%20the,pollution%2C%20established%20a%20program%20to.

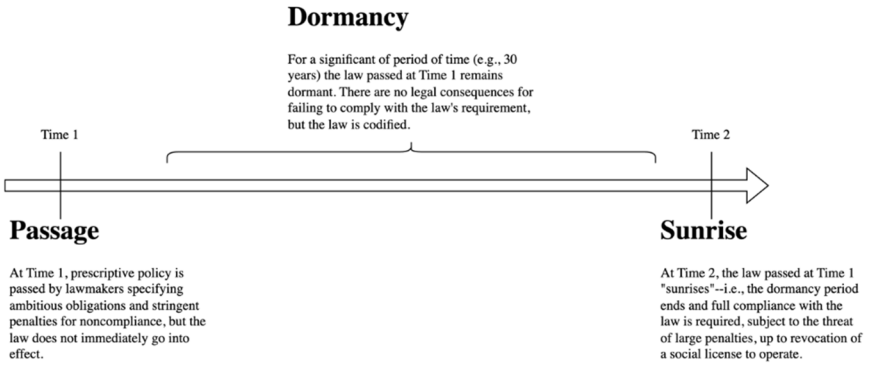
[178] Christopher Serkin, *Existing Uses and the Limits of Land Use Regulations*, 84 N.Y.U. L. REV. 1222, 1228 (2009).

[179] Again, Fagan and Levmore recognized this possibility, but rejected it on the merits. *See* Fagan & Levmore, *supra* note 159, at 130. For reasons articulated in the rest of the Article, I am more sanguine.

[180] For a discussion of the advantages and disadvantages of various policy instruments in the context of a climate sunrise, see Part III.A *infra*.

[181] For more discussion of what kinds of penalties and regulations would best maximize the payoff of the climate sunrise strategy, see Part III.A *infra*.

FIGURE 1: CLIMATE SUNRISE ELEMENTS



Before going any further, I want to be clear about why past and present climate policy proposals cannot be understood to have embraced the sunrise model. To be sure, past climate policy has invariably oriented itself to the future — indeed, climate policy discussions are awash with goals for the future — which is not surprising given the long timeframe of the climate challenge. However, it has generally not done so in precisely the way contemplated by the sunrise model. For instance, the Waxman-Markey American Clean Energy and Security Act of 2009 articulated several high-level goals for future reductions of emissions — twenty percent of electricity to come from renewable sources by 2025, and a reduction of greenhouse gas emissions by eighty-three percent by 2050 — that might superficially resemble the climate sunrise model.[182] In fact, the proposed legislation would have gradually lowered the caps such that regulated entities would have had compliance obligations as early as 2012.[183] At the international level, the Kyoto Protocol also embraced a gradualist approach by scheduling "commitment periods" wherein signatories agreed to meet binding emissions reductions sufficient to keep the world on track to avoid

[182] *Waxman-Markey Climate Bill*, GLOB. ENERGY MONITOR WIKI, https://www.gem.wiki/Waxman-Markey_Climate_Bill (last updated Apr. 30, 2021) [https://perma.cc/3HMA-H7HE].

[183] *Id.*

"dangerous anthropogenic [] interference with the climate system."[184] Industrialized countries committed to five-percent emissions reductions over the years 2008–2012 compared to 1990 levels in the "first commitment period" and to eighteen-percent emissions reductions over the years 2013–2020 compared to 1990 levels during the "second commitment period."[185]

This "phase-in" model is ubiquitous in contemporary climate policymaking, particularly where policymakers want to take aggressive action such as a ban or effective ban of greenhouse gas emissions. For instance, the California Air Resources Board's new Advanced Clean Cars II rule[186] aims to "ban the sale of new gasoline-powered cars and light trucks" within the State of California by 2035.[187] Although this twelve-year delay and aggressive target looks like a climate sunrise in some respects, in fact the Air Resources Board's regulations spell out annual targets, or milestones, that are mandatory and which gradually build up to the full ban.[188] For instance, the target is thirty-five percent ZEVs in 2026, forty-three percent in 2027, fifty-one percent in 2028, and so on.[189] Similarly, the State of Michigan recently joined a number of other states

[184] *What Is the Kyoto Protocol?*, U.N. CLIMATE CHANGE, https://unfccc.int/kyoto_protocol (last visited Mar. 12, 2025) [https://perma.cc/UQJ3-LKHC] [hereinafter *Kyoto Protocol*]; *What is the United National Framework Convention on Climate Change?*, U.N. CLIMATE CHANGE, https://unfccc.int/process-and-meetings/what-is-the-united-nations-framework-convention-on-climate-change (last visited Apr. 7, 2025) [https://perma.cc/9A5E-VUUY].

[185] *Kyoto Protocol*, *supra* note 184.

[186] *Advanced Clean Cars II* (*ACC II*) *Regulations*, CAL. AIR RES. BD., https://ww2.arb.ca.gov/rulemaking/2022/advanced-clean-cars-ii (last updated Aug. 22, 2022) [https://perma.cc/VR84-YATH].

[187] Dan Gearino, *California Just Banned Gas-Powered Cars. Here's Everything You Need to Know*, INSIDE CLIMATE NEWS (Sept. 1, 2022), https://insideclimatenews.org/news/01092022/california-just-banned-gas-powered-cars-heres-everything-you-need-to-know/ [https://perma.cc/TX4Q-7F4R]. Pursuant to Section 117 of the Clean Air Act, California has a waiver that allows it to adopt vehicle emissions standards that are more stringent than federal standards, and other states may elect to follow California's lead.

[188] Marie McNamara, *Understanding California's Advanced Clean Cars II Regulation*, ROCKY MTN. INST. (June 13, 2023), https://rmi.org/understanding-californias-advanced-clean-cars-ii-regulation/ [https://perma.cc/59R8-LL92].

[189] *Id.*

in passing legislation to require 100-percent clean electricity by 2040.[190] Again, though, Michigan and other states adopt a phase-in that gradually increases the legal obligations of regulated entities.[191] A true sunrise would forgo gradual phase-in requirements, leading to a stark discontinuity in legal obligations at the point of implementation — from no obligations to full obligation overnight.[192]

Other extant climate policy fails to embrace the sunrise model for a different reason: they shy away from any binding commitments. In the Paris Climate Agreement, for instance, nations are supposed to develop Nationally Determined Contributions ("NDCs"), outlining plans for emissions reductions in the future.[193] Likewise, governments and private actors alike have embraced the idea of voluntary Net Zero commitments.[194] On their face, climate sunrises seem similar to these various goals and commitments, but there is a major difference: none of these goals and commitments will be legally enforceable. The Paris

[190] Coral Davenport, *A Package of Bold Laws Puts Michigan on a Fast Track to Renewable Energy*, N.Y. TIMES (Nov. 8, 2023), https://www.nytimes.com/2023/11/08/climate/michigan-climate-laws-energy.html; Dan Gearino & Aydali Campa, *Michigan Poised to Join States Requiring 100 Percent Clean Electricity*, INSIDE CLIMATE NEWS (Nov. 7, 2023), https://insideclimatenews.org/news/07112023/michigan-clean-energy-laws-whitmer/ [https://perma.cc/GL3X-5SU3].

[191] *See* Press Release, Exec. Off. of Governor Whitmer, Governor Whitmer Signs Historic Clean Energy & Climate Action Package (Nov. 28, 2023), https://www.michigan.gov/whitmer/news/press-releases/2023/11/28/governor-whitmer-signs-historic-clean-energy-climate-action-package [https://perma.cc/S59P-9PP3] ("Senate Bill 271 sponsored by Senator Erika Geiss (D-Taylor) establishes a 100% clean energy standard for Michigan. By 2040, Michigan will produce all its energy from clean sources. By 2030, Michigan will produce 50% of its energy from renewable sources and 60% from renewables by 2035.").

[192] *See* Kysar, *Dynamic Legislation*, *supra* note 40, at 827 n.88. As Kysar explains, "transition rules" like phase-in schedules "exist to ensure efficient and effective implementation rather than to shift benefits and/or burdens across generations." *Id.* A sunrise is more about the latter, and in fact a gradual phase-in would undermine much of the efficacy of a climate sunrise, as I demonstrate Part II.B *infra*.

[193] *See* Daniel Bodansky, *The Paris Climate Agreement: A New Hope?*, 110 AM. J. INT'L L. 288, 289 (2016); Hari Osofsky, Lisa Benjamin, Michael Gerrard, Jacqueline Peel & David Titley, *The 2015 Paris Agreement on Climate Change: Significance and Implications for the Future*, 46 ENV'T L. REP.: NEWS & ANALYSIS 10267, 10269 (2016) (noting that NDCs are "completely voluntary and unenforceable").

[194] Esty & Arriba-Sellier, *supra* note 28, at 636; Lin, *supra* note 28, at 679.

Agreement embraced a "pledge and review" model to ensure that NDCs were met through occasional global "stocktakes."[195] In effect, they are aspirational, and, not surprisingly, both the NDCs themselves and nation states' follow-through on them have been underwhelming.[196] Meanwhile, scholars and policymakers are searching for ways to make at least private Net Zero commitments enforceable by drawing on contractual logic, but this is a work in progress.[197] Climate sunrises, by contrast, would be legally enforceable after the sunrise occurs, just not before. As I will explain below in Part II.B, this difference would likely matter both after the sunrise occurs and even before it.

The closest thing to a real-world climate sunrise came just last year, when the European Union ("EU") passed legislation banning the production and sale of internal combustion engine ("ICE") vehicles (unless they can operate via combustion of synthetic fuels other than gasoline, such as hydrogen, which can be made through carbon neutral processes and have zero emissions).[198] The full ban is scheduled to take

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[195] *See* Gabriel Weil, *Incentive Compatible Climate Change Mitigation: Moving Beyond the Pledge and Review Model*, 42 WM. & MARY ENV'T L. & POL'Y REV. 923, 931 (2018); Jamal Srouji & Deirdre Cogan, *What Is the 'Global Stocktake' and How Can It Accelerate Climate Action?*, WORLD RES. INST. (Sept. 8, 2023), https://www.wri.org/insights/explaining-global-stocktake-paris-agreement [https://perma.cc/LB88-9YPN].

[196] *See* Nadia Ahmad, Uma Outka, Danielle Stokes & Hannah Wiseman, *Synthesizing Energy Transitions*, 39 GA. ST. U. L. REV. 1087, 1114 (2023) (noting that "[s]ubmitted NDCs include widely divergent timeframes for emissions reduction, as well as divergent goals"); Srouji & Cogan, *supra* note 195, at 7 (noting that the Synthesis Report of the first Global Stocktake "underscore[d] a persistent 'emissions gap'"); Daniel Wetzel, Gabriel Saive, Luca Lo Re & Alice Latella, *Tracking Climate Pledges: Can the Global Stocktake Be a Landmark Moment for Energy Sector Ambition?*, INT'L ENERGY AGENCY (Oct. 16, 2023), https://www.iea.org/commentaries/tracking-climate-pledges-can-the-global-stocktake-be-a-landmark-moment-for-energy-sector-ambition [https://perma.cc/X5XJ-Q7VG] (noting that the "ambition of these NDCs globally is not aligned with the goals of the Paris Agreement yet").

[197] Esty & Arriba-Sellier, *supra* note 28, at 644; Lin, *supra* note 28, at 683; Oren Perez & Michael P. Vandenbergh, *Making Climate Pledges Stick: A Private Ordering Mechanism for Climate Commitments*, 50 ECOLOGY L.Q. 683, 709 (2024).

[198] Kate Abnett, *EU Lawmakers Approve Effective 2035 Ban on New Fossil Fuel Cars*, REUTERS (Feb. 14, 2023, 7:57 AM), https://www.reuters.com/business/autos-transportation/eu-lawmakers-approve-effective-2035-ban-new-fossil-fuel-cars-2023-02-14/; *EU Approves 2035 Ban on Sales of Gas-Powered Cars*, YALE ENV'T 360 (Mar. 28, 2023), https://e360.yale.edu/digest/eu-gas-car-phaseout-2035 [https://perma.cc/S823-

effect in 2035. Although there is technically a partial phase-in of the ban in 2035 — there must be a fifty-five percent fleetwide reduction in carbon emissions by this year — the phase-in is considerably less structured and gradual than California's similar ban on ICE vehicles.[199] The EU ICE vehicle ban is therefore closer to a climate sunrise than anything we have ever seen, albeit only in one industrial sector (passenger transportation) and with a relatively short dormancy period of only eleven years. Implicitly, the EU ICE vehicle ban seems to have intuited the advantages of such a policy design, and indeed the design seems to have done its job: despite political opposition from member states such as France, Italy, and the Czech Republic, and some necessary compromises with Germany's auto industry, the EU now has codified a world-leading policy on transport decarbonization.[200] The soft sunrise embedded in the policy appears to have succeeded in quelling potential political opposition.[201]

2. Differentiating Climate Sunrises from Other Climate Proposals that Use Time as a Design Element

Climate sunrises, as I am conceptualizing them, are closely related to, but ultimately distinguishable from, a number of other concepts that have been employed in the literature on climate law and policy. Like the

KMKU]. Also exempted were low volume "super car" makers, like Ferrari. *See* Michael Taylor, *Europe's Tough 2035 CO2 Laws Give Supercar Makers a Free Pass*, FORBES (Feb. 16, 2023, 7:39 AM), https://www.forbes.com/sites/michaeltaylor/2023/02/16/europes-tough-2035-co2-laws-give-supercar-makers-a-free-pass/?sh=5acb95f0ab79 [https://perma.cc/Z2HD-2QJH].

[199] *See* Joe Hernandez, *All New Cars in the EU Will Be Zero-Emission by 2035. Here's Where the U.S. Stands*, NPR (Mar. 30, 2023, 5:09 AM), https://www.npr.org/2023/03/30/1166921698/eu-zero-emission-cars [https://perma.cc/YJ49-B52J].

[200] *See* Kate Abnett, *EU Car Emission Limits Face Pushback from Eight Members*, REUTERS (May 22, 2023, 5:26 AM), https://www.reuters.com/business/autos-transportation/eu-car-emission-limits-face-pushback-eight-members-document-2023-05-22/. As of the summer before last, Poland was exercising its right to challenge the legislation before the European Court of Justice. *See* Zia Weise & Joshua Posaner, *Poland to Challenge EU Climate Laws Before Top Court*, POLITICO (June 12, 2023), https://www.politico.eu/article/poland-challenge-eu-climate-laws-fit-for-55-before-european-union-court-justice-minister-anna-moskwa/ [https://perma.cc/6DRH-QRNG].

[201] For a discussion of the political benefits of sunrises at enactment, see Part II.A.3 *infra*.

climate sunrise model I articulate in this Article, many of these proposals use time as a design element. However, they are distinguishable from my proposal both in form and in purpose.

First, several scholars have engaged with legislation's temporal dimension by encouraging climate law to embrace precommitment devices. For instance, Richard Lazarus, writing at a time when it looked like the Waxman-Markey cap-and-trade bill would pass, argued that policymakers must take proactive steps to ensure the durability of climate policies.[202] Without such "asymmetric precommitment devices," climate policies are quite vulnerable to being undone.[203] Lazarus therefore proposed a variety of mechanisms to protect the legislation from being repealed.[204] While this proposal shares with climate sunrises an interest in the ways that the politics of climate policymaking play out over time, the proposal is actually something like the mirror image of climate sunrises. For Lazarus, the idea is to protect climate policies that are enacted now from future sabotage; for climate sunrises, the idea is to enable future climate policies by insulating them from current sabotage.

Second, several scholars endorse an application of what Rebecca Kysar calls "dynamic legislation" in the climate context.[205] Under this

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[202] Lazarus, *supra* note 31, at 1206 ("We can also design lawmaking processes to make it harder to unravel legislative bargains once struck and, in effect, to 'stack the deck' in favor of certain interests and to the detriment of others as the statute is implemented over time.").

[203] *Id.* ("Absent these kinds of asymmetric precommitment strategies, climate change legislation will most likely be eroded by the daily economic and political pressures that cannot long countenance imposing immediate costs in return for benefits so removed temporally and spatially from the present.").

[204] *Id.* ("The ideas include tools such as *interagency, scientific advisory, and stakeholder consultation requirements* to promote certain voices; *statutory and regulatory hammers* to keep statutory implementation on track; *federal preemption and non-preemption triggers* to provide for regulatory innovation and to recognize state sovereign prerogatives; and *limited and enhanced judicial review provisions* to promote the effectiveness of oversight by potentially underrepresented interests and to diminish the power of those who are potentially unduly influential.").

[205] Kysar, *Dynamic Legislation*, *supra* note 40, at 834; Lazarus, *supra* note 31, at 1228. Dynamic legislation seems to be closely related to what Frank Fagan calls "stabilization rules" — the multiplication of "versions of the same policy that apply conditionally," depending on future factual circumstances. *See* Fagan, *supra* note 40, at 48; *see also* Jacob

approach, policies are indexed so that they automatically respond and adjust to factual changes in the real world that justify a recalibration of the law.[206] In the climate context, regulatory agencies could be delegated the power to make "findings of certain current external indicia, like carbon consumption, atmospheric conditions, temperature changes, sea levels, and other carbon reduction efforts by developing nations," which would then be used to tailor current regulatory standards to the evolving need for emissions controls.[207] By its very design, dynamic legislation seeks to calibrate law in the present moment to some predetermined policy choice. While this shares some similarities with climate sunrises, such as the focus on future policies, there are major differences. Most importantly, a climate sunrise of the kind that I advocate for in this Article would not calibrate future policy to some future state of facts in the world; instead, it would aim to set future policy at some fixed point that would hold *regardless* of the state of future facts.

Third, climate sunrises are closely related to what Christopher Serkin and Michael Vandenbergh call "prospective grandfathering," which would mark a phase-out date for natural gas after which regulatory takings claims would be barred.[208] Indeed, they describe their proposal as "a kind of sunrise, where federal or state agencies announce regulations today that will become effective (or implemented) far in the future."[209] However, Serkin and Vandenbergh envision prospective grandfathering primarily operating as a means of providing certainty to natural gas investors that they will be able to recover the value of their investments in needed infrastructure in the interim before the phase-

E. Gersen & Eric A. Posner, *Timing Rules and Legal Institutions*, 121 HARV. L. REV. 543, 560 (2007).

[206] *See, e.g.*, GAZMARARIAN & TINGLEY, *supra* note 156, at 57 (noting that Social Security payments are indexed to the current cost of living); Daniel Shaviro, *The More It Changes, The More It Stays The Same? Automatic Indexing and Current Policy*, *in* THE TIMING OF LAWMAKING 64, 64 (Frank Fagan & Saul Levmore eds., 2017) (generally discussing indexing).

[207] Kysar, *Dynamic Legislation*, *supra* note 40, at 834.

[208] Christopher Serkin & Michael P. Vandenbergh, *Prospective Grandfathering: Anticipating the Energy Transition Problem*, 102 MINN. L. REV. 1019, 1023 (2018).

[209] *Id.* at 1024.

out date.[210] In other words, the focus is on how to encourage natural gas development as a true "bridge fuel" while ensuring that infrastructural investments do not become justifications for indefinite use of fossil fuels through the so-called "lock-in problem."[211] This focus on "managing the costs of legal transitions" is in some sense orthogonal to the use of sunrises that I argue for in this Article.[212] Whereas Serkin and Vandenbergh want to use a temporal delay of regulation to "amortize" investment-backed expectations in an effort to encourage something like optimal investment in particular favored "bridge" industries, I want to use a temporal delay of regulation to encourage mitigation across the economy. These differences in aim would lead to important differences in the operationalization and sweep of our proposals.[213]

The climate sunrise idea is therefore distinct from these other proposals, but that does not necessarily mean that these proposals are irrelevant to the operationalization of a climate sunrise. As we will see, there may well be a place for precommitment devices of the kind that Lazarus encourages — it is just that the precommitment devices would be used to ensure back-end enforcement.[214] Indeed, Lazarus's idea of asymmetric precommitment devices seems likely to be more effective when packaged with a climate sunrise, as the delayed consequences of a sunrise enable more serious precommitment than would be politically feasible with immediately applicable precommitment devices (which raise the political stakes of the lawmaking moment).

3. The Political Advantages of Sunrises at Enactment

So what, then, is the payoff from climate sunrises? Why focus on climate sunrises rather than some other form of climate policy? A complete answer to this question will have to wait until Part II.B, where I discuss several indirect advantages of climate sunrises that make them likely to be effective at reducing emissions before the sunrise occurs. The most basic reason a climate sunrise would be beneficial, though, is

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[210] *Id.*

[211] *See id.* at 1022.

[212] *Id.* at 1024.

[213] *See infra* Part III.A.

[214] *See infra* Part III.B.

because climate sunrises match the temporal scope of the climate change problem and inherently avoid the political problems that plague the imposition of emissions limitations.[215] In short, climate sunrises can pass whereas more immediate emissions limitations of equivalent stringency cannot.

First, the characteristic sequencing of sunrises (not just of the climate variety) generally alleviates political pressures that can prevent the enactment of beneficial policies. When the costs imposed on organized interests are delayed, it is often easier for present-minded policymakers to justify imposing those costs.[216] That is because sunrises abstract the stakes of the policy change that will eventually take place by building in an inherently abstracting dormancy period, making it more difficult for present-day constituents to object to policymakers' decisions on the grounds that it affects them concretely in the now.[217] Thus, even if we

[215] *See supra* Part I.B.

[216] *See* Herz-Roiphe & Grewal, *supra* note 40, at 1989 (noting that lawmakers are "unlikely to be as politically constrained by distant effects as they are by the immediate need to satisfy their electoral bases"); *see also* Alan M. Jacobs, *Policy Making for the Long Term in Advanced Democracies*, 19 ANN. REV. POL. SCI. 433, 437 (2016).

[217] This point relates to a substantial literature on "transition relief" in regulatory governance. *See, e.g.*, Ann M. Eisenberg, *Just Transitions*, 92 S. CAL. L. REV. 273 (2019) (defending the utility of attention to a "just transition" in climate policy); Bruce R. Huber, *Transition Policy in Environmental Law*, 35 HARV. ENV'T. L. REV. 91 (2011) (discussing the factors that often drive transition relief); Louis Kaplow, *Transition Policy: A Conceptual Framework*, 13 J. CONTEMP. LEGAL ISSUES 161 (2003) (providing a law and economics theory of when transition relief is justified on efficiency grounds); Jonathan S. Masur & Jonathan Remy Nash, *The Institutional Dynamics of Transition Relief*, 85 N.Y.U. L. REV. 391 (2010) (theorizing about which institutional actor should be responsible for determining what transition relief looks like); Richard L. Revesz & Allison L. Westfahl Kong, *Regulatory Change and Optimal Transitional Relief*, 105 NW. U. L. REV. 1581 (2011) (critiquing much of the literature on transition relief). This literature recognizes that it is "a political challenge of one sort to establish ambitious yet feasible standards for cars or chemicals that have yet to be designed and produced," but "a political challenge of quite a different sort to address the problems of ongoing activities, long-standing practices or processes, and products and equipment already in use," and that one way of alleviating these political difficulties is to provide temporal relief. Huber, *supra* note 217, at 92. While transition relief may not be normatively desirable in the climate context, *see* Todd S. Aagaard, *Compensating Regulatory Losers*, 2025 U. ILL. L. REV. 4 (critiquing proposals for transition relief for regulated entities in the climate space), it may be precisely the kind of transactional grease that could reduce barriers to enactment of climate policy.

assume that present-day interests have a very strong incentive to avoid incurring costs today to pay for long-range benefits, the sunrise device inoculates those incentives to some degree through economic discounting. The degree to which it does so is, of course, dependent on how long the dormancy period is. If it is very long — say hundreds of years — then it is probably safe to say that the present value of the costs to regulated parties would be near zero. Shorter dormancy periods raise the political costs of enactment, and the optimal stopping point depends on weighing many factors, such as the urgency with which the policy issue needs to be addressed.[218] In this paper, I mostly assume that the optimal time range would be thirty to sixty years, but the precise calibration of the dormancy period involves much practical contextual judgment.[219]

A second distinctive characteristic of sunrise lawmaking can help if we assume, as may well be the case, that policymakers generally do want to consider long-term benefits, but are conflicted because of the present political costs of taking beneficial actions for future generations. By bracketing the present and focusing on the future, sunrises can serve as a "veil of ignorance" that can promote more impartial and other-regarding policy.[220] For instance, Daniel Herz-Roiphe and David Singh Grewal note that it would be difficult, if not impossible, to grant the District of Columbia statehood, or to reduce the overrepresentation of small states in the Senate, because these decisions would concretely impact people in predictable ways.[221] With the benefit of a veil of ignorance — that is, incomplete knowledge about whether D.C. would be a Democratic stronghold in the distant future, or whether small states would still predominantly support the Republican Party — policymakers would be able to make a decision that is best for all people regardless of how it would affect current politics. Sunrises can therefore

[218] Very long dormancy periods, while politically feasible to enact, might have very diminished behavioral incentives in the present for emitters. There is, in theory, some optimal length of time for the dormancy period that reduces excessive tradeoffs between enactability, entrenchment, and incentives for mitigation. *See infra* Part III.A.1.

[219] *See infra* Part III.A.

[220] Herz-Roiphe & Grewal, *supra* note 40, at 2002-03 (citing JOHN RAWLS, A THEORY OF JUSTICE 136-37 (1971)).

[221] *See id.* at 1976-77.

help pave the way for changes to policies that are entrenched in the status quo through a combination of inertia and self-interest.[222] In a way, "[s]unrise lawmaking . . . reflects the spirit of constitutionalism: it enables contemporary majorities to cast their eyes forward and think only of the future."[223]

These beneficial features of sunrises are well suited to resolve climate law's politics problem. As Part I argued, the intertemporal incidence of costs and benefits of any mitigation policy creates an onerous pathway to enactment. Sunrises dissolve this problem, or at least substantially minimize it. Avoiding the imposition of any immediate costs on polluters could dampen resistance to the enactment of policy by the concentrated interests that would otherwise be in the best position to organize to defeat policies that directly affect them.[224] Moreover, the veil of ignorance that a climate sunrise would enable would promote an even-handed evaluation of the future benefits of policy, which are likely to substantially outweigh the future costs.[225] Such a veil of ignorance may convince even those with present stakes in continued emissions to nevertheless support (or at least not oppose) the policy, since there is less certainty that those actors will still be benefitted from their ability to emit in the distant future. In this sense, climate sunrises might contribute to a "divide and conquer" strategy for overcoming concentrated political opposition, since some actors may believe that they will ultimately be advantaged relative to their competitors by their ability to adapt over a long timeframe to a delayed emissions limitation.[226] Moreover, policymakers would have strong incentives to pass policies promising action on a popular issue without having to answer for the imposition of any immediate costs — it is all upside for

[222] *Id.* at 1988 ("Sunrise amendments combat the tendency to prioritize parochial interests over the general welfare by removing many short-term motivations from the political calculus.").

[223] *Id.* at 1985.

[224] *See supra* Part I.B.

[225] *Cf.* Revesz & Shahabian, *supra* note 34, at 1104-06 (acknowledging that John Rawls and other philosophers and economists have sometimes asserted that the "pure rate of time preference" should be, on an ethical level, set at zero to reflect no preference for the present over the future).

[226] *See supra* notes 98–99 and accompanying text.

current policymakers, many of whom will not be around when costs sunrise.

A third feature of a climate sunrise would arguably further help smooth the way to passage. As discussed above, one feature of a climate sunrise worth insisting on would be a highly discontinuous compliance obligation — during the dormancy period running from enactment to effective date, firms would have no obligations, no phase-in checkpoints, no prescribed course of action. From many firms' perspective, this equate to flexibility. Much like market-based regulation, this approach can be framed as maximizing the efficiency of compliance with regulatory goals.[227] Individual firms who otherwise might resist laws that rigidly tell them to incur inefficient means of achieving decarbonization might be supportive of a law that gives them decades to figure out how best to achieve a goal.

Although I do not wish to exaggerate the ease with which a climate sunrise could be passed, especially now that climate issues have become polarized along party lines,[228] there are strong theoretical reasons to believe that core properties of sunrises would grease the gears for the enactment of hard limits on greenhouse gas emissions that are virtually inconceivable when packaged in more conventional forms of legislation. As the experience with the Build Back Better plan teaches, we are not far from putting together a majority favoring serious mitigation policy.

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[227] *Cf.* Brian J. Cook, *The Politics of Market-Based Environmental Regulation: Continuity and Change in Air Pollution Control Policy Conflict*, 83 SOC. SCI. Q. 156, 158 (2002) (noting that "regulated industries are likely to support market-based approaches in the abstract, because of their greater flexibility and cost-effectiveness, but to oppose specific design proposals for a variety of technical and strategic reasons, including uncertainty about future rules changes and the public stigma of buying the right to pollute").

[228] For a sampling of the vast literature on climate change and political and cultural polarization, see Jennifer C. Cole, Ash J. Gillis, Sander van der Linden, Mark A. Cohen & Michael P. Vandenbergh, *Social Psychological Perspectives on Political Polarization: Insights and Implications for Climate Change*, 20 PERSPS. ON PYSCH. SCI. 115, 115 (2023); Max Falkenberg, Alessandro Galeazzi, Maddalena Torricelli, Niccolò Di Marco, Francesca Larosa, Madalina Sas, Amin Mekacher, Warren Pearce, Fabiana Zollo, Walter Quattrociocchi & Andrea Baronchelli, *Growing Polarization Around Climate Change on Social Media*, 12 NATURE CLIMATE CHANGE 1114, 1114 (2022); Dan M. Kahan, Ellen Peters, Maggie Wittlin, Paul Slovic, Lisa Larrimore Ouellette, Donald Braman & Gregory Mandel, *The Polarizing Impact of Science Literacy and Numeracy on Perceived Climate Change Risks*, 2 NATURE CLIMATE CHANGE 732, 732 (2012).

Climate sunrises have the potential to move the needle for the handful of cost-sensitive centrist Democrats and Republicans, like former Senator Joe Manchin (D-WV), who presently stand in the way of virtually any direct mitigation policy. Moreover, real-world experimentation with soft sunrises, such as that in the EU ICE vehicle ban, suggests that otherwise difficult political barriers can be surmounted through the delayed onset of formal enforcement.[229]

4. The "Policy Opportunity Cost" Objection

Skeptical readers may acknowledge all of the foregoing political advantages of a climate sunrise compared to more present-oriented climate policy but still argue that the climate sunrise idea is counterproductive, since it may distract from the urgent need to do something about climate change now. By deferring action for a defined dormancy period and allowing society and industry to claim that we have already committed to climate action at a future date, a climate sunrise might take the wind out of the sails of more immediate efforts to make climate policy. Once we take the concrete step of embracing a climate sunrise, we might wonder about the counterfactual world without a climate sunrise and whether we could have done better (e.g., imposed more immediate policy that required emitters to take mitigation action *now*).

This "policy opportunity cost" objection is of course worth taking seriously,[230] and particularly in the context of climate change, where any impact of policy unfolds over long time scales (and therefore missteps can reverberate for decades or even centuries).[231] If it was clear that there was a great likelihood that we would be able to enact stringent GHG emissions limitations in the near future, it would be misguided to

[229] *See supra* notes 198–201 and accompanying text.

[230] *Cf.* Aaron Deslatte & Eric Stokan, *Sustainability Synergies or Silos? The Opportunity Costs of Local Government Organizational Capabilities*, 80 PUB. ADMIN. REV. 1024 (2020) (discussing the tendency of public organizations to ignore opportunity costs of choosing one policy over others); Emil Persson & Gustav Tinghög, *Opportunity Cost Neglect in Public Policy*, 170 J. ECON. BEHAV. & ORG. 301 (2020) (discussing opportunity cost neglect in public policy).

[231] Lazarus, *supra* note 31, at 1157.

pursue a climate sunrise. Doing so would amount to nothing more than (unjustified) regulatory relief.[232]

For a variety of reasons, however, the policy opportunity cost objection should not prevent legislators who want to move the needle on climate change from embracing a climate sunrise strategy. First, the policy opportunity cost objection seriously inflates the probability that any emissions regulation of similar ambition would be immediately forthcoming. Part I explained why the politics of climate change regulation are so difficult, and these barriers are not just contingent but permanent.[233] We should therefore set a high bar for demonstrating feasibility of more present-oriented regulatory strategies before setting aside a climate sunrise strategy. Second, the policy opportunity cost objection overstates the degree to which each tack is mutually exclusive. Enacting a climate sunrise does not formally preclude supplemental action that has more immediate compliance obligations, and while there may be something to the idea that regulated entities could point to the sunrise to deflate calls for additional regulation, the climate sunrise might conceivably enhance political movements for additional regulation through policy feedback effects and normalization of climate policymaking.[234] Sometimes, the most difficult thing is simply to get started with *something*.[235] Once the ice has been broken, the politics of policymaking can shift rapidly.[236] There may even be a case for embracing a climate sunrise strategy precisely because it could disrupt the politics of climate change regulation in a way that opens the door to something better than what we have been able to achieve thus far by

[232] *See supra* note 217.

[233] *See supra* Part I.

[234] *See infra* Part II.B.1.b.

[235] *See* JOHN W. KINGDON, AGENDAS, ALTERNATIVES, AND PUBLIC POLICIES 201 (updated 2d ed. 2011) (discussing agenda-setting theory and suggesting that policy change is most likely to occur at rare "policy windows" when "streams" of "problem recognition," "proposals," and "politics" fortuitously align); PAUL PIERSON, POLITICS IN TIME: HISTORY, INSTITUTIONS, AND SOCIAL ANALYSIS 18-19 (2004) (discussing path dependence dynamics that lock in policy for substantial periods of time).

[236] *See, e.g.*, FRANK R. BAUMGARTNER & BRYAN D. JONES, AGENDAS AND INSTABILITY IN AMERICAN POLITICS 3 (2d ed. 2009) (outlining a theory of "punctuated equilibrium" wherein policymaking occurs in short bursts as an issue's politics expand, followed by long periods of stasis).

fighting against the intertemporal public choice dynamics of climate change.

In sum, concerns about opportunity costs are always present and are best dealt with by diversifying approaches. To that end, I do not suggest that climate sunrises ought to comprise the entirety of our climate policy strategy. Instead, the climate sunrise idea would likely work best when paired alongside more present-oriented approaches, such as GIP.[237] It certainly should not be written off because of the remote possibility of an intervening political breakthrough.

B. Why Climate Sunrises Would Move Climate Regulation Forward

The most basic advantage of climate sunrises, as just discussed, is that they are passable when more immediate regulations are not. For many, this might be enough of a reason, standing by itself, for giving climate sunrises a chance. On this reasoning, any binding limitation on emissions, however far into the future, would be better than any such policy that is not enacted. For others, it is not likely to be enough. There are always costs involved in the implementation of policy, so at the very least there must be some meaningful impact of having law on the books in order to justify the expense. Ideally, climate mitigation policies would have far more than this minimally justifiable impact on actual emissions.

On their face, climate sunrises might be dismissed as ineffectual at best, since they do not impose any consequences for continued emissions until the sunrise occurs.[238] Moreover, in the absence of any formal precommitment device that prevents rescission, it could be that the sunrise would be vulnerable to repeal before the law had any chance to have an effect. Indeed, some notable sunrises, such as the Biggert-Waters Act's delayed increase of flood insurance premiums, were ultimately repealed before taking effect.[239]

These are serious concerns, but they are not reason to reject the climate sunrise model outright. While climate sunrises would not be as

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[237] *See supra* Part I.C.

[238] *See supra* Part II.A.1 (defining climate sunrises).

[239] *See* Austin Johnson, Comment, *Biggert-Waters and Rising Tides: Searching for Enduring Reform to the National Flood Insurance Program in Today's Politics*, 57 HOUS. L. REV. 227, 238 (2019) (discussing the repeal of Biggert-Waters two years after enactment in the Homeowner Flood Insurance Affordability Act of 2014).

effective as immediate emissions limits of equivalent stringency, there is ample reason to believe that climate sunrises would have a meaningful and worthwhile effect on emissions, both once the sunrise actually occurs and even well before during the dormancy period. Climate sunrises could induce a great deal of voluntary mitigation both by altering firms' incentives and by expressing a focal point for social coordination.[240] These effects would likely grow stronger the closer we come to the date of the sunrise. Although this ratcheting effect could always be undone at any time by repeal of the climate sunrise before it occurs, there is good reason to believe that a shift to a default of climate action would prevent this outcome, and in fact the sunrise would likely become self-insulating as time passes.[241] Indeed, while climate sunrises inherently involve some sacrifice of certainty of outcomes compared to more present-oriented policies, this may prove to be climate sunrises' greatest strength. By harnessing uncertainty about the future and changing expectations about what the law will likely be, climate sunrises may trigger deeper societal and economic transformations than more direct and immediate regulatory controls could hope for.

1. Shifting the Policy Default Matters

Conventional proposals for climate regulation operate against a policy default of no regulation and seek to change policy from that default, hopefully in an enduring way.[242] A climate sunrise, were it passed, would instead *shift* the default so that inaction would eventually and automatically result in a preferred policy choice. In this subsection, I argue that a climate sunrise that shifts the policy default in this way would affect the politics of entrenchment and retrenchment surrounding the law. This subsection explains why that seemingly formalistic difference would have massive implications for climate policy.[243]

[240] *See infra* Part II.B.2.

[241] *See infra* Part II.B.1.

[242] *See, e.g.*, Lazarus, *supra* note 31 (exemplifying this approach).

[243] As Herz-Roiphe and Grewal point out, the "choice to stick with a default is not like other decisions," and is in fact the "absence of a choice." Herz-Roiphe & Grewal, *supra* note 40, at 1983. A government that institutes a sunrise does so because it has

a. The sticky status quo

To start, by changing the policy default to a posture of action rather than inaction and shifting the burden to opponents of action to mobilize behind rescission of the climate sunrise, a climate sunrise would take advantage of a central feature of our legal system: change is hard.

It is well appreciated that "proposed legislation in our system can be stopped (vetoed) at any number of different points in the process — and not just at the end, through a presidential veto."[244] For instance, congressional committee chairs can kill legislation with little oversight,[245] and even a few obstinate Senators can derail the unanimous consent agreements that generally must exist for bills to go to the Senate floor.[246] Perhaps most famously, Senate rules provide for the possibility of a filibuster if there are insufficient votes to invoke cloture and to cut off debate, which means that a minority of forty-one Senators can indefinitely delay a final vote.[247] There are many other similar "veto-gates" littered throughout the lawmaking process. One implication of this design is that, "once enacted[,] statutes are hard to repeal."[248] Ordinarily, these veto-gates are substantial barriers to the enactment of climate policy. The political dynamics discussed in Part I may well manifest through the invocation of these veto-gates, making conventional climate policy extraordinarily difficult to pass. A climate sunrise, of course, sidesteps these veto-gates by deflating the incentives for veto-gatekeepers to block the legislation. Once the climate sunrise legislation is passed, the veto-gates that ordinarily stand in the way of climate policy immediately become its protector.[249]

"come to a consensus on future policy that it could not reach for the present." *Id.* at 1984.

[244] William N. Eskridge, Jr., *Vetogates and American Public Law*, 31 J.L. ECON. & ORG. 756, 757 (2015). For a particularly dramatic example of veto-gates in the environmental law space, see Bruce R. Huber, *Checks, Balances, and Nuclear Waste*, 48 ARIZ. ST. L.J. 1169, 1171 (2016).

[245] Eskridge, Jr., *supra* note 244, at 758.

[246] *Id.*

[247] *Id.* at 759.

[248] *Id.* at 757.

[249] *See* GAZMARARIAN & TINGLEY, *supra* note 156, at 44 ("Institutions such as veto points where political actors can block policy changes can also reinforce the status quo.

Of course, one insight from the public choice literature on regulatory policy that remains in place is that opponents of regulation, who often bear the concentrated costs of compliance, will have strong incentives, relative to proponents of regulation, to organize politically to change the law.[250] But a climate sunrise does not just deflate political opposition to the *enactment* of climate policy by delaying the imposition of costs; it also weakens any incentives that opponents might have to lobby for a *reversion* to the status quo ante, at least while the policy remains relatively young.[251] This feature of sunrise lawmaking is important to highlight: while a sunrise enacted at the statutory level could always be rescinded at any point before the sunrise actually occurs,[252] if a sunrise defused political opposition enough to ensure passage, it would presumably defuse political opposition for some time thereafter, allowing the policy to become entrenched as a true default.[253]

In sum, a climate sunrise has the potential to coopt some of the most pathological features of our legal system and turn them into a barrier against erosion. At some point, probably closer to the sunrise, the incentives to organize to repeal the policy would reach their apex, but even at this point, the opponents of the policy would face a steep uphill battle. Much like the current generation of climate activists, they would have to convince a supermajority of relevant decisionmakers to take up their cause. All of this matters for the signals that are sent to both regulated parties and public beneficiaries: one reason that climate policy often fails is because of the difficulty of making credible

While veto points can make political reforms harder to enact in the first place, they can also facilitate their durability when reformers clear these hurdles.").

[250] *See supra* Part I.B.

[251] There are important design questions here about precisely how long to make the dormancy period. The longer the dormancy period, the less likely it will be that there will be strong motivation on the part of affected entities to organize for a repeal. This correct approach here will depend heavily on context, but policymakers would do well to build in enough of a dormancy period to allow the policy feedback effects discussed in Part II.B.1.b *infra* to take hold without too much risk of repeal.

[252] *See infra* note 379 and accompanying text.

[253] This feature helps address the well-documented problems of policy atrophy. *See* GAZMARARIAN & TINGLEY, *supra* note 156, at 38.

commitments,[254] and anything that raises the costs of change can enhance the credibility of the commitments enacted in current law.

b. Policy feedback

Another reason that changing the policy default matters is because of the political effects of enactment. A large body of social science research shows that "policies, in addition to producing first-order or intended effects, may also influence politics itself by altering citizens' political behavior."[255] In other words, "Policies . . . are not just political objects; they are political forces that reconfigure the underlying terms of power, reposition actors in political relations, and reshape political actors' identities, understandings, interests, and preferences."[256] This "policy feedback" research confirms what "skilled politicians have always recognized: major public policies, such as Social Security, can have substantial political impacts, engendering support that helps those policies to endure."[257] Moreover, the deliberate manufacture of policy feedback effects is an important task for policymakers who wish to see enactments endure. As Eric Patashnik puts it, the "sustainability of reforms turns on the reconfiguration of political dynamics."[258]

The question, then, is what kinds of policy feedback effects the enactment of a climate sunrise might be anticipated to have, and whether these effects would solidify support for the law in a way that would make repeal even more difficult than it might be simply because of inertia in a veto-gated system. While it is of course treacherous to

[254] *Id.* at 36 (noting the existence of credibility challenges to climate policy stemming from the "struggle to convince the public and companies that they would fulfill a commitment when the future is uncertain and there could be incentives to abandon the reform later").

[255] Suzanne Mettler, *Making What Government Does Apparent to Citizens: Policy Feedback Effects, Their Limitations, and How They Might Be Facilitated*, 685 ANNALS AM. ACAD. POL. & SOC. SCI. 30, 32 (2019).

[256] Donald P. Moynihan & Joe Soss, *Policy Feedback and the Politics of Administration*, 74 PUB. ADMIN. REV. 320, 321 (2014).

[257] Jacob S. Hacker & Paul Pierson, *Policy Feedback in an Age of Polarization*, 685 ANNALS AM. ACAD. POL. & SOC. SCI. 8, 11 (2019).

[258] ERIC M. PATASHNIK, REFORMS AT RISK: WHAT HAPPENS AFTER MAJOR POLICY CHANGES ARE ENACTED 3 (2008) (emphasis omitted).

predict specific political feedback,[259] it seems likely that a climate sunrise could be expected to entrench itself by changing the politics of climate change. The best-case scenario might be for a climate sunrise to cement itself as a "superstatute" — public laws which have come to have symbolic, or even quasi-constitutional, resonance.[260] Such statutes — think the Civil Rights Act of 1964,[261] the Social Security Act,[262] the Clean Air Act,[263] or the Administrative Procedure Act[264] — have become such a fixture in American public law that it would be politically unthinkable for any mainstream politician to even suggest, let alone propose, outright repeal.[265] Meanwhile, those subject to superstatutes for the

[259] Some of the more recent literature on policy feedback examines the conditions under which policies engender *positive* policy feedback. *See* Andrea Louise Campbell, *Policy Makes Mass Politics*, 15 ANN. REV. POL. SCI. 333, 336 (2012); Suzanne Mettler, *The Policyscape and the Challenges of Contemporary Politics to Policy Maintenance*, 14 PERSPS. ON POL. 369, 371 (2016); *see also* Marius R. Busemeyer, Aurélien Abrassart & Roula Nezi, *Beyond Positive and Negative: New Perspectives on Feedback Effects in Public Opinion on the Welfare State*, 51 BRIT. J. POL. SCI. 137, 138 (2021) (arguing for a more nuanced typology of positive policy feedback). Policymakers would do well to consult this literature with an eye to fostering policy durability. *See generally* Gabriel L. Levine, *Democratically Durable Regulation*, 3 AM. J.L. & EQUAL. 283, 283 (discussing the ways that policy feedback can be harnessed to ensure that policies endure).

[260] William N. Eskridge, Jr. & John Ferejohn, *Super-Statutes*, 50 DUKE L.J. 1215, 1216 (2001) (defining a super-statute as "a law or series of laws that (1) seeks to establish a new normative or institutional framework for state policy and (2) over time does 'stick' in the public culture such that (3) the super-statute and its institutional or normative principles have a broad effect on the law — including an effect beyond the four corners of the statute").

[261] Civil Rights Act of 1964, Pub. L. No. 88-352, 78 Stat. 241 (codified as amended in scattered sections of the *United States Code*).

[262] Social Security Act, Pub. L. No. 74-271, 49 Stat. 620 (1935) (codified as amended at 42 U.S.C. §§ 301–1397).

[263] Clean Air Act Amendments of 1970, Pub. L. No. 91-604, 84 Stat. 1676 (codified as amended at 42 U.S.C. §§ 7401–7675).

[264] Administrative Procedure Act, Pub. L. No. 79-404, 60 Stat. 237 (1946) (codified as amended at 5 U.S.C. §§ 551–559).

[265] Of course, something short of outright repeal might be considered more of an option for opponents, but even these kinds of incremental reform proposals tend to ignite controversy and are typically defeated by beneficiaries of policies like Social Security or Medicare. *See* Jacob S. Hacker, *Privatizing Risk Without Privatizing the Welfare State: The Hidden Politics of Social Policy Retrenchment in the United States*, 98 AM. POL. SCI. REV. 243, 243 (2004) (noting that the welfare state has been able to fend off most

most part treat them as "fundamental law . . . against which people presume their obligations and rights are set."[266] At the extreme, principles in superstatutes might become as foundational as mathematical principles.[267]

A climate sunrise is precisely the kind of forward-looking, ambitious public policy that could plausibly join the canon of superstatutes. First, it would have political resonance. A minority of people today sincerely believe that human-caused climate change is not occurring, and indeed most believe that government should do more to address the problem.[268] These observers no doubt understand that the reason that government has not comprehensively regulated emissions is because of political barriers to enactment. But, having solved this problem, an enacted climate sunrise would likely be widely celebrated and treated as an achievement akin to other superstatutes. Second, it would have moral

retrenchment efforts, but also acknowledging that the current welfare state fails to adequately protect the public).

[266] Eskridge & Ferejohn, *supra* note 260, at 1216.

[267] *Id.* at 1216 n.3 ("To overstate a bit, super-statutes become axiomatic for legislatures as well as courts. Just as Congress would not dare (because of ridicule) adopt a law directing the citizenry to accept that 2 + 2 = 5, so it would not dare pass a law repealing the Sherman Act and allowing price fixing.").

[268] YALE PROGRAM ON CLIMATE CHANGE COMMC'N, CLIMATE CHANGE IN THE AMERICAN MIND: BELIEFS & ATTITUDES 5, 8 (2023), https://climatecommunication.yale.edu/wp-content/uploads/2024/01/climate-change-american-mind-beliefs-attitudes-fall-2023.pdf [https://perma.cc/TRX7-J6WJ] (noting that "Americans who think global warming is happening outnumber those who think it is not happening by a ratio of nearly 5 to 1" (72% versus 15%), and also noting that a majority of about 58% "understand that global warming is mostly human-caused"); Jennifer Marlon, Emily Goddard, Peter Howe, Matto Mildenberger, Martial Jefferson, Eric Fine & Anthony Leiserowitz, *Yale Climate Opinion Maps 2023*, YALE PROGRAM ON CLIMATE CHANGE COMMC'N (Dec. 13, 2023), https://climatecommunication.yale.edu/visualizations-data/ycom-us/?gclid=Cj0KCQiAqsitBhDlARIsAGMR1RglO7yapeOFBjmQAk2EDE6JKCAN6gDDMBNLtIq2urQT3eZLqWT_FEwaAlofEALw_wcB [https://perma.cc/RST3-9M7Q] (reporting that seventy-four percent of adults in the United States support regulating carbon dioxide as a pollutant, with no state failing to reach a majority); Alec Tyson, Cary Funk & Brian Kennedy, *What the Data Says About Americans' Views of Climate Change*, PEW RSCH. CTR. (Aug. 9, 2023), https://www.pewresearch.org/short-reads/2023/08/09/what-the-data-says-about-americans-views-of-climate-change/ [https://perma.cc/4BHE-7YMV] (reporting survey data that suggest that a majority of Americans believe the federal government is doing too little to address climate change, as well as that two-thirds of Americans believe that large businesses and corporations are doing too little).

force. Eskridge and Ferejohn emphasize that superstatutes "acquire their normative force through a series of public confrontations and debates over time and not through a single stylized dramatic confrontation."[269] In other words, "lasting public norms . . . grow out of conflict" over the terms of a pivotal statutory enactment.[270] It is therefore not concerning that there would likely be contestation over a potential climate sunrise. Such contestation could solidify the sociolegal legitimacy of the climate sunrise if the policy were to survive initial attempts to unravel it.

Even were it to fail to achieve the status of a superstatute, a climate sunrise could be expected to galvanize climate activism, much of which would be productively directed towards the concrete task of defending the law from political attack. Right now, climate activism has a bit of a prioritization problem: with so many efforts proceeding at so many levels of government and often addressing only one facet of the problem of climate change, activists lack a focal point for organizing, which just exacerbates the public choice dynamics recounted in Part I. The oldest trick in the book is to divide and conquer, and all the better for the would-be conqueror if the subjects divide themselves. A climate sunrise would provide a tangible and substantial win for climate activists that could keep them rowing in sync. Acting together — and taking advantage of the policy default and our inertial, veto-gated system — activists could be much more effective than they currently are. Moreover, to the extent that the climate sunrise had any of these policy feedback effects, the effect would endure even after a hypothetical repeal of the climate sunrise. Other climate policy might in the meantime become more of an option because of this political organizing linked to the climate sunrise — in other words, the Overton Window for climate law would widen.

In short, by virtue of its ambitious and comprehensive (albeit delayed) aims, a climate sunrise might very well initiate policy feedback that positively changes the politics of climate policy and build a strong constituency of supporters who can be counted on to resist efforts to undo the law once it is in the U.S. Code. There is relatively recent

[269] Eskridge & Ferejohn, *supra* note 260, at 1270.

[270] *Id.* at 1271.

precedent for precisely this dynamic: the Affordable Care Act ("ACA") packaged sunrisen reform of insurance systems with benefits like the ban on pre-existing coverage and a mandate for insurers to cover dependents up to age twenty-six.[271] It also was framed as the signature initiative of the Obama presidency, raising the salience of the law in the public's mind.[272] These factors helped to build a politics of retention around the ACA which paid off when oppositional forces attempted to repeal it.[273] Of course, the creation of a supportive constituency by itself guarantees nothing, and it also does not necessarily outweigh the countervailing constituency of regulatory targets that, especially as the date of the sunrise neared, would do everything in its power to repeal the law. However, policy feedback of the sort described in this subsection would at a minimum make it more difficult, and potentially quite politically costly, for future policymakers to accede to demands from regulated parties to repeal the law at the last second. If you are unconvinced, consider this thought experiment: would you rather be a lobbyist arguing against the passage of the Social Security Act in 1934 or a lobbyist arguing for its repeal today? To pose the question is to answer it.

One final relevant insight from the policy feedback literature is worth discussing. Not only can policy feedback create or activate friendly constituencies who will defend and entrench policy, but there is also the possibility that it can defuse opposition. Two possible mechanisms could lead to this effect. First, the policy might simply change minds — whether because the law turns out to not be so bad in practice or because arguments and evidence that are aired persuade, some opponents may well become proponents, or at least less oppositional. Second, and somewhat specific to sunrises, it could be that regulated parties would see opportunities for comparative advantage over their competitors through the sunrise. Perhaps a firm would have reason to believe that it would be able to decarbonize to comply with the sunrising policy relatively efficiently, or that its competitors would struggle. In that case, the firm might align itself with proponents of the climate sunrise. If this happened enough, it could have the effect of defusing the

[271] Daniel Béland, Philip Rocco & Alex Waddan, *Policy Feedback and the Politics of the Affordable Care Act*, 47 POL'Y STUD. J. 395, 402-03, 406 (2019).

[272] *Id.*

[273] *See id.* at 408.

kind of concentrated industry opposition that often dooms pro-regulatory legislation generally and climate legislation in particular. The long time lag and the flexibility granted to firms to determine how they might comply open the door to these kinds of dynamics.

In short, policies can be insulated from retrenchment when "group identities and coalitional patterns shift, would-be rent seekers are divided, political expectations change, and social actors become invested in the new policy regime."[274] There is every reason to believe that a climate sunrise has the potential to reconfigure politics in this fashion. Ensuring that it happens is a question of institutional design that warrants careful consideration.

2. Inducing Mitigation in the Here and Now

The discussion above suggests that a climate sunrise would be hard to repeal, but this may be a cold comfort. A key design feature of a climate sunrise is the delay of any binding legal duties for a significant period of time. This design feature is essential for climate sunrises to help address climate law's politics problem, but, after enactment, it raises serious questions about whether anything would change in the meantime. Some might say that regulated parties would simply wait until the last minute before lobbying for a bailout. Or perhaps they would make a bet that government officials would lack the guts to enforce stringent standards on firms all at once, particularly if doing so would have adverse consequences for the economy. Less cynically, regulated firms might put off compliance as long as possible, hoping for some kind of technological breakthrough that would render compliance superfluous. Whatever the case, we might worry that firms would not invest much in carbon mitigation until they absolutely had to. Since we need climate action now, and not just thirty years from now, the climate sunrise might be thought to be significantly suboptimal.

These are not frivolous challenges to the idea of a climate sunrise. Addressing them through good design is an important task that I attend to in Part III. For now, though, I want to focus on one core conceptual claim — that regulated parties would have no incentive to do anything until it became clear that the law would actually take effect, sometime

[274] PATASHNIK, *supra* note 258, at 3.

relatively close to the actual sunrise. This claim is clearly not true. Laws often have substantial effects without formally binding anyone,[275] and there are good reasons to believe that this would be especially true with respect to an ambitious climate sunrise. It is therefore no good excuse to forgo a climate sunrise on the theory that it would not accomplish anything. It certainly would, and the real question is simply whether the value it would deliver in terms of carbon mitigation justifies the strategy.

a. Pressures to prepare for the sunrise

A first set of reasons that a climate sunrise could be expected to shape private behavior in advance of any legal effect has to do with the power of uncertainty. Often, we think of certainty as a value in the law, and one that often redounds to compliance with law,[276] but the same can be true of uncertainty.[277] A climate sunrise is structured around a particular kind of legal uncertainty — namely, temporal uncertainty. The most immediate task before firms after the enactment, but before the effective date, of a climate sunrise is to make a prediction about the future (e.g., will this law, with its stringent requirements, actually go into effect at some point in the future?), and to develop a strategy for managing legal uncertainty, calibrated to the probability of each

[275] *See* James W. Coleman, *Policymaking by Proposal: How Agencies Are Transforming Industry Investment Long Before Rules Can Be Tested in Court*, 24 GEO. MASON L. REV. 497, 497-98 (2017) (discussing how the electric power industry complied with the U.S. Environmental Protection Agency's Mercury Air Toxics Rule and the Clean Power Plan well before they were required to because of the signal that promulgation of the rules sent).

[276] *See* Yuval Feldman & Shahar Lifshitz, *Behind the Veil of Legal Uncertainty*, 74 LAW & CONTEMP. PROBS. 133, 133 (2011) ("In legal scholarship, it is almost self-evident that 'certainty' is an advantage for regulation."); Adam I. Muchmore, *Uncertainty, Complexity, and Regulatory Design*, 53 HOUS. L. REV. 1321, 1324-26 (2016) ("A prominent view in the opinions issued by courts, the extrajudicial writing of prominent jurists, the work of leading law-reform organizations, the business press, the academic world, and political debate is that legal uncertainty is a characteristic of poorly designed regulatory systems.").

[277] *See* John E. Calfee & Richard Craswell, *Some Effects of Uncertainty on Compliance with Legal Standards*, 70 VA. L. REV. 965, 966 (1984); Ryan Bubb & Giuseppe Dari-Mattiacci, *Differentiation Through Legal Uncertainty* 2 (N.Y.U. L. Econ. Rsch., Working Paper No. 24-23, 2023), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4760162.

imaginable contingency. Whether we see firms as rational actors or as boundedly rational, a sufficiently stringent climate sunrise is likely to render risk assessments more, not less, precautionary.

Let's start from the perspective of firms as rational actors. Under a "classical expected-utility paradigm," targeted firms make decisions by "multiply[ing] the likelihood of an event with their utility from the payout associated with that event."[278] The product of these figures is an expected value of a particular course of action, and a rational actor will take an action when the expected value is positive, or more positive than available alternatives. However, to the extent that payouts or costs will be realized in the future, rational actors would "discount" those values to reflect their present value. By its very design, a climate sunrise would force rational actors to take serious account of worst-case scenarios for the future in the here and now — that is, to undergo rational preparation for a contingency where the sunrise goes into effect. I contend here that this would involve taking actions to mitigate emissions to "comply" with the law (i.e., to prepare for its immediate onset at the sunrise) well in advance of the effective date.

First, a climate sunrise deliberately inflates uncertainty, which could be expected to change how regulated parties think about the probability of the worst-case scenario. The time lag between enactment and effective date is itself a source of uncertainty — it is inherently difficult to predict the future, and that difficulty only increases the farther out into the future we try to predict. Moreover, by changing the policy default and requiring opponents to the sunrise to surmount veto-gates to repeal the sunrise, the sunrise harnesses the complexities and vicissitudes of politics to exacerbate uncertainty about whether the sunrise would be repealed. Different decisionmakers would assign different values to this uncertainty at different points in time, but suffice it to say that the probability of a world where the sunrise is allowed to go into effect would have to be fairly high, especially the earlier in time that a decisionmaker is strategizing. In light of this, worst-case scenarios cannot be ignored, not even in present-day decision-making.[279]

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[278] Feldman & Lifshitz, *supra* note 276, at 142.

[279] *See* Daniel A. Farber, *Uncertainty*, 99 GEO. L.J. 901, 904 (2011) [hereinafter Farber, *Uncertainty*].

Second, recall that a critical part of the definition of a climate sunrise involves substantial penalties. Setting extremely high penalties for noncompliance on the effective date of the sunrise accomplishes two things. First, it is needed to counteract reasonable discounting. The penalty needs to be large enough that the present value of future penalties is still meaningful. Second, under the expected utility framework, the larger the penalty, the larger the expected cost of being out of compliance if the sunrise occurs. While economists often seek "optimal" deterrence, climate change calls for more aggressive action to essentially end reliance on fossil fuels, and the expected utility framework allows the designers of sunrises to maximize the impact of the policy by imposing catastrophic penalties. To make this more concrete, a good sunrise might require zero emissions — as in the Advanced Clean Cars Rule II[280] — or even retract the social license to operate as a business. The bolder, the better.

These two features — high uncertainty about whether the sunrise would be repealed and high costs if the sunrise was not repealed — would combine to create a high expected cost of noncompliance, which would affect decisions about whether to prepare for that contingency. Normally, low-probability, extreme-consequence events (i.e., those in the "thin tail" of a probability distribution) may be given a low expected value and effectively ignored as rational actors weigh alternative courses of action.[281] A climate sunrise manufactures a "fat tailed" probability distribution, where the risk of inaction is non-negligible. Rational firms would likely take steps at least to rule out scenarios of catastrophic noncompliance within the fat tail.[282]

Arguably, the account so far understates the likely incentives for preparation. Simply put, the potential burden of having to comply with the law in the event that the sunrise actually does occur is increasing as

[280] *See supra* Part II.A.1.

[281] Farber, *Uncertainty*, *supra* note 279, at 904.

[282] *See id.*; Cass R. Sunstein, *Maximin*, 37 YALE J. ON REGUL. 940, 944 (2020) (accepting that worst-case scenarios should be avoided under cost-benefit analysis when a variety of conditions are met, including high uncertainty and higher-than-normal probabilities for extreme contingencies (i.e., fat tails)).

time goes on.[283] Complying over the course of several decades can be done efficiently; backloading all compliance to the very last minute in the event that the sunrise goes into effect would not be efficient. There may well be tipping points at which it will become impossible for firms to avoid the consequences of noncompliance if they have not taken enough previous action to put them on a path to compliance. Concerns about tipping points, just like the concern about tipping points when it comes to climate science, introduce an additional layer of uncertainty. Faced with these choices, regulated parties would be highly incentivized to plan to avoid worst-case scenarios by investing in an increasing amount of mitigation over time. Otherwise, they would forfeit a key benefit of the climate sunrise: its agnosticism about the means of compliance and the flexibility that regulated parties accordingly have to efficiently prepare.

There are some complications here. For instance, it is not entirely clear that, with a sufficiently lengthy time lag, present-day managers would give much weight to even potential catastrophes that would affect the firm in the distant future. Whether because managers employ a very high, or time-invariant, discount rate that effectively makes the present the only thing that matters,[284] or because managers have perverse incentives to ignore anything that does not personally affect their short-term compensation,[285] they may be able to push off decisions and act as if the risks didn't exist. However, this approach may only work for the early years after enactment. Since the risks of catastrophic noncompliance would grow over time, there would be points of no return for target firms. Even a firm that wants to engage in "hyperbolic discounting" or that only cares about stock buybacks in the coming year would not be able to ignore the accumulating risk of blowing through these tipping points. While investors may have a hard time discerning

[283] *Cf.* Coleman, *supra* note 275, at 501-02 (discussing how procedural requirements, such as NEPA reviews, "increas[e] lead times necessary for investment," driving compliance strategies much earlier in time than they would otherwise need to be if compliance could be achieved overnight).

[284] Larry Karp, *Global Warming and Hyperbolic Discounting*, 89 J. PUB. ECON. 261, 261 (2005).

[285] *See* Patrick Bolton, José Scheinkman & Wei Xiong, *Executive Compensation and Short-Termist Behaviour in Speculative Markets*, 73 REV. ECON. STUD. 577, 578 (2006).

how reckless a firm is being if it chooses for the first few years after a climate sunrise to do nothing, they will have a much easier time observing irresponsibility as time passes and as it becomes clearer that achieving compliance requires more extreme action.

These intuitions can only be strengthened by consultation of behavioral economics research.[286] As behavioral economic research has now well established, the assumptions behind the rational actor model do not always hold in practice.[287] While work continues to reconcile classical rational actor paradigms with the evidence of "anomalies" uncovered by behavioral economists,[288] the simpler explanation of these anomalies is that "the inherent complexity of economic decisions induces people to make noisy or heuristic decisions instead of solving a problem precisely."[289] What, then, does behavioral economics tell us about the likely impacts of a climate sunrise, which imports complexity into decision-making in spades? Many of the most well-documented heuristics and biases that inform decision-making under uncertainty cut strongly in favor of an exaggerated response to the prospect of the sunrise, suggesting that a stringent climate sunrise, coupled with high uncertainty about its eventual impact, would induce risk-averse behavior that may not even be entirely rational (and so much for the good, with respect to climate change).

For instance, a central part of the behavioral economics literature is prospect theory.[290] A key insight from this theory is that real decisionmakers have loss aversion — that is, they tend to give greater

[286] W. Kip Viscusi & Richard J. Zeckhauser, *The Perception and Valuation of the Risks of Climate Change: A Rational and Behavioral Blend*, 77 CLIMATIC CHANGE 151, 152 (2006). For a general overview of how behavioral economics research can inform climate policy, see Felix Mormann, *Climate Choice Architecture*, 64 B.C. L. REV. 1, 3-8 (2023).

[287] CASS R. SUNSTEIN, BEHAVIORAL LAW & ECONOMICS 1 (2000); Richard H. Thaler, *Behavioral Economics: Past, Present, and Future*, 106 AM. ECON. REV. 1577, 1593 (2016).

[288] Richard J. Zeckhauser & W. Kip Viscusi, *Discounting Dilemmas: Editors' Introduction*, 37 J. RISK & UNCERTAINTY 95, 98 (2008).

[289] Benjamin Enke & Thomas Graeber, *Cognitive Uncertainty*, 138 Q.J. ECON. 2021, 2022 (2023).

[290] *See* Matthew Rabin & Richard H. Thaler, *Anomalies: Risk Aversion*, 15 J. ECON. PERSPS. 219, 226 (2001).

weight to losses than to gains, relative to the status quo.[291] So take someone contemplating whether to make an investment in decarbonization in light of an impending sunrise. While there may be substantial upside to waiting for more information about whether the sunrise will occur (at least up to a point), the large losses that might be incurred will loom large in decision-making, likely tipping the balance from risk neutrality to risk aversion. Likewise, behavioral economics research emphasizes that risk aversion is driven in part by mental accounting and decision isolation. Again, a climate sunrise would feed this risk aversion by reducing much of the thinking about compliance to an isolated decision presenting certain risks. As it is, without any such law, regulated parties are free to think about risk more holistically, which may release them to think more risk neutrally.

To be sure, of all the behavioral anomalies identified by this literature, none is "so powerful as the extreme preference for present payoffs."[292] That is, real-world decisionmakers often display a strong present bias, and this bias does seem to be likely to dampen the impact of the sunrise. However, this impact must be compared to the alternative, which is a world where present bias is allowed to run rampant without any countervailing signals that may cause actors to hedge against risk in the long run. Any present bias is also, again, likely to be only temporarily appealing to a rational or risk-averse firm, as the accumulating stakes as time passes and the sunrise nears would render inaction exorbitantly risky.

b. The expressive power of a climate sunrise

Thus far I have articulated reasons why uncertainty about whether a sunrise would go into effect could be expected to have an *in terrorem* effect on regulated parties that could be expected to induce some voluntary "compliance" with the mitigation policy well in advance of the effective date.[293] However, the potential effect of a climate sunrise goes

[291] Ulrich Schmidt & Horst Zank, *What Is Loss Aversion?*, 30 J. RISK & UNCERTAINTY 157, 158 (2005).

[292] Zeckhauser & Viscusi, *supra* note 288, at 97.

[293] *Cf.* Mila Sohoni, *The Major Questions Quartet*, 136 HARV. L. REV. 262, 266 (2022) (discussing the "*in terrorem* curtailment of regulation" resulting from the Supreme Court's underspecified endorsement of the major questions doctrine).

well beyond general deterrence. Such a law might also be expected to change behavior through its expressive power. Indeed, a climate sunrise is tailor made for changing behavior this way.

Law's expressive power inheres in its ability to coordinate private action and inform private actors.[294] Start with the coordinative function: the idea is that law provides a salient "focal point" that allows private actors to identify strategies of interaction with other private actors that will maximize mutual welfare.[295] Two simple examples underscore the logic and potential impact of law's coordinating function. First, as Richard McAdams illustrates, one reason why traffic signals work so well — despite vanishingly low chances of enforcement — is because they provide a means through which two otherwise uncoordinated drivers can minimize the risk of an accident that will be good for neither actor. Through a "power of suggestion," the government gives drivers a possible solution. If they heed the government's warnings, an accident will be avoided. In theory, at least, this suggestive power could be useful to private actors whenever they find themselves in a situation where, in game theory terms, there are multiple possible equilibria, some good and some bad for the parties involved. Law can intervene to steer outcomes towards the better, all without doing anything other than making that utility-maximizing solution to the coordination problem salient. Second, Thomas Schelling gives the example of a game where two people are asked to name a dollar figure without communicating with each other, and if they converge on the same number, they will each receive that amount. The incentive is to choose as large a dollar figure as possible, but of course there are infinite possibilities. Remarkably, participants in an experiment converged on the same dollar figure — $1 million — twenty-nine percent of the time. Here the focal point is a culturally supplied suggestion; $1 million "differs in some salient way" from other options, making players more likely to guess that other players would choose that option (since they too would be trying to pick the most probable dollar figure). Law, however, can be a particularly powerful focal point since it carries potential authority to bind people

[294] RICHARD H. MCADAMS, THE EXPRESSIVE POWERS OF LAW: THEORIES AND LIMITS 5-7 (2015).

[295] *Id.* at 8-9.

and change behavior, which can powerfully "influenc[e] individuals' expectations about how others will behave."[296]

Law's second expressive function works by revealing information that private actors use to update beliefs and, ultimately, change behavior.[297] The basic intuition is that private actors will ultimately act on the basis of some expected utility function, but important information to that decision-making process may be unavailable in the absence of a signal, which the law can provide. These signals may, for instance, provide information about the riskiness of certain actions. Classic examples again include traffic signals: a caution yellow tells drivers that the risks associated with driving through an intersection have changed, and likewise tells drivers on a perpendicular course facing a red light that their turn is soon coming. Law's signals can also provide evidence of social attitudes: perhaps a firm wants to be perceived as in the mainstream when it comes to some political issue, and the passage of law is likely correlated with popular attitudes.[298] Finally, through "violations signaling," information about the rate of enforcement can influence beliefs about the likelihood of enforcement.[299]

Both of these expressive powers of law would be in play with a climate sunrise. First, many of the most important potential contributors to carbon mitigation involve coordination problems of the kind that could, theoretically, benefit from a focal point.[300] Take, for instance, efforts to decarbonize the electric power sector, which will require major,

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[296] *Id.* at 136.

[297] *Id.* ("In short, *law provides information; information changes beliefs; new beliefs change behavior*.").

[298] *Id.* at 139; *see also* Neil Gunningham, Robert A. Kagan & Dorothy Thornton, *Social License and Environmental Protection: Why Businesses Go Beyond Compliance*, 29 LAW & SOC. INQUIRY 307, 308 (2004).

[299] MCADAMS, *supra* note 294, at 138.

[300] *See, e.g.*, Scott Barrett & Astrid Dannenberg, *Climate Negotiations Under Scientific Uncertainty*, 109 PROC. NAT'L ACAD. SCIS. 17372 (2012) (explaining how uncertainty about climate change affects the prospects of international cooperation); Jahel Mielke & Gesine A. Steudle, *Green Investment and Coordination Failure: An Investor's Perspective*, 150 ECOLOGICAL ECON. 88 (2018) (discussing the role of uncertainty and how it can be reduced to promote coordination); Daniel E. Walters, *Lumpy Social Goods in Energy Decarbonization: Why We Need More Than Just Markets for the Clean Energy Transition*, 93 U. COLO. L. REV. 541 (2022) (describing how certain policies can promote decarbonization in the energy sector by overcoming uncertainty through coordination).

coordinated investments in transmission and storage capacity.[301] Efforts to decarbonize transportation will likewise depend on paired investments in electric vehicles ("EV") and charging infrastructure.[302] Compared to the status quo, a climate sunrise would provide a helpful focal point for this needed coordination. Although it would not provide any certainty about what the law will be, a climate sunrise would delimit the possibilities and change estimates of probabilities about the expected behaviors of a variety of actors.[303] To make this concrete, the climate sunrise might lead both transmission line builders and renewable energy providers to upscale their expectations of each counterparty's investment in light of the law's signal that a world with stringent mitigation requirements would come into existence, in the absence of intervening action, in the distant future.[304] At present, this coordination game lacks such a focal point because law does not provide much, if any, reason for the counterparties to expect that there will ever be a social mandate for deep decarbonization. Each counterparty could take the lead, which would clarify the incentives for the other counterparty, but neither party has any clear incentive to do so, and there are risks. For instance, there could be too much of a unilateral buildout of transmission capacity for the amount of renewable energy that is demanded by the market. In the absence of any salient, concrete vision of the future demands on the electric power system, coordination is entirely left to chance.[305] A climate sunrise would change all of this by making it clear that the nation will, in fact, expect these parties to coordinate in such a way as to build a grid capable of being run entirely on clean energy. The counterparties could proceed on much surer footing with law providing this clarity. So long as the law was salient enough to change estimations of the probability of a future state of the

[301] Walters, *supra* note 300, at 578.

[302] Kevin Remmy, *The Chicken-and-Egg Problem of Electric Cars*, LONDON SCH. OF ECON. (Sept. 21, 2022), https://blogs.lse.ac.uk/businessreview/2022/09/21/the-chicken-and-egg-problem-of-electric-cars/ [https://perma.cc/KX82-ZB9E].

[303] GAZMARARIAN & TINGLEY, *supra* note 156, at 38.

[304] Walters, *supra* note 300, at 596-98 (discussing the role that focal points can play in steering the resolution of coordination games toward socially optimal outcomes).

[305] *Id.* at 567 (noting that coordination games have multiple equilibria, and which one prevails depends heavily on individual discretion and context).

world where decarbonization was effectively required, the law itself would not necessarily have to be in effect in order to induce this coordination.

Second, a climate sunrise could be expected to provide useful information to a wide array of private actors who are in a position to curb their emissions on a voluntary basis. Most obviously, the passage of a climate sunrise would indicate to regulated parties that the public supports an end to business as usual (at least at some point in the future). Currently, this political message is easy to miss amidst a torrent of misinformation and cheap speech. While polling data suggest that there is a large and increasingly bipartisan contingent that supports serious climate action,[306] there is enough noise here to leave room for regulated parties to doubt that the public will ever feel strongly enough about the issue to do anything. Indeed, residual doubt about where the public stands, and whether there will ever be any informal community sanction, can provide just enough of an excuse for regulated parties to justify forgoing mitigation actions within their control. Simply by specifying that the policy default in the future will be to significantly mitigate greenhouse gas emissions (i.e., that there will be an expiration date for emissions), policymakers could crystallize where public opinion stands, thereby providing information to firms and individuals that want to be on the right side with the public. In addition, a climate sunrise could provide meaningful information about risks. To the extent

[306] *See, e.g.*, Bella Isaacs-Thomas, *Climate Change Is Hitting Close to Home for Nearly 2 out of 3 Americans, Poll Finds*, PBS NEWSHOUR (Aug. 3, 2023, 5:00 AM), https://www.pbs.org/newshour/science/climate-change-is-hitting-close-to-home-for-nearly-2-out-of-3-americans-poll-finds ("Most Democrats — 85 percent — think climate change is causing a serious impact right now. That's compared to about a quarter of Republicans and a little more than half of independents, according to the latest poll. People are also politically divided over the question of whether they think climate change will eventually have an effect, or whether it ever will."); Alec Tyson & Brian Kennedy, *Two-Thirds of Americans Think Government Should Do More on Climate*, PEW RSCH. CTR. (June 23, 2020), https://www.pewresearch.org/science/2020/06/23/two-thirds-of-americans-think-government-should-do-more-on-climate/ [https://perma.cc/5RFW-VYVX] ("[B]road majorities of the public — including more than half of Republicans and overwhelming shares of Democrats — say they would favor a range of initiatives to reduce the impacts of climate change . . . ."); *see also* Shelley Welton, *Decarbonization in Democracy*, 67 UCLA L. REV. 56, 88 (2020) (arguing that support for decarbonization efforts is more widespread and robust than is commonly assumed).

that firms are unaware of — or misinformed about — the science of climate change, the passage of a climate sunrise could signal that these misapprehensions of the risks of climate change need to be revisited. After all, the lawmaking process brings massive expert resources to bear on significant policy, and the nature of the process ensures that information backing policies is thoroughly vetted. Were it passed, a climate sunrise would at a minimum indicate in a highly salient way that the science behind climate change, and the concomitant need for significant curtailment of greenhouse gas emissions, is solid enough to merit a law. That information could, without any actual threat of enforcement in the near-term future, induce some regulated parties to update priors about how seriously to take the threat of climate change.

One counterpoint worth considering is the possibility that a climate sunrise might do expressive damage by providing a clear signal that "violations" will be overlooked for the period up to the effective date. On this theory, granting a clear safe harbor for a period of time might be interpreted by firms and the public as carrying information about the lack of need for more immediate sanctions, thereby instructing their behavior by changing beliefs in a socially undesirable way.[307] In other words, if responding to climate change is so important, why not pass a law now, and if we are not doing that, maybe responding to climate change is actually not that important — or so one might think. Unlike other informational effects of law, violations signaling can easily cut against compliance, depending on how information about violations is perceived by the target audience.[308]

While this is a legitimate concern in general, it seems somewhat misplaced with respect to the kind of climate sunrise that this Article proposes. First, compared to the baseline of inaction, even a delayed onset of legal sanctions is a relatively strong signal that forthcoming violations will be enforced. Second, the signal sent by the discontinuous nature of the sunrise — no enforcement for a time, followed by full and unrelenting enforcement after the effective date — is critically different from a signal of indefinite lax enforcement in that it clearly (perhaps more clearly even than a weakly enforced, currently binding law)

[307] *See* MCADAMS, *supra* note 294, at 136 and accompanying text.

[308] *Id.* at 175.

condemns the conduct it will eventually regulate. Moreover, anybody observing the passage of a climate sunrise would know that the amnesty period would play a purely instrumental role of reducing political friction — it could not reasonably be understood to condone the conduct that is exempted from enforcement.

3. Climate Sunrises and Democracy

If a climate sunrise worked in the way that I have argued thus far, it would not only go a long way toward advancing climate law; it might even suggest that sunrises ought to be the norm for policymaking across a wide range of issues.[309] Wherever interest group politics burden the passage of policy, policymakers could turn to sunrises in order to obscure self-interest and place all relevant constituencies behind a veil of ignorance conductive to public-minded decision-making. However, the few analysts who have looked closely at the sunrise model have all appreciated that sunrises have certain potential limitations and pathologies — broadly speaking, in some applications, sunrises may be in substantial tension with democratic values.

In this subsection, I canvass these concerns about sunrises and explain why the kind of climate sunrise I am talking about does not implicate them. In fact, a climate sunrise (and perhaps sunrises that address policy problems that present the same intractable and dysfunctional politics as climate change, to the extent that they exist) would better democracy by counteracting a clearly identifiable breakdown in democratic politics.

a. Critiques of sunrises

Broadly speaking, critiques of sunrises can be grouped into two buckets: first, that sunrises improperly bind future generations, which

[309] While this possibility is intriguing, particularly in a time that many believe is uniquely characterized by gridlocked and dysfunctional government, *see, e.g.*, THOMAS E. MANN & NORMAN J. ORNSTEIN, IT'S EVEN WORSE THAN IT LOOKS: HOW THE AMERICAN CONSTITUTIONAL SYSTEM COLLIDED WITH THE NEW POLITICS OF EXTREMISM (2012) (describing potential sources of political dysfunction), I do not entertain it here. It suffices to show that the climate issue justifies this unusual approach to legislation because of its super wicked problem features, including the extremely skewed intertemporal incidence of the costs and benefits of action. *See supra* Parts I.A–B.

seems in tension with a baseline commitment in democratic societies to self-governance; second, that they enable self-serving behavior by the policymakers who enact them, again in tension with democratic societies' orientation toward public interests.

The first critique was most clearly articulated by Daniel Herz-Roiphe and David Grewal in the context of constitutional amendment. As they recognize, although one could theoretically use a sunrise to reduce political barriers to amendment[310] (much like my argument that sunrise lawmaking could overcome climate law's politics problem[311]), sunrise amendments also "amplif[y] the central tension between the logic of democracy and the logic of constitutionalism — the famous 'dead hand' problem that arises when one generation's decisions bind another's."[312] Compared to ordinary constitutional law, a sunrise constitutional amendment does not require its architects to "live under the reforms it enacts for the future," and this "creates an absence of democratic accountability that does not exist with other forms of constitutional (or ordinary) lawmaking, all of which require legislators to live under the laws they pass."[313] In contrast to other constitutional scholars, such as Akhil Amar, who have advocated for sunrises more unqualifiedly,[314] Herz-Roiphe and Grewal argue that this dead-hand problem requires limiting the use of sunrise amendments to situations which "will enhance subsequent generations' ability to govern themselves democratically."[315] They argue that five of the six provisions of the U.S. Constitution that have "sunrise features" were democratically enhancing, but that one — the Natural Born Citizen Clause of Article II, Section 1 — was not, and was in fact motivated by "misguided paternalism."[316] Similar concerns have been extended beyond the

[310] Herz-Roiphe & Grewal, *supra* note 40, at 1980 ("Sunrise lawmaking . . . can be used to enlarge the sphere of democratic participation when short-term vested interests might otherwise stand in the way, thus enabling a fuller realization of democracy *within* the existing constitutional frame.").

[311] *See supra* Part II.A.3.

[312] Herz-Roiphe & Grewal, *supra* note 40, at 1980.

[313] *Id.*

[314] AKHIL REED AMAR, AMERICA'S UNWRITTEN CONSTITUTION: THE PRECEDENTS AND PRINCIPLES WE LIVE BY 474 (2012).

[315] Herz-Roiphe & Grewal, *supra* note 40, at 1981.

[316] *Id.*

constitutional lawmaking context. Fagan and Levmore conclude, similar to Herz-Roiphe & Grewal, that sunrises have the problem of "imposing preferences on the future, and doing so from a vantage point that is likely less well informed."[317]

The second critique takes a number of forms but centers on the allegedly bad incentives that policymakers have to use sunrises for personal or political gain. Most basically, policymakers may enact sunrises without any real expectation that the sunrise will actually occur, which allows them to structure policy to deliver certain instant rewards (the sweet) without ever having to pay for them (the bitter). For instance, Rebecca Kysar notes that Congress may have embraced tax sunrises like the Affordable Care Act's so-called Cadillac Tax in order to disingenuously balance their books, fully expecting that the tax would be delayed or repealed before taking effect (as actually occurred).[318] Under current legislative rules, budget reconciliation bills, of which the Affordable Care Act was an example, must be budget neutral. But these rules allow for accounting over a period of time, which in theory allows legislators to enact future tax increases to finance current deficit spending. As Kysar puts it, lawmakers might "use sunrise legislation to circumvent budget rules," thereby "burdening future generations while funding government spending and tax cuts for the present generation."[319] It is easy to see how policymakers would be tempted to use sunrises in this manner, although this strategy only pays off if the sunrise never occurs.[320] Even if the sunrise is never repealed, policymakers may still deliberately structure sunrises so that they never absorb the costs through so-called "partial sunrising" — deferring the onset of costs, but not the benefits, of the policy.[321] Much of the operational concern about sunrise legislation arises when it is used in

[317] Fagan & Levmore, *supra* note 159, at 142.

[318] Kysar, *Sunrise Legislation*, *supra* note 40, at 3.

[319] *Id.* at 3-4.

[320] As I will discuss in Part II.B, notwithstanding some prominent examples of sunrises that were repealed, there are many inertial pressures that work in favor of the sunrise actually occurring. *See also* Kysar, *Sunrise Legislation*, *supra* note 40, at 4 (noting certain sunrise policies that took effect despite bipartisan opposition at the time of sunrise, which Kysar attributes to "larger political forces and status quo bias").

[321] Fagan & Levmore, *supra* note 159, at 130.

the fiscal context, since it can be used to fund present-day spending on the backs of future taxpayers.[322] Needless to say, the opposite use of partial sunrises — deferring benefits but not costs — is rarely observed, because this is usually disadvantageous politically for the sponsors.[323]

b. The limitations of the critiques in the climate context

Despite these concerns about sunrises, the kind of climate sunrise I have argued for in this Article does not implicate them. In fact, a climate sunrise is quite possibly one of the best imaginable uses of the sunrise device.

First, the concern about binding future generations is substantially ameliorated by the fact that a climate sunrise would be ordinary legislation, and therefore formally repealable by subsequent legislation. Certainly, the objections that may be raised about sunrise constitutional amendments are not applicable to ordinary legislation because a future generation of policymakers would have formal control over its own destiny. While it is the case that a climate sunrise embedded in ordinary legislation would not be politically costless to repeal and indeed might become permanent due to inertia, that is true of many other accepted means of using ordinary legislation to enact and entrench today's policy preferences.[324] The more serious objections might be aimed not at the sunrise itself, which is just a more extreme version of delayed onset that is unquestionably democratic and constitutional, but instead at additional efforts to entrench the unwinding of the sunrise through repeal — for instance, rule changes that make it structurally more difficult to repeal the climate sunrise. Although there are probably particular constitutional limits that courts would enforce on such

[322] *Id.* at 145 ("'[D]ark sunrises' are of course quite common; the government spends on a project now and gets credit for the benefits, and delays taxation through debt. In most cases this incomplete and dark sunrise is strategic, in the sense that the future tax is unspecified and arouses little opposition.").

[323] *Id.*

[324] Eric A. Posner & Adrian Vermeule, *Legislative Entrenchment: A Reappraisal*, 111 YALE L.J. 1665, 1666 (2002) ("Entrenchment is no more objectionable in terms of constitutional, political, or economic theory than are sunset clauses, conditional legislation and delegation, the creation, modification, and abolition of administrative agencies, or any of the myriad of other policy instruments that legislatures use to shape the legal and institutional environment of future legislation.").

entrenching rules,[325] and although some conceivable devices to entrench the sunrise against "easy" repeal might end up running afoul of these limits,[326] these lines are not clear and stand on dubious theoretical premises.[327] At any rate, these entrenching mechanisms are not strictly required for the climate sunrise device, but are simply tools that could make the sunrise more effective.

Second, and relatedly, a climate sunrise would not be debt financed in the way that partial sunrises have been used in the fiscal space. To the extent that the benefits of mitigation attributable to the law preceded the actual sunrise, they would still be matched up temporally with the costs of the law as firms incurred the costs of compliance. If anything, it might be best to understand a climate sunrise as incurring present-day costs for a long-term benefit — a use that Fagan and Levmore recognize as perhaps the noblest use of sunrises (if also the least likely).[328]

Third, while it is true that a climate sunrise would tend to obscure the political accountability of the policymakers who pass it, since it might be difficult for voters to link those policymakers' actions to consequences down the road, there are reasons to think that this blurred accountability would not be an acute concern in this context. Compared to more mundane matters, a climate sunrise would be a salient piece of legislation that would receive significant attention. Moreover, imposition of costs that would be totally borne in the long-term future would be essential for *any* serious effort to address the climate challenge, which by its very nature is an intergenerational problem. It cannot be the case that any law whose effect is not personally experienced by policymakers presents an accountability problem. Frankly, the argument that sunrises diminish political accountability at all seems questionable in light of the fact that regular lawmaking's cost

[325] *Id.* at 1665 (acknowledging that courts often pay lip service to the principle that "legislatures may not enact entrenching statutes or entrenching rules: statutes or rules that bind the exercise of legislative power, by a subsequent legislature, over the subject matter of the entrenching provision").

[326] *See infra* Part III.B.1 (discussing particular methods by which Congress might attempt to credibly ensure enforcement of the sunrise and whether they present constitutional concerns).

[327] Posner & Vermeule, *supra* note 324, at 1666.

[328] Fagan & Levmore, *supra* note 159, at 145.

is rarely fully internalized by the policymakers who pass it. Laws frequently remain on the books for generations, sometimes even to the point of obsolescence.

The strongest argument against the climate sunrise is not that one generation is binding another, but rather that they are affecting decisions far into the future without being "well informed" about the consequences of those decisions. This is a formidable objection, and not only because it might lead to overkill through the imposition of foolish or unneeded elements, but also because it may lead policymakers to undershoot their target. As above, it seems relevant that this criticism could be leveled against any law that is intended to — or even just in fact does — affect intergenerational interests. By its very nature, addressing the climate problem requires future-oriented law, and that law must be to some degree imprecise. Perhaps the critique is less about affecting the future and more about deliberately locking in legal structures that may eventually become recognized as intolerably out of date, out of proportion, or out of step with future public sentiment. One might believe that these concerns justify indexing or regular, structured opportunities for revision — what Rebecca Kysar calls "dynamic" policymaking — to ensure that the policy is well calibrated as more is learned about future circumstances.[329] All of these are real objections to the purposeful rigidity of the climate sunrise design, but they ultimately turn on careful analysis of tradeoffs. What we buy with dynamism in terms of precision we lose in terms of the incentive structure of the climate sunrise. If one is convinced that the politics of climate change are less dysfunctional than I have argued above, dynamic legislation might seem like a better approach. But if the politics of climate change are dysfunctional, then the altered incentives of the climate sunrise approach might be better, even if sometimes policymakers lose some control over the policy. This is ultimately less of a matter of principle than it is of policy design.

Finally, this subsection has dealt with objections, but it is worth ending by noting that there is an affirmative case to be made that a climate sunrise is precisely the kind of sunrise that makes sense on democratic grounds. Climate politics are highly dysfunctional because

[329] Kysar, *Dynamic Legislation*, *supra* note 40, at 813.

of the high intertemporal incidence of costs and benefits, which is a distortion.[330] The sunrise device is democracy enhancing in this context because it corrects for the resulting asymmetrical political incentives that artificially favor climate inaction. Indeed, without something like a sunrise, it is difficult to see how a democracy could ever be expected to take climate action that benefits the entire democratic community, present and future generations alike. Fagan and Levmore basically admit as much (despite objecting to a sunrise carbon tax) when they say that in "rare cases, and especially where the mismatching of costs and benefits seems inevitable and dysfunctional, it is plausible that such intrusions on the future are useful."[331] These criteria seem met, if anywhere at all, in the climate context.

III. IMPLEMENTING AN EFFECTIVE CLIMATE SUNRISE

The idea of a climate sunrise is deliberately outside the box, and the most important contribution I hope to make in this Article is simply to convince readers that the sunrise device has significant untapped potential in the climate space and is worthy of deeper consideration by scholars and policymakers alike. Much more work would, of course, need to be done to take the general proposal here and make it concrete enough to be enacted. This Article cannot complete that work, nor should it — the basic idea of a climate sunrise could be applied in multifarious circumstances and at multiple levels of government, and it may be adapted for other goals entirely. Once we see the basic insight that delayed implementation can smooth over politics while still achieving policy goals, it becomes just another tool in the toolkit, and far be it from me to artificially limit how the tool is used.

That said, it may be helpful to close this Article with some brief reflections on some of the most important operational questions that would attend an effort to enact the most general application of a climate sunrise. The basic logic of climate sunrises should be clear enough from Part II, and the reflections in this Part build on that discussion, grappling with a non-exhaustive selection of overarching issues that must be dealt with to ensure that climate sunrises function as effectively

[330] *See supra* Part I.B.

[331] Fagan & Levmore, *supra* note 159, at 145.

as possible. Many of these issues arise from the fact that "long problems" like climate change raise a "governance paradox" — the earlier we act on long problems, the more uncertainty there is about the right course of action, even as necessary as it is to act early.[332] Climate sunrises help solve some of the political difficulties at the heart of this paradox by reducing some of the incentives present-day actors have to resist regulatory action, but they do not reduce the policy uncertainties associated with acting now to solve a long-range problem. If anything, climate sunrises increase the uncertainties by forcing present-day policymakers to make choices under uncertainty in the hopes that they will hold up over time. This problem cannot be avoided, but in this Part, I suggest that it can be managed.

This Part organizes these reflections thematically, starting first with a discussion of considerations to guide the optimal length of dormancy periods in a climate sunrise in Part III.A, turning then to questions about the definition of future obligations in Part III.B, and finally turning to questions about how to ensure enforcement after the sunrise occurs in Part III.C.

A. Optimizing the Dormancy Period

Although some existing climate policies, such as the EU's new ICE vehicle ban,[333] move in the direction of a sunrise design and suggest that there may be significant potential political benefits of delaying the onset of strict emissions limitations, the idea could and should be taken much further. But how much further? Even if climate sunrises are promising, they still involve tradeoffs. For instance, it might be possible to imagine a climate sunrise with a rather extreme dormancy period of, say, 500 years. While such a sunrise is likely to be passable through almost any political process, it is not likely to be of much utility. Likewise, as discussed above, shorter dormancy periods are ubiquitous in lawmaking,[334] even in the mundane "compliance delays" that agencies

[332] HALE, *supra* note 35, at 37-38.

[333] *See supra* notes 198–201, 229 and accompanying text.

[334] *See supra* notes 173–179 and accompanying text.

frequently package with new regulations.[335] Yet these short-term delays before implementation likely do not deliver any of the distinctive benefits of the kind of climate sunrise model discussed in this Article. At the end of the day, the logic of the sunrise device — and specifically the length of the dormancy period, which is the driving force of sunrises — raises a theoretically interesting, but simultaneously vexing, optimization problem. Understanding what needs to be traded off in optimizing the length of the dormancy period would be critical for policymakers looking to take the idea into a real-world laboratory. This Section briefly identifies the relevant considerations on this front.

First, as just suggested, the length of the dormancy period is relevant to the *political feasibility* of the law. Generally speaking, the longer the dormancy period, the more politically feasible it will be to overcome opposition from affected parties because it effectively gives those parties longer to adjust. This is why almost no law comes into effect immediately — with any law that aims to meaningfully change behavior, it will be unrealistic to expect that change to happen overnight.[336] Accordingly, many laws and regulations governing the promulgation of policies build in standardized delays of effective dates and frequently allow regulators to extend these delays at will.[337] In cases of more extreme opposition, such as in the climate space, the dormancy period may need to be drastically lengthened in order to extinguish the opposition.

Second, the length of the dormancy period may affect the *durability* of the sunrise during the dormancy period. Unfortunately, this may be the

[335] Nicholas R. Bednar, *Justifying Delay: Why Agencies Delay Compliance Dates and How They Do It*, 4 LOY. U. CHI. J. REGUL. COMPLIANCE 1, 5-12 (2019) (discussing the FDA's Menu-Labeling Rule, which was initially promulgated in 2014 with a one-year compliance delay, but which was subsequently delayed all the way until May 2018).

[336] Bednar, *supra* note 335, at 15 (discussing "industry-based delays," which result from agencies acknowledging that "compliance is not possible" within a shorter time period).

[337] For instance, the Administrative Procedure Act ("APA") sets a baseline compliance delay period of thirty days. *See* 5 U.S.C. § 553(d). While agencies are as a default free to delay compliance dates further, the courts have in recent years elaborated a fair number of constraints on this discretion. *See* Lisa Heinzerling, *Laying Down the Law on Rule Delays*, REGUL. REV. (June 4, 2018), https://www.theregreview.org/2018/06/04/heinzerling-laying-down-law-rule-delays/ [https://perma.cc/29QH-CPZ2].

variable that we know the least about and where theory alone can only take us so far. On the one hand, the longer the dormancy period, the more opportunities there would be to rescind or repeal the sunrise before it occurs, simply because there is more time in which a successful campaign along those lines could be mounted. On the other hand, it could be that, compared to a short or nonexistent dormancy period, a longer dormancy period would make the law relatively innocuous for a time, allowing some of the policy feedback and entrenchment dynamics discussed in Part II.B to take hold.[338] Consider the Biggert-Waters Act repeal — it could be the case that the relatively short two-year sunrise was simply not long enough to allow the law to become entrenched before the incentives for repeal became real to opponents.[339] In sum, the degree of entrenchment achieved after enactment but before the sunrise is likely to relate to the length of the dormancy period in some way, but likely not in simple linear fashion. The shape of this relationship merits further empirical study to help inform practical tradeoffs between longer and shorter dormancy periods and to find a length of time that maximizes entrenchment.

Third, the length of the dormancy period may have significant implications for the practical *efficacy* of the informal behavioral incentives of the sunrise before the sunrise occurs. As discussed above, the reason a climate sunrise has potential to be a net improvement despite formally delayed legal consequences is because of incentives for voluntary preparation and coordination during the dormancy period.[340] With a lengthier dormancy period, it is likely that these potential benefits of a sunrise would be delayed unjustifiably or diluted to the point that they no longer justify the climate sunrise relative to the status quo. Again, take an extreme dormancy period of 500 years: such a dormancy period would not be likely to lead to any behavioral change for some time. This is because regulated actors would not likely weigh such distant future costs very heavily, would assume that they would have ample time later to make adequate preparations, and would have greater uncertainty about whether the sunrise would occur. In other

[338] *See supra* Part II.B.1.b.

[339] *See supra* note 239 and accompanying text.

[340] *See supra* Part II.B.2.

words, the rational strategy might well be a "wait-and-see" approach when the dormancy period is excessively long. A climate sunrise by its very nature requires some kind of dormancy period, but policymakers need to know more about how responsive regulated parties are to sunrises during lengthier dormancy period — and the EU's ICE vehicle ban will likely teach us much about this question.[341]

At least these three considerations, and potentially others as well, would need to be traded from each other in order to get the most out of a climate sunrise. Ultimately, this article does not make any particular suggestions about the proper weighing of the tradeoffs identified in this Section. More study would be needed before scholars and policymakers could treat the implementation of sunrises like a formula, if it ever could be. But the consideration of the tradeoffs identified in this subsection does not seem inherently intractable.

B. Defining Obligations for the Distant Future

The logic of the climate sunrise concept depends critically on successfully performing a somewhat abnormal task: writing law for the distant future. Normally, legislators write laws that are intended to operate immediately (what I above called the "presentist paradigm"). Taking a more long-range perspective is, of course, something that constitution writers must do, so it is not entirely unheard of or untried. But, unlike with constitution writing, a climate sunrise needs to precisely define the obligations that will kick into effect at the sunrise. What is often an advantage for constitution writers — leaving commitments underspecified to allow for evolution or reflection[342] — is more of a disadvantage for the writer of a climate sunrise, since it dampens the signals that the sunrise gives to regulated parties about

[341] *See supra* notes 198–201 and accompanying text.

[342] *See* Frederick Schauer, *An Essay on Constitutional Language*, 29 UCLA L. REV. 797, 801 (1982) ("The Constitution is more an eloquently written manifesto than it is a code, and in many ways we are much better for that. But the eloquence and emotive force of the document further reinforce the view that the Constitution's words are as different as they are special. To construe its language too literally or too much like the language in a conventional statute would be both unrealistic and inconsistent with its deeper purposes. In some ways, the Constitution is a metaphor.").

what will be expected if and when the sunrise takes effect.[343] Importing familiar policy instruments into the climate sunrise model, where obligations will abruptly "switch on" in the distant future, requires careful thinking.[344] It also involves thinking about how to institutionalize the kind of "experimentalist" ethic that Charles Sabel and David Victor have recently argued needs to be incorporated into climate strategy.[345]

1. The Regulatory Menu and Guiding Principles for Instrument Choice

Climate sunrises are, in principle, capable of being set up for most any kind of regulatory instrument. Most current policy discussions concerning the regulation of greenhouse gas emissions revolve around market-based regulatory approaches, such as a carbon tax or a cap-and-trade program.[346] Both of these instruments attempt to put a price on the social costs of greenhouse gas emissions and to force emitting parties to internalize their costs, either by curbing emissions or by effectively compensating the public for any harm done through emissions.[347] Experiments with carbon taxes and cap-and-trade programs have occurred around the world, but they have been slower to catch on in the United States.[348] More prescriptive approaches involve technological standards and performance standards.[349] These approaches attempt to define with relative specificity what regulated parties need to do — in the case of technological standards, the installation of certain abatement equipment, and in the case of performance standards, the achievement of specified mitigation goals. Examples of such standards abound in the experience with the Clean Air Act. A special form of performance standard — a ban on emissions — is

343 *See supra* Part II.B.

344 *See infra* Part III.B.1.

345 *See infra* Part III.B.2.

346 *See supra* notes 153–155 and accompanying text.

347 *Id.*

348 *Id.*

349 *Id.*

worth considering as a separate category.[350] While bans are somewhat rarely imposed because of their draconian nature, policymakers have occasionally embraced them, as with the Montreal Protocol's ban of certain ozone-depleting substances[351] and with California's Advanced Clean Car II rule.[352]

Policymakers need to think about an array of factors before embracing any particular approach for a climate sunrise. For instance, climate change is a pan-economic issue with each sector presenting diverse challenges.[353] Decarbonizing air travel and heavy transportation may prove substantially more difficult than decarbonizing the electoral power sector.[354] The relative ease of decarbonization in these sectors will depend on how quickly technologies such as clean hydrogen fuel become available.[355] Progress on such technologies may be interdependent with economic growth, which further creates uncertainty. Additionally, climate change is an issue that presents

[350] The very concept of a "ban" is slippery and difficult to distinguish from ordinary conditional restrictions. *See* Joseph Blocher, *Bans*, 129 YALE L.J. 308, 312 (2019). However, constitutional law doctrine often treats bans as a special — and disfavored — category of regulation. *See id.* at 314. It might be that bans raise constitutional questions, but I find it hard to believe that a sunrisen ban would be held to this standard because the dormancy period provides substantial flexibility and relief to the entities subject to the ban.

[351] *Phaseout of Class I Ozone-Depleting Substances*, EPA, https://www.epa.gov/ods-phaseout/phaseout-class-i-ozone-depleting-substances#:~:text=The%20ban%20on%20production%20and,substances%20in%20this%20fact%20sheet (last updated Jan. 6, 2025) [https://perma.cc/UJ5A-NVJ4].

[352] *See supra* notes 187–189 and accompanying text. When they do exist, such bans are usually paired with transitional rules like phase-outs.

[353] DANNY CULLENWARD & DAVID G. VICTOR, MAKING CLIMATE POLICY WORK 4-6 & fig. 1.2 (2020).

[354] *See* Krishnan et. al, *supra* note 136.

[355] *See* Galen Bower, Whitney Jones, Eric G. O'Rear & John Larsen, *Clean Hydrogen: A Versatile Tool for Decarbonization*, RHODIUM GRP. (Sept. 9, 2021), https://rhg.com/research/clean-hydrogen-decarbonization/ [https://perma.cc/XDY9-XRGW]. The Biden Administration invested heavily in clean hydrogen, *see Biden-Harris Administration Announces $7 Billion for America's First Clean Hydrogen Hubs, Driving Clean Manufacturing and Delivering New Economic Opportunities Nationwide*, DEP'T OF ENERGY (Oct. 13, 2023), https://www.energy.gov/articles/biden-harris-administration-announces-7-billion-americas-first-clean-hydrogen-hubs-driving [https://perma.cc/H3JZ-8KX2], but the industry is still in its infancy.

unique difficulties in predicting the future. Tipping points, feedback loops, and even unanticipated innovation all complicate claims about how much mitigation we will need.[356] Finally, policymakers must consider the distributive consequences of their choices, as all too often environmental policies have simply reallocated costs to those least able to push back.[357] These are all considerations within the presentist policymaking paradigm as well, and often push policymakers toward less prescriptive options, but they are more complicated when balanced against a climate sunrise's abiding need for clarity and salience. At the outset, we ought to dispense with the notion that there is some optimal design for a climate sunrise. Instead, the best that can be done is to understand the options that are available and the tradeoffs between them. How, then, might designers of a climate sunrise think about each of these options on the "regulatory menu"?

To start, market-based approaches may not be the best choice for a climate sunrise since their advantages tend to be that they leave specific obligations unspecified. A carbon tax, for instance, does not technically require emitters to reduce emissions.[358] In theory, regulated entities could commit to pay whatever taxes they owe rather than changing business practices. Carbon tax proposals have acknowledged these limitations and have attempted to counteract them by building in additional uncertainties, such as a tax adjustment mechanism, which could, if necessary, ratchet up the price of carbon in order to induce more real compliance.[359] However, these adjustment strategies further

[356] *See* Farber, *Uncertainty*, *supra* note 279, at 922; Stelvia Matos, Eric Viardot, Benjamin K. Sovacool, Frank W. Geels & Yu Xiong, *Innovation and Climate Change: A Review and Introduction to the Special Issue*, 117 TECHNOVATION 1, 10 (2022); Ruhl & Craig, *supra* note 7, at 193.

[357] *See* David B. Resnik, *Environmental Justice and Climate Change Policies*, 36 BIOETHICS 735, 738 (2022); Shelley Welton & Joel B. Eisen, *Clean Energy Justice: Charting an Emerging Agenda*, 43 HARV. ENV'T L. REV. 307, 325 (2019).

[358] *Carbon Tax Basics*, CTR. FOR CLIMATE & ENERGY SOLS., https://www.c2es.org/content/carbon-tax-basics/ (last visited Mar. 13, 2025) [https://perma.cc/VR95-6F33] ("A carbon tax differs from a cap-and-trade program in that it provides a higher level of certainty about cost, but not about the level of emission reduction to be achieved (cap and trade does the inverse).").

[359] Marc Hafstead, Susanne Brooks, Nathaniel Keohane & Wesley Look, *Carbon Tax Adjustment Mechanisms (TAMs): How They Work and Lessons from Modeling*, RES. FOR THE

dilute the potential of a sunrise by diluting the signal. Proponents of cap-and-trade systems often argue that these approaches are preferable to carbon taxes for essentially this reason — policymakers in theory retain much greater control over actual emissions because they set a cap on total emissions, with a secondary credit market available for compliance.[360] In practice, policymakers have struggled with setting the cap at the right level. In the European Trading System, for instance, the cap was initially set at too low a level, which in turn drove the price of emissions permits to levels too low to incentivize much mitigation.[361] This "price volatility" is a substantial barrier to the effectiveness of cap-and-trade systems,[362] and if that is true now, it is certain to be true when regulated parties must make investment decisions in the shadow of a sunrising cap-and-trade system. There are too many "devil in the details"[363] problems for the full incentive effect of a sunrise to be realized.

The weaknesses of market-based approaches for a climate sunrise are largely corrected by technological and performance standards, but these approaches also give rise to different problems — both general problems and problems specific to the climate change challenge. Whereas market-based approaches leave many details unspecified so as to maximize flexibility and adaptation, technological standards and performance standards prioritize clarity and predictability.[364] Once a specific technology or level of emissions is specified, regulated entities would seemingly know exactly what they must do to stay on the right side of the law. This aspect of prescriptive regulation seems well suited to the

FUTURE (Aug. 7, 2020), https://www.rff.org/publications/issue-briefs/tams-how-they-work-and-lessons-modeling/ [https://perma.cc/LW92-EACA].

[360] *Carbon Tax Basics*, *supra* note 358.

[361] Brad Plumer, *Europe's Cap-and-Trade Program Is in Trouble. Can It Be Fixed?*, WASH. POST (Apr. 20, 2013, 1:04 PM), https://www.washingtonpost.com/news/wonk/wp/2013/04/20/europes-cap-and-trade-program-is-in-trouble-can-it-be-fixed/.

[362] Richard Schmalensee & Robert N. Stavins, *Lessons Learned from Three Decades of Experience with Cap and Trade*, 11 REV. ENV'T ECON. & POL'Y 59, 74 (2017).

[363] *Id.* at 71.

[364] *See* CHRISTOPHER CARRIGAN & ELISE HARRINGTON, PENN PROGRAM ON REGUL., CHOICES IN REGULATORY PROGRAM DESIGN AND ENFORCEMENT 8 (2015), https://kleinmanenergy.upenn.edu/wp-content/uploads/2020/08/Choices-in-Regulatory-Program-Design-and-Enforcement-1.pdf [https://perma.cc/QT5Z-4E2V].

climate sunrise idea. However, when projected into the distant future, both technological and performance standards have limitations. First, when deployed as part of a climate sunrise, the specificity of technological standards comes at the cost of lost validity. It would be very difficult to predict what kinds of technologies will be available for mitigation thirty to fifty years into the future. To the extent that policymakers today depend on expected innovation curves to calibrate appropriate technological mandates or technology-derived performance standards, there is a risk of both over- and under-shooting. Investments in emerging technologies like carbon capture and sequestration or direct air capture may or may not pan out as expected today.[365] If they do not, technological standards requiring adoption of certain abatement techniques may be rendered insufficient or obsolete. Second, while performance standards may be partially technology-agnostic, and therefore may be more immune to obsolescence, they are less objective. Firms today may look at a hypothetical numerical performance standard very differently than firms thirty years from now — while the standard would not have changed, the compliance burden may very well have changed. Much would depend on a firm's holdings, technological developments that ease or hinder compliance, and the like. And firms today anticipating these kinds of relative changes may be less likely to take preparatory actions, robbing the climate sunrise of its efficacy. It is not really an answer to this concern to say that lawmakers could always revisit the law and update the mandated technologies or the performance goal: such manipulations would only further undermine the efficacy of the sunrise by disturbing the signal and affecting regulated parties' estimates of their legal exposure.[366]

So far, we have seen that market-based regulation may be too flexible and complex to be effective in a climate sunrise, and we have likewise seen that more prescriptive forms of regulation may risk obsolescence and present concerns about over- and under-regulation when extended so far into the future. We might despair at this point, thinking there are no decent options for designing future obligations in a way that seems

[365] *See* Joe Lane, Chris Greig & Andrew Garnett, *Uncertain Storage Prospects Create a Conundrum for Carbon Capture and Storage Ambitions*, 11 NATURE CLIMATE CHANGE 925, 933 (2021).

[366] *See supra* Part II.B.1.

to balance the competing needs for predictability and precision. But that conclusion would be premature: while bans are ordinarily a blunt instrument that ignores transition costs, they are, perhaps surprisingly, an ideal instrument for a climate sunrise. First, a total ban on emissions has the virtue of predictability, which market-based approaches are lacking. Second, a total ban on emissions avoids the pitfalls of prescriptive standards by avoiding the need for calibration. Indeed, unlike ordinary performance standards, a total emissions ban is a sum certain (i.e., its perceived stringency is less dependent on subjective evaluations and predictions about the future). And a total emissions ban would be technology-agnostic, addressing risks of obsolescence. An emissions ban may be "just right" for purposes of a climate sunrise (if not for present-oriented lawmaking). Many policymakers already seem to have arrived at this conclusion, for when they have tried to articulate aspirational, non-binding goals for long-term decarbonization, they have often chosen to aim for "net zero."[367] A climate sunrise centered around a ban is simply a net zero commitment that binds. To be sure, bans may be perceived by some as overkill, but this optimizing approach is a luxury we cannot afford. Most pathways to stabilizing the climate require the complete phase-out of fossil fuels at some point in the future[368] — a climate sunrise simply encodes into law that sobering deadline.

2. The Experimentalist Challenge

As the foregoing discussion makes clear, policymakers seeking to implement a climate sunrise would do well to aim for clear, predictable obligations and penalties up front. But this also leads the climate sunrise idea into a potential practical problem: specifically, even assuming agreement to shoot for deep decarbonization, policymakers and firms alike may have only the foggiest idea today of how firms could get there. Moreover, it may be that the best solutions available to regulated parties

[367] *See supra* note 30 and accompanying text.

[368] *See* Damian Carrington, *Why Is the Phase-Out of Fossil Fuels the Biggest Flashpoint at COP28?*, GUARDIAN (Dec. 9, 2023), https://www.theguardian.com/environment/2023/dec/09/phase-out-down-fossil-fuels-cop28 [https://perma.cc/7K8S-JU39] (noting the debate between phase-out and phase-down at COP28 and that experts generally agree a phase-out will be necessary to achieve net zero by 2050).

are not yet known by *anyone* — they may need to be created by problem solving in collaborative innovation networks. To put this in practical terms, imagine that you are a polluting firm faced with a climate sunrise in which you will be asked, in 2065, to prove that you have eliminated greenhouse gas emissions from your enterprise. More sophisticated firms may have a very good idea of what compliance would entail, but it is probably safe to say that many firms would have little idea and would lack the resources to find out. This is a problem for the efficacy of a climate sunrise, since such a mechanism depends on regulated parties not only anticipating how the law would affect them years in advance of any legal effect, but also determining how they will practically work toward compliance.

Charles Sabel and David Victor have recently argued that one major reason for the success of the Montreal Protocol — which quickly phased out ozone-depleting substances — relative to the UNFCCC climate program's failures, is that the Montreal Protocol embraced an ethic of "experimentalist governance."[369] The Montreal Protocol set "bold goals" to "mark the direction of the desired change," but "acknowledge[d] up front the likelihood of false starts, given the fact that the best course of action [was] unknowable at the outset."[370] In other words, the Montreal Protocol created a "schedule to control and eventually eliminate nearly all ozone-depleting substances," with the schedule developed iteratively and incrementally by a variety of sector-specific committees who would coordinate and manage a search for replacements for ozone-depleting substances.[371] Once an alternative was discovered through this carefully "orchestrated" process of trial-and-error, the "committees put the industry on notice that the old methods would be banned," whereupon "[i]nnovative firms had a strong incentive not to be left out, and persistent laggards faced exclusion from the market."[372] Institutionally, the Montreal Protocol succeeded

[369] SABEL & VICTOR, *supra* note 98, at 3-4. The experimentalist approach is a specific application of a broader program of pragmatic reform of governance that Sabel has written about extensively. *See* Michael C. Dorf & Charles F. Sabel, *A Constitution of Democratic Experimentalism*, 98 COLUM. L. REV. 267, 314 (1998).

[370] SABEL & VICTOR, *supra* note 98, at 2.

[371] *Id.* at 5-6.

[372] *Id.* at 6.

because it "encourage[d] ground-level initiative by creating incentives for actors with detailed knowledge of mitigation problems to innovate and then convert[ed] the solutions into standards for all."[373] By contrast, the UNFCCC's climate program "evolved along a different track — one that created institutions that were rigid and tightly controlled by diplomatic processes, and thus did not allow for much experimentation," and which therefore "didn't do much problem-solving."[374] Sabel and Victor therefore argue that climate policy should embrace and institutionalize an experimentalist ethic modeled on the successful features of the Montreal Protocol.

These ideas of experimentalist governance are at once compatible with the climate sunrise idea and in substantial tension with it. On the one hand, Sabel and Victor view the setting of ambitious goals — the near complete phase-out of ubiquitous pollutants in relatively short order — as essential to the creation of incentives to collaborate, and this seems quite consistent with the idea of a climate sunrise. A sufficiently stringent climate sunrise could likewise be expected to align the incentives of regulated parties towards finding solutions to the climate problem, and in fact one key advantage of the sunrise is that it gives regulated parties the time and the freedom to innovate. On the other hand, Sabel and Victor put great stock in two features of the Montreal Protocol that are antithetical to the climate sunrise idea: first, the idea of a scheduled phase-out, which is incompatible with a climate sunrise's discontinuous on/off switch; second, the incremental updating of specific expectations for specific sectors as knowledge accumulates, which makes the specific obligations a moving target. These design elements clearly maximize experimentalism, but this additional experimentalism comes at the expense of realization of the potential incentive effects of the sunrise.

There may still be ways to build substantial experimental elements into the operation of a climate sunrise framework. Ultimately, while a climate sunrise is irreducibly committed to some rejection of the experimentalist preference for floating or moving law, it is quite compatible with coordinated experimentation under the shadow of a

[373] *Id.* at 2.

[374] *Id.* at 35-36.

rigid and inflexible goal. To that end, it is worth exploring possible methods for institutionalizing this coordinated experimentation during the dormancy period. There is much to be adopted from the sector-specific committee process that Sabel and Victor chronicle, and it would not be too difficult to set up such a process — indeed, committees might even be expected to spring up spontaneously as sectors begin to see mutual advantage in coordinating their responses to the climate sunrise.

A more government-centric approach would be for administrative agencies to coordinate the provision of benchmarking information. The SEC's recent rulemaking activities requiring disclosure of climate risks provide a potential platform. Responding to its understanding that "[i]nvestors are seeking more information about the effects of climate-related risks on a company's business," SEC proposed to require certain public companies to "include certain climate-related information in its registration statements and periodic reports, such as on Form 10-K."[375] Among other things, regulated companies need to provide information about "[h]ow any climate-related risks identified by the registrant have had or are likely to have a material impact on its business and consolidated financial statements, which may manifest over the short-, medium-, or long-term."[376] Were a climate sunrise passed, these rules could be amended to specify that regulated companies must disclose information about their progress to date in coming into compliance with the policies that will sunrise in the future. It is not even clear that SEC needs any additional statutory authority to do this, as failure to prepare for the effective date of a climate sunrise on the books would easily qualify as a material risk for these enterprises.

Finally, beyond disclosure, the government could also provide sunrise audit services which could provide firm-level feedback about both risks under the sunrise and advice about methods of reducing these risks. The Energy Information Administration ("EIA"), which already curates a wealth of data on energy-related matters, could be given responsibility for preparing audits, either on a firm-by-firm or sector-by-sector level, of progress to date. These audits would not require any action. They

[375] SEC, FACT SHEET: ENHANCEMENT AND STANDARDIZATION OF CLIMATE-RELATED DISCLOSURES 1-2, https://www.sec.gov/files/33-11042-fact-sheet.pdf (last visited Feb. 13, 2025).

[376] *Id.*

would be purely informative. These kinds of benchmarking activities would serve at least three purposes. First, they would ensure that the climate sunrise's signal would be salient to all firms from day one, and that firms would be aware of any "compliance gap" that might develop over time. Second, it would provide outside investors with information about compliance gaps, which would enlist market forces in favor of voluntary action and limit the risks of shortsighted managerial incentives. Finally, it would leverage peer comparison, which could be expected to lead to more voluntary action than might occur were firms acting in a vacuum. Of course, a climate sunrise could work without any of these benchmarking activities. In some circumstances, the *lack* of information provided could contribute to a greater *in terrorem* effect. These institutional questions about the provision of information to regulated parties before the sunrise would take place deserve more study.

Ultimately, while there is much to be said for the model of experimentalist government that Sabel and Victor advocate, and while a climate sunrise definitionally rejects some experimentalist elements, there are many available ways to make a climate sunrise experimentation-compatible short of abandoning the core idea that the climate law of tomorrow must be clear up front. Policymakers would do well to think up front about how to design administrative institutions or encourage private models of cooperation to facilitate the search for the best ways to comply with a climate sunrise.

C. Credible Commitments to Enforcement

Fast forward to 2065, or whenever a hypothetical climate sunrise goes into effect. If the climate sunrise worked reasonably well to this point, a good deal of voluntary preparation would have already taken place. Yet there would also likely be some regulated parties that, for whatever reason, failed to take all the action needed to comply with the law. What should be done at this point is a critically important question for the overall functionality of the climate sunrise device, and indeed even for the preparation incentives that compliant firms would experience during the dormancy period.

Credibility in climate change policymaking is a central and cross-cutting challenge, given the long timescale of the challenge and the

unpredictability of the future.[377] There will always be questions about how we can know that some promise that policymakers make will be upheld in the distant future. History teaches that seemingly transformative policy enactments are frequently eroded at the implementation stage.[378] This is especially true for a climate sunrise, which deliberately exploits extreme temporality to defer the political ramifications of law, thereby necessarily exacerbating possibility that policymakers in the future will renege on the sunrise when the politics of the sunrise become more salient in the present moment.

In designing a climate sunrise, policymakers would want to put significant thought into how to credibly ensure, well in advance of the sunrise date, that the government will follow through with the assessment of penalties for noncompliance even when the consequences for individual regulated parties may be catastrophic. Not only would credibility on this front amplify the incentive effects of the climate sunrise, but it would also reinforce the public's belief that the climate sunrise is worth defending against repeal or erosion. While not purporting to be exhaustive, this Section considers potential mechanisms for credible commitment to enforcement, and it also acknowledges that there is less ability to credibly commit at the international level, which means that the climate sunrise device may be best suited to national action.

1. Congress's Options

Congress likely cannot formally limit future exercises of the legislative power by barring repeal.[379] Nor would it probably want to, as a formal limit on repeal under all circumstances would raise the cost of political enactment, thus defeating one of the major purposes of employing the climate sunrise device.[380] Short of this, however, there are many potentially entrenching devices that might be both sensible as

[377] GAZMARARIAN & TINGLEY, *supra* note 156, at 7-8.

[378] *See* PATASHNIK, *supra* note 258, at 2 ("The failure of the Tax Reform Act of 1986 to consolidate its gains and reconfigure political dynamics is just one example of a larger and more worrisome phenomenon — the reversal or unraveling of general-interest reforms after their adoption.").

[379] *See* Posner & Vermeule, *supra* note 324, at 1665.

[380] *See supra* Part II.A.3.

a matter of legal design and likely to survive scrutiny from the courts. Like Odysseus, who tied himself to the mast in order to resist the sirens' call, Congress may be able to make a precommitment to enforcement through hand-tying devices.[381]

For instance, Congress could adopt procedural rule changes that raise the threshold for repeal of the statute, such as by requiring a supermajority. Congress already adheres to supermajority requirements for some legislation (the filibuster) and exempts other legislation (namely, bills promulgated through the budget reconciliation process). There would be an argument that a bill-specific procedural rule imposing supermajority requirements for repeal is more problematic than these more generally applicable rules that govern the legislative process, but it is not clear that the argument would prevail. Another interesting possibility — and one that might be less likely to be deemed in violation of any constitutional rules against legislative entrenchment — would involve Congress specifying that any repeal must be total rather than partial. This is not a far cry from the kind of severability clause that Congress often inserts in legislation to ensure that one legal flaw in a piece of legislation does not doom the entire thing. Through such a limitation, Congress might raise the stakes of repeal and activate defenders of the climate sunrise,[382] and it would also prevent opponents from whittling away at the law until it is an empty shell. There may be other procedural devices that raise the costs of repeal, such as review and report requirements (such procedural commitment devices were a key part of the Defense Base Closure and Realignment Act of 1990).[383] Finally, Congress could wield the appropriation power to earmark funds for enforcement on a permanent basis.[384] Ordinarily, appropriations are

[381] GAZMARARIAN & TINGLEY, *supra* note 156, at 56-57. For the classic treatment of precommitment devices, see JON ELSTER, ULYSSES UNBOUND: STUDIES IN RATIONALITY, PRECOMMITMENT, AND CONSTRAINTS 4 (2000) (linking the story of Ulysses (also known as Odysseus) to "two types of beneficial constraints," including "pre-commitment" or "self-binding").

[382] *Cf.* GAZMARARIAN & TINGLEY, *supra* note 156, at 58 (suggesting the utility of "linking" policies together, so that attacks on one policy activate constituencies with stakes in other policies).

[383] Lazarus, *supra* note 31, at 1201-02.

[384] This suggestion is similar to Gazmararian and Tingley's suggestion that future policymakers' hands could be tied by having the government "accumulate debt that

handled on a year-to-year basis, which provides many opportunities for future Congresses to renegotiate commitments. But Congress can and does depart from this baseline. By specifying that appropriations for enforcement are permanent unless repealed, Congress would ensure that annual budgetary politics, and the threat of a holdup of funds along the lines of what we frequently see with budgets and debt-ceiling raises, would not become a roadblock to enforcement.

Of course, no matter what Congress does to try to raise the costs of repeal, the best defense against repeal is the one articulated in Part II.B: once something becomes law, inertia and the operation of veto-gates make it difficult to change.[385] Congress arguably needs to worry much less about future Congresses and much more about what happens when responsibility for enforcement is delegated to the executive branch. It is to that challenge that I turn next.

2. Eliminating Administrative Discretion

Primary responsibility for enforcing a climate sunrise would undoubtedly fall to administrative agencies within the executive branch, and this delegation of responsibility carries with it a serious risk of dilution of a climate sunrise. It is more the exception than the rule that agencies will carry out their delegated powers to the full extent of the law. Agencies frequently cite resource limitations and their comparative expertise in matters of resource allocation to justify their decisions to forgo or delay taking action within their power.[386] They are empowered to write into their rules carveouts that categorically except or exempt actors or actions from legal obligations that are otherwise applicable, and they can grant dispensations that waive the application of legal

constrains the policy choices of a successor." *See* GAZMARARIAN & TINGLEY, *supra* note 156, at 57.

[385] *See supra* Part II.B.1.

[386] *See* Eric Biber, *The Importance of Resource Allocation in Administrative Law*, 60 ADMIN. L. REV. 1, 17-18 (2008).

obligations.[387] The exercise of these "equitable" powers appears to be a substantial part of what agencies do.[388]

Administrative law does little to constrain the exercise of this discretion. For instance, in *Heckler v. Chaney*, the Supreme Court held that agencies generally cannot be sued for failure to enforce statutes, in part because enforcement decisions are essentially within the prosecutorial discretion of the executive branch.[389] Likewise, the Supreme Court held in *Norton v. Southern Utah Wilderness Alliance* that courts generally are not empowered under the Administrative Procedure Act to "enter general orders compelling compliance with broad statutory mandates," because such "failures to act" are not discrete or legally required without more.[390] Even if one surmounted these hurdles, standing doctrine is often a significant barrier to those seeking to force agencies to take all of the action within their power to regulate the activities of others.[391] If a climate sunrise was enacted against this backdrop of conventional administrative law, the commitment to enforcement would not be credible. There would simply be too many avenues for regulated parties to wait until the sunrise occurred and bet that agencies would feel pressure to grant waivers or overlook violations. They would assume (correctly) that those with an interest in full enforcement of consequences for noncompliance would not be able to bring their complaints to court.

In order to neutralize these reactions, policymakers enacting a climate sunrise would do well to explicitly change the default administrative law norms with respect to the implementation of the climate sunrise. Some of this could be accomplished by simply taking advantage of the tools that courts have already given Congress to reduce administrative discretion. For instance, *Heckler v. Chaney*'s holding that agency nonenforcement is committed to agency discretion by law is

[387] Cary Coglianese, Gabriel Scheffler & Daniel E. Walters, *Unrules*, 73 STAN. L. REV. 885, 888-89 (2021).

[388] *Id.*; *see* Jason Webb Yackee & Susan Webb Yackee, *From Legislation to Regulation: An Empirical Examination of Agency Responsiveness to Congressional Delegations of Regulatory Authority*, 68 ADMIN. L. REV. 395, 437 (2016).

[389] 470 U.S. 821, 833 (1985).

[390] 542 U.S. 55, 62, 66 (2004).

[391] United States v. Texas, 599 U.S. 670, 686 (2023).

merely a rebuttable presumption that can be overcome by clear and mandatory language requiring enforcement.[392] And under the *Norton* case, Congress can increase the chances that litigants will succeed in getting judicial review by defining agencies' discrete obligations with specificity and subjecting them to deadlines.[393] Beyond this, the courts would likely have to respect a congressional statement to the effect that agencies lack any power to waive violations of the law or exempt regulated parties from enforcement.[394] Of course, such a statement would frequently run up against the resource limitations facing agencies,[395] but Congress could address that concern in part by stripping regulated parties of any additional procedural rights beyond those required by due process. Unencumbered by the need to observe extensive procedural rights in the assessment of penalties, agencies would have more resources available to ensure more complete enforcement of the law.

Obviously, this hard-edged approach to administrative law may not be desirable in most situations where agencies are asked to carry out statutory programs, but a climate sunrise is very different from ordinary legislation. With so much hinging on a credible commitment to enforce the law, and with so much time given to regulated parties to order their affairs for the coming sunrise, a less forgiving and more predictable set of administrative law principles seems justifiable.

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[392] 470 U.S. at 832-34 (discussing *Dunlop v. Bachowski*, 421 U.S. 560 (1975), which held that Congress required enforcement, and authorized judicial review of non-enforcement, by using mandatory language).

[393] *Norton*, 542 U.S. at 71 (noting that a "specific statutory command requiring an agency to promulgate regulations by a certain date" is a paradigmatic instance of a legal requirement that agencies ignore only at the risk of a lawsuit to compel action unlawfully withheld under section 706(1) of the Administrative Procedure Act).

[394] *Cf.* HollyFrontier Cheyenne Refin., LLC v. Renewable Fuels Ass'n, 594 U.S. 382 (2021) (generally approach questions about the scope of waiver or exemption provisions as matters of legislative design and subjecting them to textual scrutiny to determine what Congress intended).

[395] *See* Biber, *supra* note 386, at 17-18 (discussing the reality that judicial review of agency inaction frequently implicates resource allocation concerns, as courts are ill suited to determine how to prioritize actions in an environment with scarce resources).

3. Limitations at the International Level

Thus far, I have largely assumed that a climate sunrise would be implemented in domestic policy, but the climate sunrise device is in principle something that could be adopted in international law as well. International climate law has struggled with many of the same political challenges that domestic climate law has. While the international community scored a major victory in the Paris Climate Agreement, the parties failed to overcome political barriers to imposing any binding emissions limitations. Instead, nation states have been charged with developing nonbinding nationally determined contributions ("NDCs") and long-term strategies ("LTSs").[396] The first wave of post-Paris NDCs in 2020 were ambitious enough to promise a seven-percent reduction of greenhouse gas emissions by 2030, but the Intergovernmental Panel on Climate Change ("IPCC") estimated that reductions would have to be closer to forty-three percent to "keep the 1.5°C goal within reach."[397] And that is assuming that nation states achieved the goals set out in their NDCs, which they are not legally required to do. As for LTSs, nation states have so far given them far less attention than NDCs.[398] Without any serious risk of binding emissions limits, nation states are free to treat the entire international climate law framework as optional.

The climate sunrise idea could, in principle, provide more incentive for nation states to prepare for a future where there are binding limitations. The problem is that, compared to the situation at the domestic level, it is much more difficult to make a credible commitment to enforcement at the international level. As sovereigns, parties to international agreements ultimately control their own destiny and could be expected to defect from any agreement that imposed a sunrise

[396] Kelly Levin & Taryn Fransen, *Climate Action for Today and Tomorrow: The Relationship Between NDCs and LTSs*, WORLD RES. INST. (Sept. 19, 2019), https://www.wri.org/insights/climate-action-today-and-tomorrow-relationship-between-ndcs-and-ltss [https://perma.cc/F9WT-93UE].

[397] *WRI Analysis of Updated NDCs Reveals Need for Transformational Change*, INT'L INST. FOR SUSTAINABLE DEV. (Oct. 27, 2022), https://sdg.iisd.org/news/wri-analysis-of-updated-ndcs-reveals-need-for-transformational-change/ [https://perma.cc/SXA5-BGPN].

[398] Levin & Fransen, *supra* note 396.

that was not perceived to be in their national interest.[399] Already, we have seen the United States defect from the Paris Climate Agreement, and the world's other large emitters of greenhouse gases might likewise flinch when faced with a future binding cap on emissions. In domestic policymaking, this kind of individual defection is not possible, which is why a majority in favor of a sunrise could impose it on unwilling regulated parties.

To be sure, it may be possible to forge a political commitment among the world's nations, much as recently occurred with the so-called Global Minimum Tax ("GMT"), under which signatories coordinate to ensure that multinational corporations pay at least a fifteen-percent tax rate. The agreement helps to resolve an obvious race-to-the-bottom for corporate tax rates and is predicted to substantially limit the utility of tax havens.[400] Needless to say, these changes will produce some winners and some losers, but, through years of difficult negotiations, the parties appear to have come to some kind of commitment to address tax avoidance. Perhaps negotiation could convince the world's leading emitters to commit to a climate sunrise (even as it apparently could not convince them to embrace *immediate* binding limitations in the Paris Climate Agreement or other UNFCCC instruments), but just as with the GMT, the commitment would only be worth the word of the parties. International law has no means of holding sovereign actors to commitments that they no longer want to make.

For these reasons, it may be that the climate sunrise idea is best suited to a domestic context, where the challenges to demonstrating a credible commitment are formidable but surmountable. The possibility of unilateral defection from any international climate sunrise would probably undermine any credible threat embedded in a climate sunrise.

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[399] Rachel Brewster, *Stepping Stone or Stumbling Block: Incrementalism and National Climate Change Legislation*, 28 YALE L. & POL'Y REV. 245, 248 (2010) ("[A]n international agreement requires the consent of each nation and cannot bind jurisdictions that do not wish voluntarily to change their environmental standards.").

[400] Thomas Lassourd, *What Does the Global Minimum Tax Deal Mean for Developing Countries?*, INT'L INST. FOR SUSTAINABLE DEV. (Feb. 10, 2022), https://www.iisd.org/articles/global-minimum-tax-deal [https://perma.cc/EG4E-99JG].

CONCLUSION

In many ways, the present moment is one for optimism on climate change. The general embrace of green industrial policy in the United States and other major emitting nations promises to accelerate the transition to clean economies and foment unprecedented decarbonization. Likewise, we are on a much better track to address climate change because of the major contributions of private environmental and climate governance. Slowly but surely, the world is responding to the threat of climate change. The proposal identified in this Article — a climate sunrise that substantially delays the onset of bold, decisive regulatory action to mitigate greenhouse gas emissions — is best conceived not as a substitute for all of this much-needed positive action on climate change, but as a complement.[401] As international governmental organizations and climate watchdogs alike continuously remind us, the nation and the world are not on track to prevent avoidable harms, and the best-case scenarios for industrial policy and private environmental governance still leave us with an "emissions gap" that will need to be plugged at some point in order to prevent the worst impacts of climate change.[402] This will not happen, at least not entirely, until polluters are forced to stop. A climate sunrise holds promise as a politically feasible strategy for committing to the plugging of this gap, and, as I have shown in this Article, it could also be expected to shape the response to climate change well before the policy formally takes effect. In hindsight, it would have been helpful to have enacted a climate sunrise thirty years ago; the next best thing, though, is to enact one today for the benefit of those living thirty to fifty years from now.

[401] Indeed, many of Shelley Welton's critiques of the "net zero" paradigm — that its agnosticism about the means to decarbonization may not adequately address concerns about justice or scalability that could be better managed through more hands-on regulation — would apply to a climate sunrise operating in isolation. *See* Welton, *supra* note 28, at 175-76. These problems can perhaps be addressed by pairing the climate sunrise with more bottom-up strategies in GIP and PEG.

[402] *See, e.g.*, *supra* note 6 and accompanying text.