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June 17, 2022

The Honorable Gary Gensler
Chair
Securities and Exchange Commission
100 F Street, NE
Washington, DC 20549

Re: RIN 3235–AM87, The Enhancement and Standardization of Climate-Related Disclosures for Investors

Dear Chair Gensler,

This letter comments on the Securities and Exchange Commission's ("the SEC") Proposed Rule on "The Enhancement and Standardization of Climate-Related Disclosures for Investors" ("the proposed rule") published in the Federal Register on April 11, 2022, at 87 Fed. Reg. at 21,334 through 21,473.

The volume and the scope of the information that the proposed rule seeks is breathtaking. Registrants would be required to disclose a panoply of "climate-related" information: "physical risks" from extreme weather; so-called "transition risks" posed by potential future climate policy; a registrant's own greenhouse gas ("GHG") emissions—and often upstream supplier and downstream consumer emissions as well— to "assess a registrant's exposure" to climate risks; and a "transition plan" where a registrant is forced to explain how they will reduce their disclosed risks by reducing GHG emissions.

Because the proposed rule would force registrants to disclose data that is sheer guesswork under the best conditions and to disclose plans to reduce GHG emissions, whether financially prudent or not, registrants would find themselves stuck between a rock and a hard place. Either divest from unpopular fossil fuels or open themselves to private lawsuits over allegedly misleading climate-related disclosures, lawsuits made even more likely SEC's other proposed rulemaking seeking to crack down on "greenwashing." *See Enhanced Disclosures by Certain Investment Advisers and Investment Companies about Environmental, Social, and Governance Investment Practices*, RIN: 325-AM96.

This catch-22 is not an accident but by design. While the proposed rule purports to require climate-related disclosures to protect companies and investors from the risks of climate change, it is clear the disclosures' true purpose is to protect

the climate from risks posed by companies. The proposed rule has its roots in pressure from elite asset managers who wish to manipulate the capital market system to force companies to align their behavior with the political preferences of the elites. As proposed, the climate-related disclosures would place a mammoth burden on large and small companies alike, while simultaneously driving up energy prices and removing valuable assets from a pool that main street investors can access, all while doing *nothing* to reduce financial risk or even to benefit the environment.

Fortunately for registrants and the American public, the proposed rule is illegal and unconstitutional. In seeking to regulate the environment, the SEC would step beyond the statutory authority granted to it by Congress, trespassing on the Environmental Protection Agency's ("EPA") domain and exceeding any permissible interpretation of the Exchange Act under the Supreme Court's major-questions doctrine. The proposed rule would far exceed the "materiality" standard for disclosures that the Supreme Court has found that the Securities Act and Exchange Act require. The proposed rule would be arbitrary and capricious for more than a dozen reasons, not least of which being that it encourages substantial conflicts of interest and is based on gross misrepresentations of the facts of climate change. The proposed rule would violate the First Amendment by compelling controversial speech. And to top it all off, the proposed rule would run afoul of the nondelegation doctrine and the private nondelegation doctrine by seeking to give legal effect to the Paris Agreement's climate goals despite those goals having never been approved by Congress, much less given binding effect.

As written, the proposed rule would cost billions of dollars per year and directly undermine the SEC's mission of making regulations in the public interest. The SEC does not have—and under the Constitution could never have—the legal authority to execute such a politically motivated power grab.

I provide more specific comments on the proposed rule in the following discussion. Additionally, in support of this comment, I have attached expert declarations from Dr. Jonathan Klick ("Klick Declaration"), Dr. Roy Spencer ("Spencer Declaration"), and James Copland ("Copland Declaration") as well as two previous publications I have authored discussing the intersection of climate policy, energy policy, and the American economy.

Table of Contents

I. The Proposed Rule Would Exceed the SEC's Authority Because the EPA—Not the SEC—Has Primary Jurisdiction over Environmental Regulation.

A. The EPA has Primary Jurisdiction over Environmental Regulation.

The Supreme Court has long held that "we must be guided to a degree by common sense as to the manner in which Congress is likely to delegate a policy decision of such economic and political magnitude to an administrative agency." *FDA v. Brown & Williamson Tobacco Corp.*, 529 U.S. 120, 133 (2000). The SEC lacks statutory authority to issue its proposed rule mandating vast climate disclosures for the "common sense" reason that another federal agency—the EPA—has already been tasked with regulating matters of environment quality, both through direct regulation and by requiring extensive disclosures on that topic, via the Clean Air Act. It makes no sense that Congress would also have granted the SEC the same powers—or, indeed, even *broader* powers, as the SEC now claims to possess—than Congress granted to the EPA in the context of environmental and climate regulations.

The Supreme Court has recognized that the EPA is specifically given the task of environmental regulation. *See Am. Elec. Power Co. v. Connecticut*, 564 U.S. 410, 426 (2011) ("The critical point is that Congress delegated to the EPA the decision whether and how to regulate carbon-dioxide emissions from power plants; the delegation is what displaces federal common law. Indeed, were EPA to decline to regulate carbon-dioxide emissions altogether …, the federal courts would have no warrant to employ the federal common law of nuisance to upset the agency's expert determination.").

In particular, Congress has authorized the EPA to collect reports from emission sources and make them available to the public, *see* 42 U.S.C. § 7414, and the EPA already requires the disclosure of GHG emissions from all facilities that emit more than 25,000 metric tons of CO2-equivalent per year and from all facilities that supply certain products that would result in over 25,000 metric tons of CO2-equivalent if those products were released. This information is publicly available through the EPA's website. *See* 87 Fed. Reg. at 21,414 & nn.736–38. As the EPA's own website explains, the GHG Reporting program covers more than 8,000 facilities and represents 85 to 90% of all U.S. GHG emissions. *See Greenhouse Gas Reporting Program and the U.S. Inventory of Greenhouse Gas Emissions and Sinks*, EPA (Oct. 6, 2021), https://www.epa.gov/ghgreporting/greenhouse-gas-reporting-program-and-us-inventory-greenhouse-gas-emissions-and-sinks.

What's more, the EPA and states (for actions that EPA has delegated to states) have issued thousands of permits and regulations that authorize all large stationary source and all mobile source emissions, in compliance with the Clean Air Act and require disclosure of the emissions of all these sources.

In the context of climate regulation, the more recently passed and more specific Clean Air Act controls over the SEC's generic 1930s disclosure statutes. *See Brown & Williamson*, 529 U.S. at 133 ("[T]he meaning of one statute may be affected by other Acts, particularly where Congress has spoken subsequently and more specifically to the topic at hand."). The Supreme Court has also previously rejected the SEC's attempts to regulate disclosure of ERISA matters that fell within a more-recently-enacted and more-specific statute: "Unlike the Securities Acts, ERISA deals expressly and in detail with pension plans. ERISA requires pension plans to disclose specified information to employees in a specified manner, in contrast to the indefinite and uncertain disclosure obligations imposed by the antifraud provisions of the Securities Acts." *Int'l Bhd. of Teamsters, Chauffeurs, Warehousemen & Helpers of Am. v. Daniel*, 439 U.S. 551, 569 (1979). The same logic applies here: the Clean Air Act deals specifically with broad climate disclosures, unlike the earlier-enacted, indefinite, and uncertain disclosures required by the Securities Act and Securities Exchange Act.

For nearly 50 years, and as recently as 2016, the SEC itself agreed that it lacked such power. It concluded that "disclosure relating to environmental and other matters of social concern should not be required of all registrants unless appropriate to further a specific congressional mandate or unless, under the particular facts and circumstances, such matters are material." *Business and Financial Disclosure Required by Regulation S-K*, 81 Fed. Reg. at 23,916, 23,970 (Apr. 22, 2016); *see Environmental and Social Disclosure, Notice of Commission Conclusions and Rulemaking Proposals*, 40 Fed. Reg. at 51,656, 51,657 (Nov. 6, 1975). There has been no new "specific congressional mandate" authorizing mass environmental and climate disclosures, or any federal statutes commanding economy-wide reductions in GHG emissions—yet the SEC now suddenly asserts the power it has long disclaimed. The old SEC view was right, and the new SEC view is wrong. The SEC has no authority under current law to promulgate the proposed rule, which "has gone beyond what Congress permitted [the SEC] to do." *City of Arlington v. FCC*, 133 S. Ct. 1863, 1869 (2013).

B. The Proposed Rule Would Trespass on the EPA's Environmental Jurisdiction.

Several aspects of the proposed rule confirm that it would trespass on the EPA's domain and thus exceeds the SEC's statutory authority. First, as mentioned above, the proposed rule acknowledges that the EPA already requires greenhouse gas emission figures from all facilities that emit more than 25,000 metric tons of CO2-equivalent per year, and all of this information is "made public through [the EPA's] website." 87 Fed. Reg. at 21,414 & nn.736–38. Second, the proposed rule acknowledges that the Greenhouse Gas Protocol it adopts is the same one used by the EPA's Center for Corporate Climate Leadership, 87 Fed. Reg. at 21,344, except the EPA requires less exhaustive disclosures than the SEC seeks to require, 87 Fed. Reg. at 21,376 (acknowledging that the EPA's requirements are akin to requiring "only Scope 1 emissions").

The proposed rule also incorporates EPA standards for "emission factors" of certain fuel sources, allowing registrants to use these standardized values rather than directly measure their own emissions, 87 Fed. Reg. at 21,386. The proposed rule looks to EPA predictions of costs to try to estimate the cost of the proposed rule's own emissions disclosure requirements. 87 Fed. Reg. at 21,442. It is no surprise, then, that the proposed rule cites the EPA more than any other organization: 28 footnotes include citations to EPA materials or positions (the Carbon Disclosure Project has the next-most citations, with 27). *See* Letter from Lawrence A. Cunningham et al. at 20, File No. S7-10-22 (Apr. 25, 2022).

At one point, the proposed rule even states that the SEC could require the same information that any other agency already requires—including the EPA—because merely requiring "inclusion in SEC filings" makes "the public . . . more aware of the information," which the SEC deems to be a legally sufficient basis on its own for requiring disclosures. 87 Fed. Reg. at 21,434.

The take-away is that the SEC believes the EPA is insufficiently regulating climate disclosures, so the SEC must step in, take charge, and demand emissions data well above what the EPA itself requires. The SEC lacks statutory authority to overtake the EPA as the federal government's primary regulator of the environment. Even more disturbing is the SEC's claimed power to require disclosures on any topic already directly addressed by any other agency, simply because the SEC has a bigger megaphone and thus can disseminate information more efficiently. The SEC is laying the groundwork to become the primary federal regulator of any and all issues it chooses, with no meaningful limiting principle—a violation made all the worse

because the SEC is considered to be an independent agency with less meaningful executive oversight.

In doing so, the SEC ignores all other federal (and state) permitting and regulatory activities, including NEPA determinations, finding that vast quantities of fossil fuel production, distribution, consumption, and exports are not only lawful, but in the public interest, as well as thousands of federal and state permits that explicitly authorize every large stationary source of emissions to combust the fuel that produces those emissions, as well as thousands of federal and state regulations that authorize emissions from nearly every source of anthropogenic emissions in the country.

The SEC also ignores that the expenditure of taxpayer funds by federal, state and local governments are used to implement myriad government programs and operations that drive nearly half of U.S. GDP, actions that are fueled by coal, oil and natural gas, often requiring the use of fossil fuels by the government itself. If the SEC was truly concerned about climate-related financial risks to markets, the first step would be to convene interagency consultation on how these governments intend to operate without the use of fossil fuels, up and down the government goods and services supply chain. We are unaware of any such consultation beyond the Federal Energy Management Program (FEMP) which strives to make marginal improvements in energy efficiency and reduce water consumption, mainly at tens of thousands of federal buildings.

If all the above were not enough, there is also the fact that the SEC has never previously required disclosures of this sort, either in terms of subject matter (blanket emissions and "climate risk" data) or in scope (reaching, directly or indirectly, nearly every business and consumer in the country). "When an agency claims to discover in a long-extant statute an unheralded power to regulate a significant portion of the American economy, we typically greet its announcement with a measure of skepticism." *Util. Air Regul. Grp. v. E.P.A.*, 573 U.S. 302, 324 (2014).

C. Despite What the Proposed Rule Claims, the True Purpose of the Rule—and Certainly Its Effect—Is to Regulate the Environment.

The SEC will claim it is not directly regulating environmental matters but merely calling for disclosures on the topic. But that distinction is irrelevant because the EPA is still the agency tasked with requiring broad *disclosures* on environmental matters. *See, e.g.*, 42 U.S.C. § 7414. That alone is enough to find that the SEC lack statutory power to promulgate the proposed rule. The SEC's claim also flouts reality. As Commissioner Peirce explains: "Let us be honest about what this proposal is really trying to do. Although styled as a disclosure rule, the goal of this proposal . . . is to

direct capital to favored businesses and to advance favored political and social goals." SEC Comm'r Hester M. Peirce, *We Are Not the Securities and Environment Commission—At Least Not Yet*, Mar. 21, 2022, https://www.sec.gov/news/statement/peirce-climate-disclosure-20220321; *see also* Rupert Darwall, *The SEC Tries Its Hand at Climate Policy*, THE HILL, Mar. 30, 2022, https://thehill.com/opinion/energy-environment/600203-the-sec-tries-its-hand-at-climate-policy/.

Numerous aspects of the proposed rule demonstrate that the true purpose here is indeed to regulate matters of climate and environment.

1. The Proposed Rule Is Riven with Nods to Aggressive Climate Activists.

The SEC claims there has been "significant investor demand for information about how climate conditions may impact their investment." 87 Fed. Reg. at 21,340. But the groups to which the SEC points seem to want the converse: information about how their investment decisions impact climate conditions. Copland Declaration at 13. For example, Investor Agenda, referenced on 87 Fed. Reg. at 21,340, states that its investment goals are to "set a net-zero target," to achieve "net-zero emissions by 2050 or sooner," and to "phase out investments in thermal coal." *Investment*, The Investor Agenda, https://theinvestoragenda.org/focus-areas/investment/ (last accessed May 4, 2022). These changes are "fundamental to the kind of society we want to see, to the planet's future, to how business operates." Paul Simpson, CDP CEO and founding partner of The Investor Agenda, *The Role of Investors and Governments in the Transition to a Net Zero Economy: a Conversation with Kwasi Kwarteng MP*, The Investor Agenda (Apr. 7, 2021), https://theinvestoragenda.org/blog/kwasi-kwarteng-mp/.

Another group, Net Zero Asset Managers Initiative, referenced on 87 Fed. Reg. at 21,340, states that it is "committed to supporting the goal of net zero greenhouse gas emissions by 2050 or sooner, in line with global efforts to limit warming to 1.5 degrees Celsius; and to supporting investing aligned with net zero emissions by 2050 or sooner." The Net Zero Asset Managers Initiative, https://www.netzeroassetmanagers.org/ (last accessed June 10, 2022). Climate Action 100+, referenced on 87 Fed. Reg. at 21,341, is an "investor-led initiative to ensure the world's largest corporate greenhouse gas emitters take necessary action on climate change." *About*, Climate Action 100+, https://www.climateaction100.org/about/ (last accessed June 10, 2022). The initiative "was formed in the wake of the 2015 Paris Agreement" and they believe that securing "greater disclosure of climate change risks and robust company emissions reduction strategies . . . is essential to achieve the goals of the Paris Agreement." *Id.* Climate Action 100+ initiative counts as members many of the other investors the proposed rules notes have been calling for these

disclosures: BlackRock, State Street, AllianceBernstein, Boston Common Asset Management, Calvert Research and Management, Domini Impact Investments, Parametric Portfolio, and others (referenced on 87 Fed. Reg. at 21,339).

The proposed rule acknowledges that "in response to mandatory ESG-related disclosure rules, firms tend to report actions that appear more 'favorable' with respect to the corresponding disclosures. These decisions would be made by a firm's management with the goal of maximizing firm value in response to the new disclosure mandate." 87 Fed. Reg. at 21,447. The proposed rule then states that "mandatory reporting of GHG emissions results in reduced aggregate reported emissions among affected firms." *Id.* And the SEC notes that registrants will likely "devot[e] more resources to climate-related governance and risk management in an effort to address indirect effects on their business arising from the disclosures," such as by "giving more weight to climate expertise when searching for directors," by "minimiz[ing] negative impacts in order to put forth more favorable metrics," by "search[ing] for alternative energy sources," or by "chang[ing] some suppliers or disengag[ing] with certain clients due to the effect that they may have on the firm's Scope 3 emissions." 87 Fed. Reg. at 21,447–48; *see also* Proposed 17 C.F.R. §§ 229.1503(c)(3), 229.1506(b)(6). The proposed rule says the quiet part out loud: the SEC both knows and intends that the proposed rule will change registrants' actions vis-à-vis climate and emissions. This crosses the line from "asking companies to tell us what they do" to "suggesting how they might do it." Peirce, *We Are Not the Securities and Environment Commission, supra.*

As Copland explains, "Climate-related financial disclosures are then just a means to an end. In creating a broad disclosure scheme, climate activists open the door to public shaming and to aggressive enforcement actions, by the SEC, other agencies, state, and local officials, and in particular to private lawsuits by the plaintiffs' bar." Copland Declaration at 25.

2. There Is No Link Between a Company's Performance and Its Emissions.

There is a fundamental disconnect between (1) the proposed requirement to disclose greenhouse gas emissions and (2) companies' performance—which reveals that the SEC's goal is to regulate climate and emissions writ-large, not to regulate disclosure of individual companies' financial prospects. The SEC effectively admits this by stating that disclosures about greenhouse gas emissions would allow the public "to assess the progress of registrants with public commitments to reduce GHG emissions." 87 Fed. Reg. at 21,344. Thus, even if climate change were material on a global or national basis, there is no evidence that any one particular company's

performance will depend on its *own* emissions.[1] Even the company with the largest contribution to greenhouse gases still contributes only a little the world's total anthropogenic emissions. ExxonMobil Corp—the largest publicly traded company with respect to Scope I and III GHG emissions, is only connected to 1.4% of global industrial GHG emissions. Paul Griffin, *CDP Carbon Majors Report 2017*, Carbon Majors Database 15 (July 2017), https://cdn.cdp.net/cdp-production/cms/reports/documents/000/002/327/original/Carbon-Majors-Report-2017.pdf. Chevron Corp is only connected to 0.9%. *Id.* If Exxon or Chevron reduced their emissions to zero (at great expense, no doubt, *see* 87 Fed. Reg. at 21,354 (acknowledging "increased expenses" due to lowering Scopes 1 and 2 emissions)), the overall state of the climate would not change, meaning that the company would have reduced emissions with *no benefit to itself or even to the global climate*. The only way to achieve that latter goal is to regulate *all* companies, precisely as the proposed rule seeks to do.

As scholars have noted, "climate change is a collective action problem . . . . From a strictly financial perspective, it is not individually rational for a fund manager [or company] to try to solve it." Paul G. Mahoney & Julia D. Mahoney, *The New Separation of Ownership and Control: Institutional Investors and ESG*, 2 COLUM. BUS. L. REV. 840, 856 (2021). This disconnect is most obvious with Scope 3 emissions, which the SEC admits are "generated from sources that are neither owned nor controlled by the company." 87 Fed. Reg. at 21,344-45. There is no persuasive explanation for how emissions untethered from company control could nonetheless affect the company's financial prospects. The proposed rule says part of the reason to require diclosure of Scope 3 emissions is to capture instances where a company "contract[s] out certain high-emission production activities so that its own Scope 1 or 2 emissions are lower," 87 Fed. Reg. at 21,379; *id.* at 21,388, but this again gives away the game by showing that the concern is not about a company's *own* emissions or risks—but about global emissions, a matter for Congress or the EPA, not the SEC.[2]

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[1] Given that emissions in the United States have decreased over the last two decades while those from China have tripled (and now are more than twice the United States' total emissions per year), it is difficult to argue even that *total* United States emissions are material—but at a minimum this confirms the folly of the proposed rule's belief that any one particular company's emissions are material to its own financial prospects in a world with a changing climate. *See* U.S. Energy Information Administration, *International*, https://www.eia.gov/international/data/world.

[2] The SEC states that Scope 3 emissions need be disclosed only if "material"—but then proceeds to make clear that it considers Scope 3 emissions to be material in almost every case and that companies should err on the side of over-disclosure. *See* 87 Fed. Reg. at 21,378.

But, as Copland explains, "if U.S. companies do attempt to reduce their scope III GHG emissions—for example by no longer extracting oil or natural gas or by selling off a particularly high emission portion of their business—global GHG emissions will not be reduced." Copland Declaration at 56. Instead, every type of divestment is more likely to be counterproductive in terms of reducing global emissions. For example, an oil company could reduce its emissions by selling assets to other oil companies, as Shell recently did with its Permian Basin assets. "While such a sale would reduce carbon emissions at the company level, it is unlikely to affect annual overall emissions as the buyer would likely generate emissions at a level equivalent to those of the selling company." *Id.* at 57. Another option would be for an oil company to reduce its emissions by reducing production from existing reserves.

Copland explains:

> [I]f one company cuts production, another company could profitably raise production—either by increasing output in an existing field or purchasing new fields. There are many state-owned foreign energy companies that would not be subject to the SEC's disclosure rules: Saudi Aramco, Russia's Rosneft and Gazprom, Kuwait Petroleum Corporation, Petróleos de Venezuela S.A., the Nigerian National Petroleum Corporation and China's Sinopec, to name just the largest. Even within the U.S. there are roughly 9,000 independent oil producers who develop 91% of the wells and account for 83% of U.S. oil and 90% of U.S. natural gas production. If a publicly traded oil company drops their GHG emissions these foreign and private oil companies will pick them up and global GHG emissions would only get worse. *Id.* at 58.

In other words, the SEC is demanding information on a company-by-company basis that will rarely if ever be material at the company-by-company level and would likely make global emissions worse. In any event, regulating climate and emissions at a nationwide level may be appropriate for Congress or the EPA, but it is not appropriate for the SEC, which focuses on facilitating information for investors on a company-by-company performance level.

Finally, the rigidity of the disclosures—best demonstrated by the requirement that the information be disclosed in a "structured, machine-readable data language," 87 Fed. Reg. at 21,410—removes any pretense of company-by-company narrative disclosures about materiality. Instead, companies essentially fill in data like bubbles on a standardized test. The SEC acknowledges this is done so that investors can "compar[e]" and "filter[ ]" the numbers to rank companies, *id.*, in a manner designed to encourage facile ordinal rankings so that certain companies can be more easily

identified and targeted for policy change by activists who do not represent individual investors' interests.

3. The Controversial Frameworks, Rigidity, and Scope of the Proposed Rule Confirm the SEC's Goal of Regulating Climate.

The proposed disclosures would require the use of sophisticated and controversial climate modeling programs, as well as significant reporting and benchmark requirements about emissions that are highly subjective. This is not disclosure of financial matters—it is regulation of companies' environmental policies. And by acknowledging that companies are already required to disclose material climate risks while still demanding blanket disclosures from all companies regardless of whether the information is material to their stock performance (e.g., the proposal does not invoke any materiality requirement for Scope 1 and Scope 2 disclosures), the SEC gives away its true motive: the purpose is to regulate climate, not give investors access to material information, let alone material information they currently lack.

SEC's desire to redirect investments away from politically disfavored companies and regulate the environment is confirmed by the proposed rule's convoluted requirement that companies peg their reporting structure and baselines to the United States' non-binding "commitments" to reduce emissions under the Paris Accords and UN Climate Change Conference. 87 Fed. Reg. at 21,337 n.18, 21,353. These have been subject to great political controversy and are not "law" in any sense of the word—yet the SEC is now converting these frameworks into *de facto* policy requirements for measuring and reporting emissions. Indeed, the proposed rule suggests that any registrant "operat[ing] in a jurisdiction that has made commitments under the Paris Agreement to reduce its GHG emissions" should have a transition plan explaining how the registrant plans to meet those "commitments." 87 Fed. Reg. at 21,361. That the SEC is now carrying water for international climate policy that otherwise has dramatically failed to garner sufficient legislative support in the United States is a key example of the SEC's underlying purpose of regulating climate, environment, and emissions.

The thinly-veiled goal of forcing environmental policy changes is further confirmed by the proposed rule's unusual requirement that a company disclose "information concerning the board's oversight of climate-related risks, and management's role in assessing and managing those risks," 87 Fed. Reg. at 21,359, as well as the company's "climate-related targets or goals, and transition plan," 87 Fed. Reg. at 21,345. This includes expressly naming "any board members … responsible for the oversight of climate-related risks" and whether that board

member "has expertise in climate-related risks," as well as "the frequency by which the board or board committee discusses climate-related risks," 87 Fed. Reg. at 21,359, and a list of "management officials" who are "responsible for assessing and managing climate-related risks," 87 Fed. Reg. at 21,360. The SEC proposes to force companies' internal deliberations and strategies into the public, with the obvious purpose of forcing companies to change how they currently deliberate, and facilitating naming-and-shaming so outsiders can attack companies deemed to be insufficiently considering climate issues and "transition plans."

As noted above, the proposed rule says a transition plan "may be an important part of a registrant's climate-related risk management strategy, particularly if it operates in a jurisdiction that has made commitments under the Paris Agreement to reduce its GHG emissions." 87 Fed. Reg. at 21,361. Translation: even though transition plans are technically voluntary, the fact that the United States has made non-binding, non-legally-enforceable "commitments" means registrants must adopt transition plans and then disclose them. And then those transition plans have their own requirements where companies must explain how they will transition to "a lower carbon economy," use "renewable power," and set "conservation goals and targets that would help reduce GHG emissions." 87 Fed. Reg. at 21,362. This is how the SEC backdoors companies into requiring "green" policies and dramatically changing their behavior towards environmental matters.

In sum, as several scholars have noted: "Why, then, are institutional investors and political activists pressing for the SEC to require an expanded and standardized set of ESG disclosures . . . ? For political activists, the answer is straightforward—they want to use the information to prod companies to change policies in socially-motivated directions. . . . Such disclosures facilitate an ordinal ranking of companies that can serve as a focal point to organize boycotts, demonstrations, and social media campaigns against 'brown' companies. The SEC should consider the possibility that this is also an important goal of institutional investors who argue for ESG disclosures." Mahoney, *supra* at 851–52.

4. The SEC Acknowledges that It Is in Way Over Its Head.

The SEC itself concedes that assessing the present materiality of potential consequences of ongoing and future climate change will be difficult, but "climate consulting firms are available to assist registrants in making this determination." 87 Fed. Reg. at 21,352. But how can the SEC have such expertise when companies' own financial experts do not? The SEC will have to either coordinate with the EPA or become the new EPA. The proposed rule would also "require that GHG emissions

disclosure[s] be subject to third-party attestation," 87 Fed. Reg. at 21,393, which just underscores how helpless the SEC believes itself to be in terms of confirming the accuracy of these disclosures.

So-called ESG experts freely admit that the SEC will lack expertise to evaluate the merits of the required climate disclosures—which is a key indicator that the requirements are designed not to satisfy standard SEC financial disclosure requirements but to drive change in environmental behavior. Jean Rogers, global head of ESG at Blackstone, says the SEC will need to work with the EPA to develop targets and "transition pathways" sector-by-sector—because otherwise the SEC will be unable to "evaluate the adequacy and materiality of the climate disclosures companies make." Grant Harrison, *What the Pioneers of ESG Have to Say on the SEC*, https://www.greenbiz.com/article/what-pioneers-esg-have-say-sec (Mar. 16, 2022).

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For all the above reasons, the SEC lacks authority to mandate blanket environmental disclosures or to facilitate environmental policy changes through the backdoor of "disclosures," but that is precisely what the proposed rule would do. It is therefore outside of the SEC's statutory power and is illegal.

II. The Proposed Rule Would Exceed the SEC's Limited Statutory Power to Require Blanket Disclosures of Financial "Balance-Book" Information.

Even setting aside the fact that the EPA (via the Clean Air Act) is clearly the agency tasked with environmental and climate regulation and disclosure, the proposed rule would still exceed the SEC's statutory disclosure power because the SEC can require blanket disclosure by all issuers only of typical financial "balance-book" and management information.

The Securities Act of 1933 and the Securities Exchange Act of 1934 provide the SEC with authority to issue rules and regulations requiring certain disclosures from regulated companies. *See* 15 U.S.C. § 77g(a)(1) (registration statements "shall contain such other information, and be accompanied by such other documents, as the SEC may by rules or regulations require as being necessary or appropriate in the public interest or for the protection of investors"); § 77j(c) ("Any prospectus shall contain such other information as the SEC may by rules or regulations require as being necessary or appropriate in the public interest or for the protection of investors."); § 78m(a)(1) (same, for periodic updates and annual reports); § 78*l*(b)(1) (same, for

registration on national securities exchange); § 78o(d) (same, for periodic updates for registration statements).

These seemingly broad authorizations must be read in the context of the surrounding language. *See Ala. Ass'n of Realtors v. Dep't of Health & Hum. Servs.*, 141 S. Ct. 2485, 2488 (2021). For example, § 77g(a)(1)'s reference to "necessary or appropriate in the public interest or for the protection of investors" must be construed with the rest of that same paragraph, which requires registration statements to include the specific information in "Schedule A" listed in § 77aa—and that information deals with basic background facts (like identity of officers and location) and basic financial statements. *See* 15 U.S.C. § 77aa. The SEC itself has said the list is "largely financial in nature and [is] intended to help investors assess a security's value." *Business and Financial Disclosure Required by Regulation S-K*, 81 Fed. Reg. 23,916, 23,921 (Apr. 22, 2016). Accordingly, under § 77g, the SEC cannot require disclosures of anything it thinks will be in the public interest. The information must be of the same nature as those in Schedule A. *See Ala. Ass'n*, 141 S. Ct. at 2488 (holding that when construing seemingly broad grants of authority, courts must look to surrounding "sentence[s]" that "inform[ ] the grant of authority by illustrating the kinds of measures that could be necessary"). Or, as one expert has argued, "the SEC may supplement Schedule A for good reason but should not stray far from it." Andrew N. Vollmer, *Does the SEC Have Legal Authority to Adopt Climate-Change Disclosure Rules?* at 7 (Aug. 2021).

Likewise, the seemingly broad grant of power in § 78*l* is cabined by the 11 expressly listed types of information that must be disclosed, all of which focus almost exclusively on balance-sheet information. *See* 15 U.S.C. § 78*l*(b)(1)(A)–(K). The SEC's power in § 78m merely incorporates that same limitation by allowing for disclosure of updated information required by "section 78*l* of this title." 15 U.S.C. § 78m(a)(1). Section 78m is further limited by § 78m(b)(1)'s restriction to financial disclosures typically "shown in the balance sheet and earnings statements." *Id.* § 78m(b)(1).

Given these contextual clues from surrounding provisions, the only types of information that the SEC can require every registrant to disclose in a standardized format are those accepted "balance-book" financial figures about company performance and management. But climate data and risks are of a completely different type, focusing on figures that are not direct measurements of companies' financial performance or management information, and, in many cases, are entirely outward looking, not inward-looking at the company itself. *See* Andrew N. Vollmer, *Does the SEC Have Legal Authority to Adopt Climate-Change Disclosure Rules?* at 12–14 (Aug. 2021). Indeed, the proposed rule itself repeatedly differentiates "climate-

related disclosures" from true "financial disclosures." 87 Fed. Reg. at 21, 335, 21,411. To be sure, it is conceivable that *some* companies' financial performance may be directly tied to those specific companies' own greenhouse gas emissions, but those matters are already required to be disclosed under the SEC's longstanding and flexible company-by-company requirement to disclose *material* information.

Constitutional avoidance concerns involving the First Amendment and nondelegation also warrant reading these disclosure statutes in a more limited manner, lest they provide the SEC with carte blanche to compel speech. *See* Part VIII, *infra* (explaining how the proposed rule violates the First Amendment, which can be avoided by construing the relevant statutes to preclude the proposed rule); *see* Part IX, *infra* (explaining how the proposed rule violates the nondelegation doctrine, which can be avoided by construing the relevant statutes to preclude the proposed rule).

* * *

Requiring en masse, standardized climate disclosures would therefore exceed the SEC's current statutory disclosure authority.

III. The Major-Questions Doctrine Confirms the SEC's Lack of Statutory Authority.

Even if the statutory text and context did not resolve the matter of the SEC's statutory authority, the major-questions doctrine confirms that the SEC lacks power to require disclosure blanket disclosures of non-balance-book information from every registrant. The major-questions doctrine requires Congress to "speak[ ] clearly" when it delegates "powers of 'vast economic and political significance'" to an agency. *Ala. Ass'n*, 141 S. Ct. at 2489.

The SEC's proposed environmental regulations are of vast economic and political significance. They represent perhaps the most expansive regulatory framework ever adopted by the SEC, affecting not just listed companies but every single link in those companies' supply and distribution chains, right down to the everyday customer. The proposed rule would regulate all those entities and individuals either directly or indirectly, meaning there will hardly be a company or even person who would not be affected by the proposed rule.

The SEC's own compliance-cost estimates over the first five years—which the SEC admits underestimate true costs because it cannot "fully and accurately quantify" the costs of emissions reporting, 87 Fed. Reg. at 21,441—are around $15.3 billion, with over $3.5 billion of that in the first year alone. *See* 87 Fed. Reg. at 21,439 (estimating first-year costs of $640,000 for each non-SRC, then $530,000 for each

subsequent year, totaling $2,760,000 for each non-SRC over the first five years; and first-year costs of $490,000 for each SRC, then $420,000 for each subsequent years, totaling $2,170,000 for each non-SRC over the first five years); 87 Fed. Reg. at 21,413 (conservatively estimating there are 6,220 registrants, "approximately 50 percent" of which are SRCs). And this is not even counting the dramatic increase in litigation and liability as registrants are sued for allegedly misleading statements in data that are sheer guesswork even under the best conditions. *See* 87 Fed. Reg. at 21,443–44 (acknowledging these risks but claiming "safe harbors" will mitigate them, even though the proposed rule elsewhere makes clear that any such safe harbors are actually rather narrow, *see* 87 Fed. Reg. at 21,352, 21,391).[3]

The major-questions doctrine requires that even if the scope of the SEC's powers here are unclear, that ambiguity must be construed against the SEC's claimed authority. Yet nowhere did Congress "clearly" provide the SEC with the power to mandate vast climate disclosures, or regulate the environment, or facilitate changing companies' environmental policies through the backdoor of expansive and exhaustive "disclosures" with nonexistent or minimal relevance. The SEC invokes only its generic powers to require disclosures, but those are not specific enough to satisfy the major-questions doctrine for disclosures of this magnitude. At the very least, it is ambiguous whether Congress gave the SEC such power—which is fatal under the major-questions doctrine. This is demonstrated, ironically enough, by the SEC itself, which has long concluded that it lacks statutory power to mandate "all registrants" to make "disclosure[s] relating to environmental and other matters of social concern," absent "a specific congressional mandate." *Business and Financial Disclosure Required by Regulation S-K*, 81 Fed. Reg. at 23,916, 23,970 (Apr. 22, 2016); *see Environmental and Social Disclosure, Notice of Commission Conclusions and Rulemaking Proposals*, 40 Fed. Reg. at 51,656, 51,657 (Nov. 6, 1975).

If there were any doubt that the major-questions doctrine shows that the SEC lacks statutory power to promulgate the proposed rule, this doubt is eliminated by the proposed rule's requirement that companies peg their reporting structure and baselines to the United States' non-binding "commitments" to reduce emissions under

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[3] Although the proposed rule takes no position on whether the final rule would be considered a "major rule" under the Small Business Regulatory Enforcement Fairness Act of 1996, it is obvious that the final rule will indeed so qualify. 87 Fed. Reg. at 21,463–64. It satisfies each of the disjunctive requirements: (1) an annual effect on the U.S. economy of $100 million or more; (2) a major increase in costs or prices for consumers or industries; or (3) a significant adverse effect on competition, investment, or innovation. *Id.*

the Paris Accords and UN Climate Change Conference. 87 Fed. Reg. at 21,337 n.18, 21,353, 21,361. Those agreements are not laws and are subject to change at any moment based on the acts of foreign governments. Congress did not "clearly" authorize the SEC to outsource binding policy standards to foreign governments. Indeed, if Congress did provide the SEC with such power, it would violate the nondelegation doctrine. *See* Part IX, *infra*; *see also Gundy v. United States*, 139 S. Ct. 2116, 2142 (2019) (Gorsuch, J., dissenting) (the major-questions doctrine "appl[ies] … in service of" the nondelegation doctrine).

* * *

For these reasons, the proposed rule also flunks the major-questions doctrine.

IV. The Proposed Rule Would Exceed the SEC's Limited Statutory Power to Require Disclosure of "Material" Information.

A. The SEC is Limited to Disclosure of "Material" Information.

Even if the SEC could require blanket disclosure of information beyond standard balance-book data, the proposed rule would still exceed the SEC's current statutory authority because the SEC is limited to requiring disclosure of "material" information. Yet the proposed rule would repeatedly require information to be disclosed whether or not it is material, and other parts of the proposed rule would require disclosure of information premised on a definition of materiality that conflicts with Supreme Court precedent.

As noted above, the relevant statutes limit the SEC to mandating disclosures only when "necessary or appropriate in the public interest or for the protection of investors." 15 U.S.C. § 77g(a)(1); § 77j(c) (same); § 78*l*(b)(1) (same); § 78o(d) (same); *see also* § 78m(a) ("necessary or appropriate for the proper protection of investors and to insure fair dealing."). Although these statutes do not expressly use the word "material," Supreme Court precedent and constitutional avoidance confirm that Congress limited the SEC's disclosure power to material information.

Many provisions throughout the Securities Act and Exchange Act state that the SEC has the power to issue rules and regulations only "as necessary or appropriate in the public interest or for the protection of investors," or as "necessary or appropriate for the proper protection of investors and to ensure fair dealing," as discussed above. The Supreme Court has recognized that the "public interest" is not furthered by requiring companies "simply to bury the shareholders in an avalanche of trivial information," which "is hardly conducive to informed decisionmaking" and thus would "accomplish more harm than good." *TSC Indus., Inc. v. Northway, Inc.*,

426 U.S. 438, 448-49 (1976). Similarly, in *Mills v. Electric Auto-Lite Co.*, 396 U.S. 375 (1970), the Court held that a "misstatement or omission in a proxy statement" is actionable under 15 U.S.C. § 78n(a) only when the misstatement was "material" because imposing liability beyond that limit "would not further the interests protected by" the statutes. *Id.* at 384. By limiting the SEC's disclosure power to those types of disclosures that further the public interest, Congress was necessarily limiting the SEC to requiring *material* information.

The SEC will likely respond that it should not read a materiality requirement into its disclosure statutes when the word "materiality" does not appear in those statutes. But this ignores that the Supreme Court and appellate courts have routinely imposed a materiality requirement in other provisions of the Securities Act and Exchange Act that contain versions of the "public interest" language, including some of the disclosure statutes cited above, even though such statutes likewise never expressly use the word "material."

In *Mills*, 396 U.S. at 384, for example, the Court held that a "misstatement or omission in a proxy statement" is actionable under 15 U.S.C. § 78n(a) (commonly referred to as § 14(a)) only when the misstatement was "material," even though that word appears nowhere in § 78n(a). The Court held that imposing liability beyond that materiality limit "would not further the interests protected by" the statutes. *Id.* In *TSC Indus.*, 426 U.S. at 449, the Court re-affirmed that materiality requirement for § 78n(a).

In *Basic Inc. v. Levinson*, 485 U.S. 224, 249 (1988), the Court held, "We specifically adopt, for the § 10(b) [15 U.S.C. § 78j] and Rule 10b–5 context, the standard of materiality set forth in *TSC Industries*"—even though that statute likewise does not expressly use the word "material." *See also Basic*, 485 U.S. at 258-59 (White, J., concurring) (noting "congressionally adopted policy" of disclosure of "material information" that is "expressed" in 15 U.S.C. §§ 78m and 78o(d)).

Recent Supreme Court cases have continued to recognize a materiality requirement in these statutes even with no express use of "material" in the statutory text. *See, e.g.*, *Matrixx Initiatives, Inc. v. Siracusano*, 563 U.S. 27, 38 (2011) (re-affirming materiality requirement in § 10(b)); *S.E.C. v. Zandford*, 535 U.S. 813, 816 n.1 (2002) ("The scope of Rule 10b-5 [which expressly requires 'materiality'] is coextensive with the coverage of § 10(b) [also known as §78j(b), which does not expressly state 'materiality']."). And lower court decisions have followed suit. *See, e.g.*, *S.E.C. v. Koenig*, 469 F.2d 198, 200 (2d Cir. 1972) (materiality required for § 78m(a), commonly referred to as § 13(a)).

The same interpretive doctrine should apply to the SEC's *disclosure* statutes: the materiality requirement is within the "public interest" text of the statutes. And by authorizing the SEC to demand disclosures in the "public interest," Congress was necessarily limited that disclosure power to material information.

This view is confirmed by the fact that when Congress wants the SEC to regulate *outside* the realm of materiality, Congress has provided express and separate authority to do so. For example, Congress expressly authorized the SEC to mandate disclosures about so-called "conflict minerals," 15 U.S.C. § 78m(p)(1)(A), although that statute was deemed to violate the First Amendment, *see* Part VIII, *infra*. Congress also expressly authorized the SEC to mandate disclosures about "resource extraction" issuers, 15 U.S.C. § 78m(q)(2)(A), and expressly authorized the SEC to mandate disclosures about executive compensation, 15 U.S.C. § 78n(i).

Indeed, as noted above, the SEC itself has stated that a new "specific congressional mandate" would be required to give the SEC power to compel environmental disclosures from all issuers. *Business and Financial Disclosure Required by Regulation S-K*, 81 Fed. Reg. at 23,916, 23,970 (Apr. 22, 2016); *see Environmental and Social Disclosure, Notice of Commission Conclusions and Rulemaking Proposals*, 40 Fed. Reg. at 51,656, 51,657 (Nov. 6, 1975).

Constitutional avoidance confirms that Congress limited the SEC's disclosure power to material information. In *Nat'l Inst. of Family & Life Advocates v. Becerra*, 138 S. Ct. 2361 (2018), the Supreme Court held that a compelled disclosure is subject to strict scrutiny (as a content-based regulation) unless it falls into one of two categories: (1) "laws that require professionals to disclose factual, noncontroversial information in their 'commercial speech'"; or (2) regulation of "professional conduct, even though that conduct incidentally involves speech." *Id.* at 2372. As Commissioner Peirce has argued, where a regulation requires disclosure of "information [that] is unrelated, or only tangentially related, to the statutory objectives [of the SEC]," then "it likely is controversial" for purposes of the Supreme Court's test. Peirce, *We Are Not the Securities and Environment Commission, supra.* To avoid that conflict, the relevant statutes should be construed only to provide authority to mandate disclosure of material information. *See* Part VIII, *infra.*

There is another form of constitutional avoidance that demonstrates the SEC is limited to mandating disclosures of material information: if the SEC has no meaningful limit on what information it can require to be disclosed, the disclosure statutes would violate the nondelegation doctrine by giving the SEC *carte blanche.* The Supreme Court has held that statutes should be interpreted narrowly to avoid

such nondelegation concerns. *Indus. Union Dep't, AFL-CIO v. Am. Petroleum Inst.*, 448 U.S. 607, 646 (1980) (plurality). A materiality requirement provides that meaningful limitation.

These concerns can be avoided simply by concluding that the SEC cannot require all registrants to disclose certain information unless it is material.

B. "Material" Information Is What a Reasonable Investor Would View as Having Significantly Altered the "Total Mix" of Information Made Available.

The Supreme Court has adopted the same test for "materiality" across various SEC contexts: "there must be a substantial likelihood that the disclosure of the omitted fact would have been viewed by the reasonable investor as having significantly altered the 'total mix' of information made available." *TSC Indus.*, 426 U.S. at 449; *see Basic Inc.*, 485 U.S. at 232 (adopting the same test for Rule 10b-5 disclosures). The Supreme Court long ago rejected a proposed test labeling as material "all facts which a reasonable shareholder might consider important," which would have set the materiality bar too low because (1) the probability factor was minimal ("might") rather than robust ("substantial likelihood"); and (2) the effect factor was too subjective and minimal ("important") rather than concrete and substantial ("significantly altered"). *TSC Indus.*, 426 U.S. at 445.

The materiality test is an objective one, measured by how a reasonable investor would view the information, and is a mixed question of law and fact. *TSC Indus.*, 426 U.S. at 445, 450. Because the test looks to a reasonable *investor*, the focus must be on financial returns. "[W]hile any given shareholder may have bought securities for reasons other than or in addition to making money, it seems clear that a 'reasonable investor' is someone whose interest is in a financial return on an investment." SEC Comm'r Elad Roisman, *Can the SEC Make ESG Rules that Are Sustainable?* (June 22, 2021), https://www.sec.gov/news/speech/can-the-sec-make-esg-rules-that-are-sustainable.

Further, information can be material only if it is "sufficiently specific" to "guarantee some concrete fact or outcome which, when it proves false or does not occur, forms the basis for a … fraud claim." *City of Pontiac Policemen's & Firemen's Ret. Sys. v. UBS AG*, 752 F.3d 173, 185 (2d Cir. 2014). Courts have steadfastly avoided imposing bright-line rules for materiality, but they have looked to the SEC's own long-standing guidance for relevant examples of the "total mix of information" to which investors look, which can then inform the court whether a particular false statement or omission would have significantly altered that mix. *ECA, Loc. 134 IBEW*

Joint Pension Tr. of Chicago v. JP Morgan Chase Co., 553 F.3d 187, 197-98 (2d Cir. 2009). In this analysis, the Second Circuit—home of the New York exchanges—has said it is appropriate to put "an emphasis [on] quantitative considerations." *Id.* at 204.

The key quantitative factor for determining materiality is "the financial magnitude" of the information. *Id.* at 197 (citing SEC Staff Accounting Bulletin No. 99, 64 Fed. Reg. at 45150, 45150-52 (1999)). There is some debate about whether this should be measured against assets, liabilities, revenues, or net income—with the answer likely depending on the specific case. *Id.* Additionally, some qualitative factors may be relevant, including: "(1) concealment of an unlawful transaction, (2) significance of the misstatement in relation to the company's operations, and (3) management's expectation that the misstatement will result in a significant market reaction." *Id.* at 198. Although consideration of qualitative factors is sometimes appropriate, that consideration is still solely within the framework of financial return. The qualitative factors look at matters that have a substantial likelihood of affecting *financial* performance.

The Supreme Court has also long eschewed the notion that a particular type of information is always material, even information that speaks directly to a firm's quantitative finances. In *Basic*, the Court rejected the notion that the existence of merger discussions would always be material, as "[a]ny approach that designates a single fact or occurrence as always determinative of an inherently fact-specific finding such as materiality, must necessarily be overinclusive or underinclusive." *Basic*, 485 U.S. at 236; *see also Matrixx*, 563 U.S. at 39 (re-affirming *Basic*'s refusal to set any bright-line tests for materiality). The Court went even further, cautioning the SEC and lower courts against "administratively confining materiality to a rigid formula." *Basic*, 485 U.S. at 236. Relatedly, just because a topic may be important in the colloquial sense does not necessarily render it material. "The importance of the topic of the representation does not, however, automatically make it material." *J & R Mktg., SEP v. Gen. Motors Corp.*, 549 F.3d 384, 396 (6th Cir. 2008).

Courts also routinely hold that materiality must consider whether the information is already in the public domain, regardless of whether the information would otherwise have been deemed material. *See, e.g.*, *Acme Propane, Inc. v. Tenexco, Inc.*, 844 F.2d 1317, 1323 (7th Cir. 1988); *Longman v. Food Lion, Inc.*, 197 F.3d 675, 684 (4th Cir. 1999); *Grossman v. Novell, Inc.*, 120 F.3d 1112, 1119 (10th Cir. 1997) ("Whether information is material also depends on other information already available to the market . . . .").

Courts and the SEC itself have routinely considered small financial effects to be non-material as a matter of law. The SEC "suggests a percentage threshold below which the amount is presumptively immaterial"—namely, 5%—although it is not always clear what that percent should be measured against. *ECA*, 553 F.3d at 197 (citing SEC Staff Accounting Bulletin No. 99, 64 Fed. Reg. at 45150, 45150-52 (1999)). The Second Circuit has adopted a "five percent numerical threshold" as a "good starting place for assessing the materiality" of information, as anything below that number is "unlikely to be material," meaning that courts can often resolve the issue as a matter of law. *ECA*, 553 F.3d at 204. Other circuits have done the same and have also approved measuring the percentage as against total revenues, not profits, which inevitably makes the percent lower. *See, e.g.*, *Romine v. Acxiom Corp.*, 296 F.3d 701, 706 (8th Cir. 2002) (finding non-material, as a matter of law, a $2.3 million adjustment to benefit reserves, viewed in context of "quarterly earnings of $15.7 million on revenues of $211.5 million").

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As described next, the information sought by the proposed rule is not material for a variety of reasons.

C. Because Material Environmental Risks Must Already Be Disclosed, the Proposed Rule Would Necessarily Mandate Disclosure of Non-Material Information.

The SEC acknowledges that companies must already disclose material risks, including exposure to liability or regulatory actions arising from their business operations, as well as trends or changes in uncertainty that would likely have a material impact on financial condition. 87 Fed. Reg. at 21,368. And historic evidence confirms that registrants have long done so.

As Dr. Klick explains,

> Exxon, for example, has been disclosing risks arising from climate change regulation and changing consumer preferences in its annual reports for the better part of a decade. The same is true for Ford, General Electric, Wal-Mart, and many other U.S. firms, big and small. It is true those disclosures are not directly comparable with each other, but that is because the risks and opportunities faced by each of these companies are not comparable either. This is not a problem with the format or the content of the disclosures waiting to be solved by regulatory guidance; instead, it is a reflection of firm heterogeneity. The SEC proposes to mandate comparability by, among other things, making the disclosures

> machine readable, but it is unclear what valuable information exists that could be meaningfully compared firm to firm in the same industry, much less across different industries. Klick Declaration at 34.

Companies are already disclosing some climate-related information as it could be responsive to several existing disclosure requirements:

1. Item 303 of Regulation S-K, Management's Discussion and Analysis of Financial Conditions and Results of Operations ("MD&A"): this requires disclosure of "material events and uncertainties known to management that are reasonably likely to cause reported financial information not to be necessarily indicative of future operating results or of future financial condition." 17 C.F.R. § 229.303(a).

2. Item 101 of Regulation S-K, Description of Business: this requires a description of the registrant's business, including each reportable segment. 17 C.F.R. § 229.101(c)(1). This specifically requires disclosure of the material effects that compliance with environmental regulations may have on capital expenditures. 17 C.F.R. § 229.101(c)(1)(xii).

3. Item 103 of Regulation S-K, Legal Proceedings: this requires a description of material pending legal proceedings, as well as administrative or judicial proceedings relating to the environment if certain conditions are met. 17 C.F.R. § 229.103(c)(3).

4. Item 105 of Regulation S-K, Risk Factors: this requires a discussion of the "material factors that make an investment in the registrant or offering speculative or risky." 17 C.F.R. § 229.101(c)(5).

5. Securities Act Rule 408 and Exchange Act Rule 12b-20: these require companies to disclose, in addition to the information that is subject to specific disclosure mandates, "such further material information, if any, as may be necessary to make the required statements, in light of the circumstances under which they are made, not misleading." 17 C.F.R. § 230.408 and 17 C.F.R. § 240.12b-20.

As Commissioner Peirce demonstrated, companies are relying on these requirements to disclose a range of environmental risks such as wildfires, rising sea levels, rising temperatures, and climate-change legislation or regulation—*but only when those risks are material to the company's financial situation* and thus are worthy

of investors' time. Peirce, *We Are Not the Securities and Environment Commission*, *supra*. The Division of Corporate Finance "has taken a more aggressive posture in its review of climate-related disclosures in the past year," but tellingly companies have confirmed that the "requested disclosures by SEC staff were largely immaterial and inappropriate for inclusion in SEC filings." *Id.* This confirms the obvious: companies are already disclosing climate and environmental risks to the extent they are material.

The SEC subcommittee recommending new ESG disclosure rules agreed that "significant disclosure requirements for material risks already exist and we *do not see the need to change the disclosure laws*." SEC, Asset Management Advisory Committee, *Potential Recommendations of ESG Subcommittee* 4 (Dec. 1, 2020) (emphasis in original), *available at* https://www.sec.gov/files/potential-recommendations-of-the-esg-subcommittee-12012020.pdf. But the proposed rule disregarded that advice and put forward a framework requiring dramatic and expansive disclosures far in excess of what companies currently make under current materiality requirements.

By requiring that companies disclose information *beyond* what is already required as material, the proposed rule would necessarily require companies to disclose non-material information. The SEC lacks the statutory power to require disclosure of non-material information, as demonstrated above.

Moreover, courts routinely hold that securities laws do not require the "re-disclosure" of information that is already public, regardless of how material the information would otherwise have been. *See* Part IV.A, *supra* (collecting cases). Because companies are already publicly releasing material climate risk information, the SEC can make no claim that a new rule is required just to force the re-disclosure of information already in the public domain.

D. The Proposed Rule Improperly Dispenses with Materiality in Many Places and Distorts It Beyond Supreme Court Precedent in Others.

The proposed rule would require disclosure of Scope 1 and Scope 2 greenhouse gas emissions regardless of materiality. *See* 87 Fed. Reg. at 21,345, 21,377. As demonstrated above, the SEC lacks statutory authority to require disclosure of non-material information—and there can be no doubt that authority is exceeded where the SEC itself declines to state that these requirements are subject to any materiality test.

The SEC seems to acknowledge that Scope 1 and Scope 2 emissions are not actually material for all—or maybe not even *any*—registrants. At most, the proposed rule says only that such registrants "may" face "declines in cash flows" and thus investors "may" want Scope 1 and Scope 2 information. 87 Fed. Reg. at 21,434. The SEC's theory seems to be that there *might* be "future regulations" that "*may*" require reductions in emissions, and thus this information *might* be material in this hypothetical future world. 87 Fed. Reg. at 21,435. Under that theory, any conceivable piece of information is always material, as there is always a chance of future regulation that touches on that information.

The SEC argues that even though such information may not be material to a particular company's performance, investors have many investments and will want to compare data across them. 87 Fed. Reg. at 21,336, 21,368, 21,434. As Commissioner Peirce stated, "this justification depart[s] from the Commission's traditional company-specific approach to disclosure," which looks at materiality company-by-company, not across the nearly infinite variety of every single individual investor's personal portfolio; and, relatedly, the proposed rule "suggests that it is appropriate for shareholders of the disclosing company to subsidize other investors' portfolio analysis," which is an impossible task given that every investor will have different information demands for "her own idiosyncratic portfolio." Peirce, *We Are Not the Securities and Environment Commission*, *supra*.

Indeed, as noted above, this is a critical flaw of the proposed rule: even treating climate change as material on a large-scale basis, there is no evidence that any one company's performance will depend on its own emissions. Even the company with the largest contribution to greenhouse gases still contributes only a miniscule amount of the world's total emissions, and if that company reduced its emissions to zero, the overall state of the climate—and thus the alleged magnitude of risk of climate change to that company—would not change. The SEC is thus demanding information on a company-by-company basis that cannot be material at the company-by-company level.

To the extent the SEC believes that Scope 1 and Scope 2 emissions are inherently material—such that the SEC did not even need to bother to explain or impose a express materiality requirement—it would violate the Supreme Court's decision in *Basic*, which held that "[a]ny approach that designates a single fact or occurrence as always determinative of an inherently fact-specific finding such as materiality, must necessarily be overinclusive or underinclusive," and the Supreme Court even warned the SEC against "administratively confining materiality to a rigid formula." *Basic*, 485 U.S. at 236. Yet that is precisely what the SEC seems to have

done with Scope 1 and Scope 2 emissions. This notion that certain information is "inherently material" would also render the proposed rule internally contradictory because the SEC acknowledges elsewhere that a "materiality determination is largely fact specific." 87 Fed. Reg. at 21,351.

Even for portions of the proposed rule that pay lip service to a "materiality" requirement, it is clear the proposed rule has deviated from the Supreme Court's definitions. For example, the proposed rule says that for climate risks, the "materiality determination that a registrant would be required to make regarding climate-related risks under the proposed rules is *similar to* what is required when preparing the MD&A section in a registration statement or annual report." 87 Fed. Reg. at 21,352 (emphasis added). But "similar to materiality" is not "materiality." The clear purpose here, especially when combined with the rule's decoupling from objective financial inquiries, is to force companies to over-disclose information. So why would the SEC take a step that violates the Supreme Court's warning against setting materiality too low and thereby "bury[ing] the shareholders in an avalanche of trivial information" that is not "conducive to informed decisionmaking"? *TSC Indus.*, 426 U.S. at 448-49. The answer is that the SEC's audience here is not investors. The SEC's goal is to force companies to change their environmental and climate approaches by forcing the companies to submit such onerous and invasive disclosures that activists can use for targeted campaigns.

Similarly, the proposed rule says a company would have to disclose Scope 3 emissions only if it has set an emissions target that includes Scope 3 emissions *or if those emissions are material*. 87 Fed. Reg. at 21,378. But the proposed rule then makes clear that the SEC believes Scope 3 emissions are material for any registrant for whom "transition risks" exist, as those companies "may need to allocate capital to invest in lower emission equipment." 87 Fed. Reg. at 21,378. As discussed above, the SEC believes that almost every company in existence faces transition risk, meaning nearly every company will now have to deem Scope 3 emissions material. And just in case there were any lingering uncertainty about the SEC's thumb on the scale, it says that any "doubts be resolved in favor of" over-disclosure. 87 Fed. Reg. at 21,378. These rationales violate Supreme Court precedent discussed above: (1) the Supreme Court has rejected the one-sized-fits-all notion that an entire type of information is *always* material (contra the SEC's view regarding Scope 1 and 2); and (2) the Supreme Court has held that materiality cannot be defined too low that it inhibits investor decisionmaking by burying investors in information (contra the SEC's view regarding Scope 3).

Further, the proposed rule would require disclosure of "climate risks" that are, at best, sheer guesswork because they rely on subjective modeling about events with horizons occurring over decades, as the proposed rule itself admits. 87 Fed. Reg. at 21,445, 21,427. But as explained above, courts have held that information can be material only if it is "sufficiently specific" to "guarantee some concrete fact or outcome which, when it proves false or does not occur, forms the basis for a . . . fraud claim." *City of Pontiac*, 752 F.3d at 185. How can investors rely on information about climate risks that is the product of such incredible speculation? Despite the SEC's attempts to make climate disclosures sound objective by forcing companies to put specific numbers on paper, the fact remains that the proposed rule itself acknowledges great disparities between predictive models for climate risks, rendering the required information non-material as a matter of law—and thus outside of the SEC's disclosure authority.

The speculative nature of climate disclosures resulted in a victory for Exxon in a seminal trial in the New York Supreme Court. *See People by James v. Exxon Mobil Corp.*, 65 Misc. 3d 1233(A), 119 N.Y.S.3d 829 (N.Y. Sup. Ct. 2019). The New York Attorney General argued that Exxon had violated its obligation under state law to disclose material information (using the same test as the U.S. Supreme Court applies to the SEC) about how Exxon's alleged contribution to climate change would hurt the company's bottom line in the future. The court found that none of the information identified by the State was material. First, looking to the past, none of the information "affected Exxon Mobil's balance sheet, income statement, or any other financial disclosure." *Id.* Second, the speculative nature of future climate predictions rendered it non-material for forward-looking purposes, too: "the Office of the Attorney General's case is largely focused on projections of proxy costs and GHG costs in 2030 and 2040. No reasonable investor during the period from 2013 to 2016 would make investment decisions based on speculative assumptions of costs that may be incurred 20+ or 30+ years in the future with respect to unidentified future projects." *Id.* The same logic applies to the proposed rule's requirements to make speculative disclosures about climate patterns and risks.

To the extent climate risk can be boiled down to something objective, it amounts to little more than stating that climate risks exist, and some companies may have more risks than others. But that is already "common knowledge" that a "reasonable investor can be presumed" to know—and thus is immaterial "as a matter of law." *Parnes v. Gateway 2000, Inc.*, 122 F.3d 539, 546 (8th Cir. 1997); *see also Levitin v. PaineWebber, Inc.*, 159 F.3d 698, 702 (2d Cir. 1998). The same holds true even when the commonly known matter is a systemic issue that may affect many

companies in different ways. *See, e.g.*, *In re Convergent Techs. Sec. Litig.*, 948 F.2d 507, 513 (9th Cir. 1991) ("As a general matter, investors know of the risk of obsolescence posed by older products forced to compete with more advanced rivals.").

Finally, as demonstrated below, *see* Part V, *infra*, any connection between the proposed rule's new climate disclosures and firm performance is so weak that it would easily fall within the realm deemed non-material as a matter of law and thus outside the SEC's statutory disclosure power. *See, e.g.*, *ECA*, 553 F.3d at 204 (adopting a "five percent numerical threshold" as a "good starting place for assessing the materiality" of information, as anything below that number is "unlikely to be material").

* * *

For all these reasons, the SEC is limited to disclosures of material information, yet the information required by the proposed rule is not material. The SEC therefore lacks statutory authority to demand such disclosures.

V. Empirical Evidence Confirms that the Required Disclosures Would Not Be in the Public Interest, Necessary to Protect Investors, Necessary to Insure Fair Dealing, or Material.

As explained above, the SEC's statutory disclosure authority is limited to ordering disclosures of standard "balance-book," management, and material information. But regardless of whether that is correct, the proposed rule would still exceed the SEC's statutory authority because the rule is not "necessary or appropriate in the public interest or for the protection of investors." 15 U.S.C. § 77g(a)(1); § 77j(c); § 78*l*(b)(1); § 78o(d), or (in a slightly different phrasing) "necessary or appropriate for the proper protection of investors and to insure fair dealing," § 78m(a).

In its "public-interest" analysis, the SEC "shall also consider, in addition to the protection of investors, whether the action will promote efficiency, competition, and capital formation." 15 U.S.C. §§ 77b(b), 78c(f), 78w(a)(2). Amazingly, the proposed rule says only that its astoundingly expansive disclosure regime "could"—not will—yield such public benefits. 87 Fed. Reg. at 21,430. This equivocation signals what empirical evidence confirms: the proposed rule would not satisfy these statutory requirements, as demonstrated below. At the very least, the evidence is "mixed," and in such circumstances courts have not hesitated to conclude that the SEC lacks substantial evidence to support issuance of a rule. *Bus. Roundtable v. SEC*, 647 F.3d 1144, 1151 (D.C. Cir. 2011) ("In view of the admittedly (and at best) 'mixed' empirical evidence, we think the Commission has not sufficiently supported its conclusion that

increasing the potential for election of directors nominated by shareholders will result in improved board and company performance and shareholder value.").

A. Not in the Public Interest: Based on and Encourages Conflicts of Interest.

The primary drivers for the proposed rule are asset managers, who are not investors. *See* 87 Fed. Reg. at 21,340 (noting, as the very first example of "growing investor demand," that "[s]everal major institutional investors, which collectively have trillions of dollars in investment under management, have demanded climate-related information . . . ."). The SEC's reliance on requests for such mandates by exceedingly wealthy investment managers like Blackrock and Vanguard is entirely illogical because those managers, with trillions of dollars of investments under their control, undoubtedly have easy access to whatever information they want. In other words, it is implausible that the most sophisticated and wealthiest managers have any actual need for mandated climate disclosures.

So why are these managers so interested in mandating disclosures of information they can already easily access? They are likely looking out for their own interests: either their personal desires to virtue signal about how companies should be run, or a desire to make it more difficult for investors to determine whether asset managers are actually doing their jobs. The proposed rule plays into both of those flaws.

As Copland explains,

> ESG has been an increasing focus for groups in the financial services sector. In past two years U.S. firms have spent more than $3.5 billion buying "green" ratings companies and data providers. Additionally, the Big Four audit firms are pushing toward ESG. For example, PricewaterhouseCoopers last year said ESG was a focus of its $12 billion investment plan. . . .The market for helping companies with climate-related risk and other ESG re-porting is worth an estimated $1.6 billion and is forecast to increase by 21% each year over the next six years, according to U.K.-based research firm Verdantix. "The growth rate across several areas of ESG professional services is very strong," said Kim Knickle, a research director at Verdantix. This value is bolstered by the mandated reporting called for in the proposed rule. These firms stand to make a great deal of money in helping registrants prepare their disclosures. The proposed rule estimates the cost of compliance to be about $15.3 billion, with over $3.5 billion of that in the first year alone. And the SEC admits that it underestimates true costs because it cannot "fully and accurately quantify" the costs of emissions reporting. As

> detailed by Commissioner Peirce, the "unprecedented" nature of the disclosures coupled with the speculative nature—particularly of scope 3 emissions—and the assurance requirement, means companies will likely have to pay quite a bit for assurance. Copland Declaration at 29–31.

Similarly, Commissioner Peirce has argued, "Some of the loudest voices in favor of ESG disclosures for issuers are asset managers who advise pension funds or fund complexes. Sometimes commentators classify asset managers as investors, but the fact that they work for investors does not make them investors. . . . [P]ension plan fiduciaries and fund managers—who are humans susceptible to pressure from peers, personally held values, employees, and others—may be making voting and investment decisions based on their own self-interest rather than in the interest of the funds they manage. . . . Mandating the disclosure of ESG metrics, to the contrary, could provide agents (whether corporate officers or fund managers) with an out if their performance lags." SEC Comm'r Hester M. Peirce, *Chocolate-Covered Cicadas*, July 20, 2021, https://www.sec.gov/news/speech/peirce-chocolate-covered-cicadas-072021; *see* Mahoney, *supra* at 844, 875 (arguing that "ESG disclosures will exacerbate conflicts of interest between the managers of mutual funds and pension plans and their shareholders and beneficiaries," which is "in active conflict" with the SEC's "primary function[]" of "[p]rotecting investors against such conflicts").

Further, the proposed rule acknowledges it is based on the work of the self-anointed Task Force on Climate-related Financial Disclosures ("TCFD") Disclosure Framework. The proposal states, incorrectly, that the TCFD is "an industry-led task force". In reality, since its creation in 2015, the TCFD has been a government-sanctioned activist organization, under the leadership of partisan climate activists, Michael Bloomberg and Mark Carney, both of whom have significant conflicts of interests. *See FSB to establish Task Force on Climate-related Financial Disclosures,* Financial Stability Board (Dec. 4, 2015), https://assets.bbhub.io/company/sites/60/2015/12/12-4-2015-Climate-change-task-force-press-release.pdf. The work of the TCFD is referenced 243 times in the SEC proposal. Former SEC Chair Mary Schapiro and current Head of the Secretariat for the TCFD and vice-chair of the Glasgow Financial Alliance for Net-Zero ("GFANZ"), explains TCFD's motivation: "Disclosure is at the heart of reaching net zero, and the TCFD has provided a solid foundation to support the private sector's net zero commitments through transparency and accountability. GFANZ complements this effort by solidifying a road map for accelerating the private sector on the path to net zero. I look forward to driving forward this ambitious initiative." *See UN Special Envoy for Climate Ambition and Solutions Michael R. Bloomberg Joins UN Special Envoy on Climate Action and*

Finance Mark Carney as Co-Chair for GFANZ, Bloomberg (Nov. 2, 2021), https://www.bloomberg.com/company/press/un-special-envoy-for-climate-ambition-and-solutions-michael-r-bloomberg-joins-un-special-envoy-on-climate-action-and-finance-mark-carney-as-co-chair-for-gfanz/.

It bears repeating that the TCFD was created by, funded by, and remains directed by Michael Bloomberg, who currently serves as "UN Special Envoy for Climate Ambition and Global Ambassador for the UN's Race to Zero Campaign."[4] Bloomberg himself rallied to create the GFANZ, a group of 450 financial institutions that claim to manage over $130 trillion in assets. Uncoincidentally, Bloomberg's company has announced it intends to be the "the financial industry's first port of call for ESG information." *See Bloomberg sets target to be one-stop-shop for sustainability data*, Bloomberg (Nov. 18, 2021), https://www.bloomberg.com/professional/blog/bloomberg-sets-target-to-be-one-stop-shop-for-sustainability-data/. Earlier this year it launched climate transition scores starting with the oil and gas industry that benchmarks companies' progress towards net-zero against their own published targets. The data was expanded recently to include the metals and mining sectors. The climate transition scores are provided with insights from BloombergNEF, the company's new energy financing research business and its Bloomberg Intelligence analysis unit. The scores have benefited from a year-long goal to improve transparency into the emissions records of global companies. *Id.*

In short, the one individual that essentially funded the creation of the SEC proposal also happens to be the single-biggest donor to the party that directs the SEC, and also happens to be the same individual who owns the proprietary tools that are the preferred means for the financial sector to obtain data and would also be the preferred tool to comply with the SEC proposal, likely generating billions in new revenue for Bloomberg. A recent report conducted by analyst Jennifer Milton says that this aspect of Bloomberg's business accounted 76.6% of company revenues of $10 billion in 2018. Ginger Milton, *Bloomberg Revenue Continues to Diversify*, Linkedin Community Economic Development (Jan. 7, 2019), https://www.linkedin.com/pulse/bloomberg-revenue-continues-diversify-jennifer-milton/. The SEC's proposed rule would almost guarantee that those revenues will increase by billions. The proposed rule is a glaringly clear example of pay-to-play politics and self-dealing. This type of behavior is decidedly *not* in the "public interest."

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[4] And just happens to also be the single-biggest donor to Democrats in the 2020 election cycle.

Relatedly, the proposed rule mentions institutional investors dozens of times but mentions individual investors only once. As Dr. Klick explains, there are a few reasons to question the relevance of institutional investors' support for a climate-related disclosure mandate.

> First, given the large amount of capital they represent and the resources under their control, it is largely implausible that these investors could not obtain the relevant information from the sources noted above or from the companies themselves. Instead, Barzuza et al (2020) have offered a theory that these institutional investors simply use these kinds of statements to signal to investors in the millennial generation who collectively have shown an interest in pursuing social interests through their investment behavior, largely independent of any concerns for the functioning of financial markets. Regardless, as pointed out in a comment by 22 prominent law and finance professors, when climate-related shareholder proposals are voted on by shareholders, very few pass, suggesting that there is not a favorable consensus around the proposition that investors generally want something like the SEC proposal. *See* 87 Fed. Reg. at 21,439. Klick Declaration at 49.

As Austin Moss explains, the distinction between institutional investors and retail investors is critical because the SEC's statutory duty is to retail investors and by-in-large, "ESG disclosures are irrelevant to retail investors' portfolio allocation decisions." Austin Moss et al., *The Irrelevance of ESG Disclosure to Retail Investors, Evidence from Robinhood* (2020), http://papers.ssrn.com/abtract_id=3604847.

The SEC is currently considering two other major rules relating to private fund advisors, and both rules contain dozens of references to the potential conflicts of interest, yet the proposed rule fails to address this significant problem altogether—a fatal flaw. *See* Release No. IA-5950, File No. S7-01-22, https://www.sec.gov/rules/proposed/2022/ia-5950.pdf; Release No. IA-5955; File No. S7-03-22, https://www.sec.gov/rules/proposed/2022/ia-5955.pdf.

B. Not in the Public Interest: Undercuts Capital Formation.

Such dramatic disclosure burdens would lead to substantial reductions in market capitalization, as companies forgo access to markets rather than deal with the disclosure burdens—the exact opposite of "promot[ing] capital formation."

As Dr. Klick explains, while the SEC trumpets the market value of climate-related disclosures, there are a number of reasons to think a more serious analysis of the benefits of the mandate would yield little if any incremental value. "First, the

available empirical analyses indicate that investors are already well informed about firms' material climate risks. Second, existing rules already require that firms disclose material risks arising from environmental factors. Third, much of the relevant underlying data are already available publicly via disclosures required by the EPA." Klick Declaration at 26.

Counterbalanced with these (at best) negligible benefits are exorbitant costs:

> The SEC places its own cost estimate in excess of $10 billion annually. This estimate is constructed using a range of inputs from firms' experiences in complying with other country's disclosure mandates to U.S. firms' experience with complying with EPA data provision requirements. Almost surely this is a lower bound. For starters, these costs are accounting costs, whereas the real economic cost would include the opportunity costs of these expenditures. Time and resources spent on complying with the SEC rule are not available for productive activities within the firm. Beyond this, the compliance costs with the EPA requirements do not include retention of outside auditors. Using standard audit fees as a guide likely understates the eventual costs as these disclosures will require audit firms to expand the scope (as opposed to just the scale) of their services. Additionally, as the SEC acknowledges but does not cost out, these required disclosures will inevitably lead to shareholder litigation which is often costly in terms of time, financial resources, and reputation. Either this litigation, and its attendant costs, will manifest or, perhaps just as bad, firms will engage in wasteful defensive tactics (e.g., over-comply with the mandate, hire more and more expensive experts to assure the public the firm is doing everything correctly, agree to preemptive settlements, etc.) to avoid this litigation. Klick Declaration at 46.

When taken together, these considerations virtually guarantee "that the SEC regulation will cost billions of dollars while the benefits, as discussed above, are speculative and highly uncertain. There is even the possibility . . . that the presumed benefits of disclosure are negative." Klick Declaration at 47.

This means that any "higher returns" that result from the proposed rule will be "reserved for the wealthy, who the Commission has granted access to private markets." Peirce, *We Are Not the Securities and Environment Commission, supra*; *see also* Mahoney, *supra* at 845 ("Disclosure requirements that come bundled with substantial political and litigation risk can discourage companies from going (or staying) public.").

The SEC even acknowledges this consequence, *see* 87 Fed. Reg. at 21,448 (acknowledging that firms may "exit public markets or refrain from going public in the first place in order to circumvent the disclosure requirements"), but claims it will almost always be more expensive to forgo access to public markets than to comply with the proposed rule, *id.*, but that ignores the unprecedented costs of the proposed rule, *see* Part V, *supra*. It also mimics unacceptable rent-seeking behavior. If the proposed rule is issued, it is only a matter of time before the SEC requires disclosures on nearly every conceivable topic of interest to any investor, with ballooning compliance costs. Companies will realize it makes sense to get out now, before the SEC becomes the "Supervise Everything Commission."

The proposed rule would also result in unnatural movements of capital and increased rating agency disagreements that create the risk of bubbles and financial instability. Dr. Klick explains,

> when countries mandate ESG disclosures, there is increasing disagreement among the ratings of those intermediaries which in turn has negative consequences for the financial markets. . . . . [T]his disagreement among the ratings agencies is associated with a number of bad outcomes in the market. Specifically, [there is a] statistically significant increase in the magnitude of price swings and the volatility of firm returns [and] leads to reductions in both equity and debt issuance by firms. Klick Declaration at 36.

In contrast to other scenarios where greater disclosure helps reduce disagreement, "greater ESG disclosure leads to greater ESG disagreement across ESG rating agencies." Klick Declaration at 38; *see also* Peirce, *Chocolate-Covered Cicadas, supra* ("SEC regulation in this area, including disclosure regulation, is likely to exacerbate the homogenization of capital flows already occurring as a result of voluntary allocation of capital to ESG investments in the United States and regulatory mandates in other jurisdictions. . . . Lots of money will be mandated to chase green investment opportunities. As with past regulatory efforts to drive investment toward particular sectors, current efforts to green the financial system could precipitate future financial instability.").

C. Not in the Public Interest: These Disclosures Are Not Tied to Firm Performance.

There is no demonstration that the information that would be required by the proposed rule is material to firm performance. *See, e.g.*, *ECA*, 553 F.3d at 204 (adopting a "five percent numerical threshold" as a "good starting place for assessing

the materiality" of information, as anything below that number is "unlikely to be material"). The SEC subcommittee that proposed the rule admitted as much: "The subcommittee found that there is a wide range of research and assessments concerning how ESG factors affect performance, and that a clear picture of the impact of ESG on performance does not currently emerge." SEC, Asset Management Advisory Committee, *Potential Recommendations of ESG Subcommittee* 7 (Dec. 1, 2020), *available at* https://www.sec.gov/files/potential-recommendations-of-the-esg-subcommittee-12012020.pdf.

As Dr. Klick explains, what little literature the proposed rule relies on in support of its performance claims "are of questionable reliability." Klick Declaration at 21. For example, for the proposition that "mandatory disclosures improve market liquidity the SEC cites to Grewal, Hauptmann, and Serafeim (2021)." *Id.* But that paper "does not meet basic academic standards for reliability in empirical work." *Id.* Other research the proposed rule cites have received "neither peer review nor peer editing" and still others "use the non-standard one-tailed test of statistical significance to give the impression that their results are more certain than they really are." *Id.* (discussing M.E. Barth, et al., *Integrated Report Quality: Share Price Informativeness and Proprietary Costs*, Socially Responsible Investment E-Journal (2021)).

Beyond merely citing sub-quality research, the proposed rule also cites research that is entirely "irrelevant" to the mandated disclosures. *Id.* "For example, the SEC proposal asserts "In addition, firms that choose to disclose emissions have lower costs of equity and loan spreads," and cites work by Dhaliwal et al. (2011) in support." But in that research, "the authors find no effect of voluntary ESG disclosures in and of themselves on a firm's cost of capital" but only that disclosing positive corporate social responsibility can lower future costs of capital. *Id.* This suggests that companies are not incentivized to disclose, but to only disclose positive information. To make matters worse for the proposed rule, the positive impact gets worse—not better—when environmental disclosures are made. *Id.*

D. Not in the Public Interest: These Disclosures Are Based on Highly Speculative Climate Models.

The types of climate materials that the SEC proposes to mandate for disclosure would necessarily be highly subjective and speculative, given the complex nature of trying to predict long-term climate effects—and therefore cannot be useful to investors. *See* Peirce, *We Are Not the Securities and Environment Commission, supra.*

While there is a scientific consensus that global temperatures have increased and are continuing to increase, there is great uncertainty in the magnitude and timescale of this temperature increase. There is even greater uncertainty about the risks that will (or will not) flow from these changes.

Dr. Spencer explains,

> The IPCC Sixth Assessment report, cited repeatedly in the proposed rule, is good evidence of this uncertainty. The report gives several possible warming scenarios. The worst-case scenario, RCP8.5, projects a 5°C global surface temperature rise. But the scientific consensus is that this scenario is incredibly unlikely. . . . To achieve this scenario, the world would require virtually no emissions reductions and an unprecedented fivefold increase in coal use by 2100. . . .While worst-case scenarios can be a useful thought exercise, they cannot be the main driver of risk assessment. Instead of 5°C, a 2 to 3°C temperature rise is far more likely. This smaller temperature rise will be far more manageable. The IPCC's sixth assessment report states that with warming of 2 to 3° C we are likely to see the most catastrophic effects of climate change, like the melting of the Greenland or West Antarctic Ice Sheets, only "over multiple millennia." Spencer Declaration at 37-40.

To make matters worse, "climate models have also historically overpredicted temperature rise." While there is an observed warming trend, all models from the Climate Model Intercomparison Project "warm faster than observations." *Id.* at 48. This bias across all models is enough to "reject the notion that any of these climate models provides a 'realistic' assessment of warming." *Id.*

Even if future temperatures could be predicted with certainty, these are not "what businesses are being asked to assess. Instead, they are asked to follow extrapolations from these models to predictions of the effect of long-term weather changes on business operations." *Id.* at 50. Every weather event has a "host of possible natural and anthropogenic causes in addition to anthropogenic climate change." *Id.* at 51. While there can be some confidence in predictions that there will be "long-term warming of the regional or global climate," there is "little or no confidence in the attribution of severe convective storms and extra-tropical cyclones." *Id.*

What's more, economic impact of "chronic risks" is "far more dependent on non-climate-change-related mitigation measures taken than it is on the rise of global temperatures." *Id.* at 52. For example, one study found that "with no adjustments sea-level rise would cause $55 trillion in flood damage annually, as much as 5% of projected world GDP." *Id.* at 53. But with moderate mitigation, like the construction

and maintenance of dikes, at a maximum cost of 0.00002% of world GDP, "the total costs of flooding would decrease from today's levels to only 0.008% of world GDP." *Id.*

Finally, some of the long-term risks asserted by the proposed rule are not just uncertain, but virtually certain *not* to occur. For example, the SEC suggests that businesses must account for risks such as the "decreased arability of farmland." 87 Fed. Reg. at 21,350. But global warming will "most likely in-crease the total arable land in the United States, possibly by more than 15%." Spencer Declaration at 54. Further, while the proposed rule suggests registrants must account for "decreased habitability of land", 87 Fed. Reg. at 21,350, "over the next 80 years, all climate change scenarios predict virtually no change in habitability throughout North America." Spencer Declaration at 55.

E. Not in the Public Interest: Investors Already Have Access to Material Climate Information.

There is already a wealth of information available about climate matters for specific companies—rendering the information non-material for disclosure purposes and also imposing needless repetition and burdens on companies to collect and produce information in various different formats.

As Dr. Klick found, detailed in Part IV.C, *supra,* many large companies have disclosed risks related to climate change for more than a decade. Klick Declaration at 34. Further, beyond the voluntary disclosures and those required under the existing materiality standard, "there is already significant information collected by the government and provided to the public related to firms' climate-related activities." *Id.* at 39.

> For example, according to the Environmental Protection Agency, "The Greenhouse Gas Reporting Program (GHGRP) collects Greenhouse Gas (GHG) data from large emitting facilities, suppliers of fossil fuels and industrial gases that result in GHG emissions when used, and facilities that inject carbon dioxide underground." Even more conveniently, the EPA provides a ready-made spreadsheet that links those data to "their highest level U.S. parent company. " As of the date of this writing, these data are available in a consistent format annually for the period 2010-2020. Further, using the facility IDs in that dataset, it is easy to link the parent companies with a wealth of other information about their GHG

> emissions as well as other pollutant datasets held by the EPA,[5] allowing one to pinpoint (with either a street address or latitude and longitude coordinates) exactly where a firm's GHGs are being produced, allowing interested members of the public, including investors, to even judge sub-national (e.g., state) regulatory risks that could affect a firm. As the SEC itself notes, "The EPA estimates that the required reporting under their rule covers 85-90% of all GHG emissions from over 8,000 facilities in the United States." *Id.*

In other words, it is not in the public interest to inundate investors with an almost incalculable amount of information that in almost no circumstances is actually relevant to investment decisions, beyond what investors already can access.

F. By Taking Sides on a Political Matter, the SEC Loses Legitimacy.

By veering into a hotly contested political matter, the SEC will inevitably lose legitimacy—with the effects felt far outside of the climate-disclosure realm, as investors realize the SEC no longer plays the role of honest regulator but is merely another partisan agency whose rules are designed to further partisan interests. *See* Mahoney, *supra* at 880.

As Commissioner Peirce stated:

> [O]ur meddling with the incentives for capital allocation will harm this agency, which plays such an important role in the capital markets. As discussed above, the proposal takes us outside of our statutory jurisdiction and expertise, which harms the agency's integrity. In addition, filling SEC filings with information that is inherently unreliable undercuts the credibility of the rest of the information in these important filings. Moreover, while the existence of anthropogenic climate change itself is not particularly contentious, how best to measure and solve the problem remains in dispute. The Commission, which is not expert in these matters, will be drawn into these disputes as it reviews, for example, the climate models and assumptions underlying companies' metrics and disclosures about progress toward meeting climate targets. This proposal could inspire future more socially and politically contentious disclosures, which would undermine the

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[5] For example, https://www.epa.gov/system/files/other-files/2021-10/2020_data_summary_spreadsheets.zip . The EPA also has tools to examine a facility's enforcement and compliance history; see https://echo.epa.gov/facilities/facility-search?srch=adv

> SEC's reputation as an independent regulator. Meanwhile, we have other important work to do, and the climate initiative distracts us from it. Peirce, *We Are Not the Securities and Environment Commission, supra*; *see also* Peirce, *Chocolate-Covered Cicadas, supra* ("Wading into controversial issues, whether directly or indirectly through a third-party standard setter would consume our limited resources and impede our ability to carry out our given mission of protecting investors and the integrity of the capital markets.").

Needless to say, it is not in "the public interest" for the SEC to lose its legitimacy and credibility.

* * *

For these reasons, there is not substantial evidence to support a finding that the proposed rule satisfies the public-interest tests required by the statutes authorizing the SEC to mandate disclosures.

VI. The Proposed Rule Would Be Arbitrary & Capricious

All of the flaws identified above also render the proposed rule arbitrary and capricious. And there are numerous additional bases for why the proposed rule is arbitrary and capricious.

A. The Proposed Rule Is Internally Inconsistent Because It Would Mandate Vast Disclosure of Information that It Acknowledges Is Largely Guesswork and Not Useful.

The proposed rule acknowledges that the "complexity, uncertainty, and long-term nature of climate risks make it unlikely that voluntary disclosure of such risks would be fully revealing," 87 Fed. Reg. at 21,445, and spends a significant amount of time explaining that climate risks are nearly impossible to calculate accurately because of the "uncertainty and complexity of climate-related risks and the multidimensional nature of the information being disclosed," which can manifest themselves over decades. 87 Fed. Reg. at 21,427. The "uncertainty surrounding the future path of climate change and the evolving nature of the science and methodologies measuring their economic impacts" explain why many companies have not voluntarily disclosed such guesswork predictions and also explains why there is no "predictable investor response[ ]" to such disclosures, meaning that investors do not value information that is the product of such inescapable guesswork. 87 Fed. Reg. at 21,427.

The proposed rule then illogically concludes that the solution is to *mandate* the disclosure of such information. 87 Fed. Reg. at 21,445. In other words, the data is not particularly useful and is primarily guesswork to the point that investors often find it useless—and thus the SEC thus proposes to *mandate* this information from *every* registrant? If the information is so inherently speculative, the solution is to maintain the status quo of company-by-company disclosures of specific climate issues material to those companies—not some one-size-fits-all sledgehammer disclosure regime. By acknowledging that the information is speculative and not revealing yet mandating it anyway, the proposed rule is internally inconsistent and illogical—and thus arbitrary and capricious.

B. The SEC Has Not Adequately Explained Its Dramatic Changes in Position.

As demonstrated above, the SEC has long required materiality when mandating disclosures because that is a statutory requirement. But even if it were not a statutory requirement, the SEC would still have to justify its dramatic change in regulatory posture, away from a tailored, flexible materiality standard towards special environmental disclosures in an exhaustive one-size-fits-all format that presumes an expansive catalogue of environmental data is automatically material. Similarly, the SEC has long concluded that "disclosure relating to environmental and other matters of social concern should not be required of all registrants unless appropriate to further a specific congressional mandate or unless, under the particular facts and circumstances, such matters are material." *Business and Financial Disclosure Required by Regulation S-K*, 81 Fed. Reg. at 23,916, 23,970 (Apr. 22, 2016); *see Environmental and Social Disclosure, Notice of Commission Conclusions and Rulemaking Proposals*, 40 Fed. Reg. at 51,656, 51,657 (Nov. 6, 1975).

Where an agency seeks to change its position from a prior regime, it (1) must "display awareness that it is changing position," (2) "must show that there are good reasons for the new policy" and provide an even "more detailed justification" when the "new policy rests upon factual findings that contradict those which underlay its prior policy," and (3) must "take[ ] into account" "reliance interests" on the prior policy. *F.C.C. v. Fox Television Stations, Inc.*, 556 U.S. 502, 515 (2009).

The SEC has not provided the necessary justification for singling out environmental data and requiring disclosures by all issuers in a special format beyond the extant requirements for disclosing material risks. Indeed, in its lengthy list of "reasonable alternative[]" proposals, the SEC does not even acknowledge the possibility of maintaining the principles-based materiality requirement. 87 Fed. Reg. at 21,448–52. This alone renders the proposed rule arbitrary and capricious.

Moreover, the SEC itself, as well as private parties, has a right of action to pursue relief when companies breach the existing disclosure requirements, including (where appropriate) because of omitted or misstated climate risk information. The SEC has not explained why these robust mechanisms have proven inadequate in ensuring that companies provide climate information, especially in light of the fact that the SEC itself could bring enforcement actions if it honestly believed that companies were not disclosing material climate information. The likely reason no enforcement actions are being brought is because, as Commissioner Peirce demonstrated, companies are *not* failing to disclose material climate and environmental risks in their current filings. *See* Peirce, *We Are Not the Securities and Environment Commission, supra.* Other experts agree: the data shows that there has been no "market failure," in the disclosure of climate-related risks, which confirms the SEC has not (and cannot) justify such a dramatic change in policy. *See* Mahoney, *supra.*

Nor does the proposed rule address the significant reliance interests at stake. *See Fox*, 556 U.S. at 515. Regulated entities will have to fundamentally change their processes to shift from a principles-based approach (materiality) to a prescriptive (blanket) disclosure format, requiring data that is vast, exhaustive, expensive to determine—and may actually be impossible to determine in some circumstances and will almost always be impossible to determine to a requisite degree of accuracy. Given the incredible costs, the likely substantial liability that will result, and the fact that material climate disclosures are *already* required, the SEC was required to provide a significant explanation for why it is "necessary to overrule [the SEC's] prior position." *Encino Motorcars, LLC v. Navarro*, 136 S. Ct. 2117, 2126 (2016) (heightened explanation required where there has been "decades of industry reliance on the [agency's] prior policy"). The proposed rule fails to do so—and therefore is arbitrary and capricious.

C. The Proposed Rule Would Be Arbitrary and Capricious Because the Requirements for Disclosure of Acute Physical Risk are Premised on Inaccurate Facts about Physical Risk.

Contrary to the assertion in the proposed rule, "acute risks" from extreme weather events, such as hurricanes, floods, tornadoes, and wildfires are not increasing. 87 Fed. Reg. at 21,350. The well-developed and rigorous body of scientific evidence on these issues points strongly in the opposite direction. While there are acute risks to businesses posed by the weather, there is significant evidence that the extreme weather events that cause these risks are not increasing and that the

damage from natural disasters in lives lost and in economic cost relative to GDP are decreasing.

Dr. Spencer explains, "'acute risks' from extreme weather events, such as hurricanes, floods, tornadoes, and wildfires are not increasing." Spencer Declaration at 17. "The frequency of hurricanes making landfall in the United States has declined slightly since 1900. Further, the hurricanes that are occurring are not increasing in intensity." Additionally, hurricane damage—while increasing in absolute value—is decreasing relative to GDP. This is because increased "development along vulnerable coastlines" is being offset by a growing economy and richer and "more resilient" infrastructure. *Id.* at 18-19.

And a similar story can be told with flooding. "Flooding costs as a share of GDP have declined nearly tenfold since the beginning of the 20th century, to 0.05% of GDP, while annual flood death risk in fatalities per million dropped nearly threefold." There has also been "no observable increase in the frequency of major tornadoes over time" and there is no "robust evidence that wildfires are increasing" but instead "increasing evidence suggesting that there is overall less fire in the landscape today than there was centuries ago." *Id.* at 20-26.

> The natural disasters that do occur cause far fewer deaths than they did a century ago because the worst killers—droughts and floods—have been mitigated by technological improvements. Most deaths from natural disasters in the 21st century have resulted from earthquakes, which are not directly associated with climate change. Further, data and evidence show that the overall economic damages associated with extreme weather have in fact decreased when measured in the context of global GDP. *Id.* at 28-29.

The only data the proposed rule points to in support of the assertion that acute risks are increasing is an increase in "billion dollar" events based on a National Oceanic and Atmospheric Administration (NOAA) dataset. 87 Fed. Reg. at 21,336 n.10. But what "the dataset actually shows is a combination of poor methodology and the consequences of a growing society, with more people and property in locations exposed to loss from extreme weather. It is not an indicator of climate change. Climate data, not economic data, should be used for that purpose." *Id.* at 30. Instead, analysis of disaster losses indicates that "societal change and economic development are the principal factors responsible for the documented increasing losses to date." *Id.* And a more accurate look at losses shows the opposite of what the NOAA dataset implies, "that direct economic losses from disasters have declined over the past 30 years over 0.3% of global GDP to under 0.25% of global GDP." *Id.* at 31.

D. The SEC Has Not Given Proper Notice to Affected Non-Registrants, nor Properly Considered the Costs to Those Non-Registrants.

The SEC has failed to provide fair notice to the tens or hundreds of thousands of small companies in the supply chain of registrants (i.e., typically large public companies), as well as the hundreds of millions of individuals who are customers, who would all be indirectly regulated by the SEC when public companies seek data to develop Scope 3 emission estimates and assumed liabilities—and when those public companies presumably feel compelled to pressure their upstream suppliers and downstream customers to change their conduct to help reduce the public company's Scope 3 emission reports.

Many smaller suppliers of big public companies do not currently have the capacity to measure their emissions, meaning they will have increased costs to determine them, and there will be substantial financial leverage exerted by their supply chain customers to do so. *See* Vince Bielski, *The Green U.S. Supply-Chain Rules Set to Unspool and Rattle the Global Economy*, RealClearInvestigations (Apr. 7, 2022) https://www.realclearinvestigations.com/articles/2022/04/07/the_green_supply-chain_rules_set_to_unspool_and_rattle_the_economy_825567.html.

Nor has the SEC accounted for these costs on non-registrants, who are not required to collect or report Scope 1 and Scope 2 emissions, as they are not regulated by the SEC. It is not only foreseeable that registrants will demand that their supply chain partners produce this information, but this outcome is acknowledged by the proposed rule, which would require the registrant to identify the data sources it used to calculate its Scope 3 emissions, including whether "the emissions reported by parties in the registrant's value chain" were verified by the registrant or a third party. *See* proposed Item 1504 (c)(2)(i).[6]

The SEC acknowledges the burdens on registrants in collecting Scope 3 data, but that concern is magnified for the private, smaller non-registrants who will be indirectly regulated just as much as the registrants themselves. While it is fair to assume that the imposition of these requirements on non-registrants will be proportionately immense because the SEC found that would be the case for smaller

[6] A conditional safe harbor for the Scope 3 emissions that public entities are required to report is irrelevant to the burden on unregulated suppliers that the proposed rule would create.

registrants,[7] a precise estimate of the costs cannot be made at this time because the SEC did not examine the burdens associated with data gathering, verification, and other actions associated with Scope 3 emissions reporting imposed on unregulated entities that are suppliers, much less the ancillary financial impacts of sharing this data on competition on small unregulated businesses, including whether such disclosures would affect proprietary business information, or impose potential legal exposure to unregulated or excluded suppliers.

By failing to include costs to the substantial number of small businesses that will be directly affected, the proposed rule would violate the SEC's obligations under the Regulatory Flexibility Act. 5 U.S.C. § 601 *et. seq*. To avoid these financial impacts on unregulated entities and on suppliers and customers in a registrant's value chain, the SEC could require registrants to rely totally on published emission factors, or expressly eliminate all references to disclosures of Scope 3 emissions. Because there are significant problems with relying on emission factors, it would better serve the SEC to eliminate the collection and disclosure of Scope 3 emissions. 87 Fed. Reg. at 21,463. Emission factors essentially represent an average of a range of emission rates, meaning that approximately half of the subject sources will have emission rates greater than the emission factor and the other half will have emission rates less than the factor.

Failing to consider these costs on non-registrants also renders the rule arbitrary and capricious. Inexplicably, the SEC did weigh the very same impacts on small reporting companies ("SRCs"), and, as a result, proposed to exclude SRCs from reporting Scope 3 emissions, *see* 87 Fed. Reg. at 21,391, but then ignores that those very same burdens will be imposed anyway if an SRC is a supplier—indeed, those costs will be imposed on suppliers around the country regardless of whether they are SRCs. The costs to gather and provide Scope 3 emissions data is an important aspect of climate reporting, which is acknowledged throughout the proposed rule, but the SEC's abject failure to consider those very same costs for non-registrants would render this rulemaking invalid due to failure to consider "an important aspect of the problem." *Motor Vehicle Mfrs. Ass'n of U.S., Inc. v. State Farm Mut. Auto. Ins. Co.*, 463 U.S. 29, 43 (1983).

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[7] *See* 87 Fed. Reg. at 21,463 ("While small entities would not be exempt from the full scope of the proposed amendments, they would be exempt from the Scope 3 emissions disclosure requirements, which would likely impose the greatest compliance burden for registrants due to the complexity of data gathering, calculation, and assessment required for that type of emissions.").

The SEC should withdraw the proposed rule's references to any and all Scope 3 emissions reporting.

E. The Proposed Rule Would Allow for Improper "Greenwashing."

The "Scope 1, 2, 3" system adopted by the proposed rule has come under intense scrutiny—including by the very same coalition that created it—for making it far too easy for some companies to engage in greenwashing, or "making something seem more environmentally friendly than it is." Phred Dvorak, *Climate-Reporting Rules Fact Scrutiny*, WALL ST. J., Apr. 8, 2022, at B5.

This GHG Protocol standard adopted by the proposed rule lets companies "say they are procuring carbon-free energy, even though that does not always reflect their actual energy consumption." *Id.* One commentator described it this way: "If I drive my Hummer to work every day, can I go buy a walk-to-work certificate from some guy on the other side of town that walks to work every day and say my emissions are zero?" *Id.* This indicates that the SEC is requiring unprecedented disclosure requirements that impose tremendous costs, all for numbers that are easily manipulated directly contrary to the supposed goal of ensuring accurate environmental footprint figures. It is arbitrary and capricious to impose such dramatic requirements that run counter to the purpose of the proposed rule. It is also arbitrary and capricious because the SEC premises imposition of the GHG Protocol on the erroneous belief that it "would help mitigate instances of greenwashing." 87 Fed. Reg. at 21,376.

This failure by the proposed rule is particularly ironic given the SEC's *other* proposed ESG rulemaking: Enhanced Disclosures by Certain Investment Advisers and Investment Companies about Environmental, Social, and Governance Investment Practices, RIN: 325-AM96. This rulemaking aims to crackdown on the precisely the "greenwashing" that the proposed rule would enable. This inconsistency renders the proposed rule arbitrary and capricious.

F. The SEC's Contrived Rationale Renders the Proposed Rule Arbitrary and Capricious

Even if the proposed rule were otherwise valid and based on lawful authority, it would still be unlawful because the SEC has provided a contrived basis for the rulemaking. Judges "are not required to exhibit a naiveté from which ordinary citizens are free." *Commerce*, 139 S. Ct. at 2575 (cleaned up). Commissioner Peirce stated the obvious: "Let us be honest about what this proposal is really trying to do. Although styled as a disclosure rule, the goal of this proposal . . . is to direct capital

to favored businesses and to advance favored political and social goals." Peirce, *We Are Not the Securities and Environment Commission*, *supra*; *see also* Part I.C, *supra*.

This disconnect between the SEC's stated purpose and its true purpose is a fatal flaw. The Supreme Court has held that providing a contrived explanation for agency rulemaking is per se arbitrary and capricious. "The reasoned explanation requirement of administrative law, after all, is meant to ensure that agencies offer genuine justifications for important decisions, reasons that can be scrutinized by courts and the interested public. Accepting contrived reasons would defeat the purpose of the enterprise." 139 S. Ct. at 2575–76.

G. The Proposed Rule Is Arbitrary and Capricious Because It Would Result in Arbitrary and Capricious Application.

Because the SEC has no expertise in climate matters and thus has no expertise in reviewing climate-related disclosures, the enforcement of the rule would be arbitrary and unbounded. *See* Part I, *supra*. And although the SEC may temper that unbounded power by resorting to cooperation with those who do have experience in the realm of environmental regulations, doing so would only demonstrate the SEC itself lacks statutory power here (i.e., if the SEC coordinates with the EPA) and may also violate the private nondelegation doctrine (i.e., if the SEC defers to private organizations). *See* Part I, *supra*; Part IX, *infra*.

H. The Proposed Rule Is Arbitrary and Capricious Because It Would Cause Extensive Litigation Costs with Minimal Benefits.

Because the disclosures called for by the proposed rule are so subjective and arbitrary—yet give the faux appearance of objective certainty—companies would be subjected to an onslaught of litigation over their disclosures. The SEC views this as a benefit, claiming that the requirement to include climate data in SEC filings "carries certain additional potential liability, which itself can cause registrants to prepare and review [the] information . . . more carefully than information presented outside SEC filings." 87 Fed. Reg. at 21,339. But the SEC's rationale is internally contradictory—and therefore arbitrary and capricious—because the SEC admits elsewhere that "the liability provisions of Section 10(b) and Rule 10b-5 of the Exchange Act can apply to statements made in filings with the SEC or elsewhere, such as in sustainability reports or on company websites. As such, registrants should scrutinize and ensure the accuracy of such statements whether or not filed with the commission." *Id.* at 21,339 n.49. The SEC claims that requiring uniform disclosures will cause more accurate disclosures because of the risk of legal liability, while

simultaneously acknowledging companies' disclosures must *already* be accurate under penalty of that very same legal liability.

I. The Proposed Rule Is Arbitrary and Capricious Because It Inconsistently Ignores Risks from the Potential Expansion of Emissions Levels or Elimination of Subsidies.

The proposed rule would require disclosures about a company's risks from "laws, regulations, or policies" that "restrict GHG emissions or products with high GHG footprints"—but does not require disclosures about a company's risks from changes in laws, regulations, or policies that would *expand* GHG emissions or eliminate subsidies for "green" actions, which provide the lifeblood of many "green" companies. 87 Fed. Reg. at 21,362, 21366.

If the SEC cared about actual financial risk, it would require detailed disclosures about how companies rely on such subsidies and how they plan to "transition" away from them when those subsidies are eliminated in the future, as well as how they plan to transition when the United States withdraws from non-binding, extra-legal agreements like the Paris Accords. The SEC arbitrarily assumes there is only one direction: emissions will be forced downward in perpetuity, and the United States will never withdraw from these non-binding climate agreements (even though the United States has previously withdrawn in the past). It is arbitrary and capricious to ignore such an obvious aspect of the problem the SEC claims to be addressing here.[8]

J. The Proposed Rule Is Arbitrary and Capricious Because It Ignores the Benefits of Climate Change.

Although the proposed rule cursorily acknowledges that some companies may do better because of climate change, 87 Fed. Reg. at 21,366, it does not recognize that warmer overall temperatures have resulted in an estimated 166,000 lives saved per year. Spencer Affidavit at 34. Those saved lives represent not only an immeasurable benefit in themselves but also demonstrate that population growth—with its accompanying economic growth and thus financial benefits for registrants and the

[8] Of course, this makes sense if one acknowledges that the SEC's goal here is not really to provide material financial information but instead to force climate policy through the backdoor of "disclosures."

economy writ-large—results from climate change. The proposed rule arbitrarily ignores these significant aspects of the alleged problem it seeks to address.

K. The Proposed Rule Is Arbitrary and Capricious Because It Would Encourage Companies to Mitigate Climate Risks by Adopting Solutions that May Be Even Riskier.

The SEC suggests that businesses "might develop strategies to reduce their emissions to the extent possible through operational changes—such as modifications to their product offerings or the development of solar or other renewable energy sources." 87 Fed. Reg. at 21,355. But this ignores the supply chain risks that are associated with adopting technologies, like solar energy, that are sourced primarily internationally. *See, e.g.*, Jennifer A. Dlouhy, *Biden Probe Into Solar Imports Risks 65% of Planned U.S. Projects*, Bloomberg (Apr. 19, 2022), https://www.bloomberg.com/news/articles/2022-04-19/solar-trade-probe-risks-65-of-planned-u-s-projects-group-says ("A U.S. Commerce Department trade probe that could result in tariffs against solar imports from Southeast Asian nations is already threatening clean energy projects, according to an advocacy group fighting the investigation. At least 65% of U.S. solar capacity set to come online in 2022 and 2023—equivalent to 24 gigawatts—is now at significant risk of cancellation or delay.").

Copland explains,

> encouraging companies to mitigate risk by switching to "green" technologies, the proposed rule also narrowly ignores the effect of increased regulation likely in response to the negative consequences of photovoltaics, wind turbines, and battery production. The proposed rule repeatedly suggests that companies might mitigate their risk by switching to "less carbon-intensive sources" by developing "solar or other renewable energy sources," or switching to "electric vehicles." But these technologies come with their own risks. For example, about half of the world's polysilicon, a key component in up solar panels, is produced in the Xinjiang region—the location of the Uyghur genocide currently being perpetrated by Xi Jinping's Chinese Communist Party—which has led U.S. law makers to crack down on solar imports. President Biden's probe into solar imports has 65% of planned U.S. solar projects at risk of failure. The risk mitigation the SEC suggests may be jumping out of the frying pan and into the fire. Copland Declaration at 64.

L. The Proposed Rule's Inconsistent Treatment of Scopes 1 and 2 Emissions and Scope 3 Emissions Is Arbitrary and Capricious.

The SEC claims that only "material" Scope 3 emissions would be disclosed and that this analysis must be undertaken on a company-by-company basis, considering the "total mix of information" and "the particular facts and circumstances," which "mak[e] it difficult to establish a 'one size fits all' standard." 87 Fed. Reg. at 21,379, 21,381. Yet the proposed rule inexplicably declines to impose the same requirements for Scopes 1 and 2 emissions—apparently presuming without adequate explanation that Scopes 1 and 2 are always material in every instance. This internal inconsistency is arbitrary and capricious.

M. The Proposed Rule's Requirement to Disclose Both Physical Risks and Transition Risks Is Internally Inconsistent and Arbitrary and Capricious.

The SEC puts a heavy emphasis on "transition risks" it states are likely to be associated with the enactment of climate-related regulatory policy necessary to stop climate change. Viewed as alternatives, this makes some sense: a penny of prevention may be worth a pound of cure. Either we face the risks of climate change unprepared or we expend resources to mitigate that risk. But the SEC illogically views them as cumulative—baselessly assuming that the anticipated costs of transition will not in fact mitigate the anticipated harms of climate change one whit. This is like making a risk assessment where you buy insurance and then assume that insurance will not cover anything.

Dr. Spencer explains,

> long-term or chronic physical risks are premised largely on climate change scenarios in which GHG emissions are not sufficiently mitigated. If the world adopts "climate-related regulatory policies . . . necessary to achieve" climate goals then most of the physical risks anticipated to flow from extreme climate change will not come to pass. Or if the worst physical risks do occur, this can only be because the climate-related regulatory policies that would lead to risks disclosed under the category of "transition risks" did not occur.
>
> Because of the small role of individual nations in contributing to climate change it is theoretically possible that the United States could adopt strict climate-related regulatory policies—creating "transition risks"—and yet still suffer the worst consequences of climate change—"physical risks." But this is unlikely because in this regard, climate change is like a prisoner's dilemma. Every nation benefits if others restrain their pollution, but would prefer not to have to restrain its own. As a result, it is predictable that nations will only reduce GHG emissions in a manner proportionate to other nations. If every nation enacts climate-

> related regulations than companies will face transition risks but will not face physical risks. If, on the contrary, no nation enacts strict regulations than physical risks may come to pass, but transition risks will not. It is illogical to require the disclosure of both. Spencer Declaration at 63-65.

In other words, if the world adopts climate-related regulatory policies necessary to achieve climate goals, then most of the physical risks anticipated to occur because of extreme climate change will not actually happen. Or if they do happen, then it was because the climate-related regulatory policies that would lead to risks disclosed under the category of "transition risks" did not occur. This internal inconsistency is arbitrary and capricious.

N. The Proposed Rule Is Arbitrary and Capricious Because It Fails to Consider Costs Properly, Especially for Smaller Firms.

As detailed above, the SEC admits that it underestimates true costs because it cannot "fully and accurately quantify" the costs of emissions reporting, 87 Fed. Reg. at 21,441, which the proposed rule estimates to be approximately $15.3 billion in the first five years, with over $3.5 billion of that burden in the first year alone. *See* 87 Fed. Reg. at 21,439. As detailed by Commissioner Peirce, the "unprecedented" nature of the disclosures coupled with the speculative nature—particularly of scope 3 emissions—and the assurance requirement, means companies will likely have to pay quite a bit for assurance. Peirce, *We Are Not the Securities and Environment Commission, supra.*

The market for helping companies "with climate-related risk and other ESG re-porting is worth an estimated $1.6 billion and is forecast to increase by 21% each year over the next six years, according to U.K.-based research firm Verdantix." Copland Declaration at 30. For example, Pricewaterhouse Coopers has stated it will hire 100,000 new employees—and invest $12 billion—over the next 4-5 years to help meet its clients' ESG reporting requirements. *See* https://www.reuters.com/business/sustainable-business/pwc-planning-hire-100000-over-five-years-major-esg-push-2021-06-15/. The obvious conflict of interest aside (Klick explains that listening to Pricewaterhouse Cooper's claims that these disclosures will help investors to find and compare climate-related information is like "like listening to a fox's argument that leaving the henhouse door open will make it easier to get your morning eggs." Klick Declaration at 48.) this investment indicates that the true scale of compliance costs will be far greater than the SEC's own cost estimate "in excess of $10 billion annually." *Id.* at 10.

By failing to provide meaningful and accurate costs, the proposed rule is arbitrary and capricious. The SEC's acknowledgement that it cannot provide more specific information on costs is especially ironic—and confirms the arbitrary nature of its proposed actions—because the SEC apparently has no qualms about forcing registrants to provide far more data on a bevy of speculative topics, under penalty of federal law. Perhaps the SEC should learn from its own experience.

* * *

For all these reasons, the proposed rule, if finalized, would be arbitrary and capricious.

VII. The SEC Lacks Authority to Regulate Renewable Energy Credits and so Disclosure of These Credits or Other Emission Offsets Should be Voluntary.

The proposed rule references a voluntary renewable energy credits ("REC") program by the EPA, the Green Power Program, to encourage and recognize the voluntary purchase of renewable electricity. But neither RECs nor carbon offsets are mandated or defined under any federal law or regulation and their regulation is beyond the authority of the SEC. *See* Part I, *supra*. This is because RECs and offsets include numerous sub-types and cannot be defined, commoditized, securitized, or swapped without consideration for the particular REC or offset they represent. The SEC cannot delegate regulation to third parties that create, register or certify RECs and offsets and the SEC does not have authority to define, create, register or certify RECs and offsets.

Further, as demonstrated above, the SEC does not have authority to mandate disclosure of Scope 2 or Scope 3 emissions that are beyond the control of the registrant. But even if the SEC had such authority, RECs and carbon offsets (or "global emission reductions at additional, external projects," 87 Fed. Reg. at 21,355 n. 237) are even further removed from the registrant's control because, typically, RECs do not represent the physical delivery of any renewable electricity to the company taking credit for the RECs; and a carbon offset typically does not represent the physical reduction, avoidance, or sequestration of emissions controlled by the registrant. Moreover, where registrants are mandated by states to generate or surrender specific types of RECs and/or offsets that generate a material impact on the business, those disclosures are already covered by existing SEC disclosure rules. Where registrants are not mandated to generate or surrender specific types of RECs or offsets, any exchange of RECs or offsets is voluntary, like advertising and

marketing expenses. Where those costs (or revenues) are material, they will already be disclosed to shareholders under existing SEC requirements.

Moreover, notwithstanding that RECs and offsets are beyond SEC's disclosure authority, the regulation of such credits would represent a usurpation of the domain of the Federal Trade Commission ("FTC") in regulating the veracity of 'green' claims, including RECs and offsets. The FTC enforces federal consumer protection laws that prevent fraud, deception and unfair business practices, enhances informed consumer choice and public understanding of the competitive process, and accomplishes this without unduly burdening legitimate business activity. The FTC has already developed extensive guidance on RECs and offsets. *See* Guides for the Use of Environmental Marketing Claims, 77 Fed. Reg. at 62,122. The SEC has no role in these markets.

VIII. The Proposed Rule Would Violate the First Amendment.

The D.C. Circuit has held that the SEC is not entitled to any greater leeway when it comes to regulating speech merely because the SEC invokes "the federal government's broad powers to regulate the securities industry." *Nat'l Ass'n of Manufacturers ("NAM") v. SEC*, 800 F.3d 518, 555 (D.C. Cir. 2015) (internal quotations omitted). Otherwise, the SEC could "easily regulate otherwise protected speech using the guise of securities laws." *Id.* Accordingly, the First Amendment applies the same to the SEC as it does to any other government actor.

"[F]reedom of speech prohibits the government from telling people what they must say." *Rumsfeld v. Forum for Academic & Institutional Rights, Inc.*, 547 U.S. 47, 61 (2006). In *National Institute of Family & Life Advocates v. Becerra* ("NIFLA"), 138 S. Ct. 2361 (2018), the Supreme Court held that a compelled disclosure is subject to strict scrutiny (as a content-based regulation) unless it falls into one of two categories: (1) "laws that require professionals to disclose factual, noncontroversial information in their 'commercial speech'"; or (2) regulation of "professional conduct, even though that conduct incidentally involves speech." *Id.* at 2372.

The proposed rule triggers strict scrutiny because it requires disclosure of controversial information and does not regulate professional conduct that incidentally involves speech (indeed, the SEC claims the rule is entirely about compelled speech because it labels the rule as mere "disclosures"). *Id.* The proposed rule fails to satisfy strict scrutiny because there is no compelling government interest at stake, nor is the proposed rule narrowly tailored. Even if strict scrutiny did not apply, the proposed rule is still unconstitutional because there is no substantial government interest.

A. The Information That the Proposed Rule Would Require Registrants to Disclose is "Controversial."

The information that the proposed rule would require registrants to disclose is "controversial" for several reasons. First, climate change in general is a politically charged matter, and, more specifically, whether emissions information is material to corporate performance is a strongly debated political matter. *See, e.g.*, Speech by Commissioner Roisman on Whether the SEC Can Make Sustainable ESG Rules (June 23, 2021), https://corpgov.law.harvard.edu/2021/06/23/speech-by-commissioner-roisman-on-whether-the-sec-can-make-sustainable-esg-rules/ ("To the extent that there are issues included within the ESG umbrella that remain contested among American voters, I believe that such debates are properly and appropriately held amongst Americans' elected officials."); Letter from Republican Members of U.S. House Committee on Financial Services to Gary Gensler, SEC Chairman (July 6, 2021) ("The SEC's increasing willingness to wade into social and public policy debates, like climate change, risks the credibility and independence."); Aime Williams & Camilla Hodgson, *Investors at Top US Banks Refuse to Back Climate Proposals*, FINANCIAL TIMES (Apr. 26, 2022), https://www.ft.com/content/740b55f8-fa2e-4b66-9398-9f84aedbe8d8 ("Investors refused to back resolutions demanding stricter fossil fuel financing policies at three major US banks on Tuesday, dealing a blow to environmentalists hoping to apply more pressure to lenders over climate issues. Proposals filed at Wells Fargo, Bank of America and Citi called on the banks to align their fossil fuel financing policies with achieving net zero emissions by 2050, and to ensure financing did not contribute to 'new fossil fuel supplies.' But the resolutions were backed by only about 11 per cent of shareholders at Wells Fargo and Bank of America and fewer than 13 per cent at Citi.").

Second, the proposed rule would require disclosure of information that is "hardly 'factual and non-ideological.'" *NAM*, 800 F.3d at 530. As discussed above, the disclosures are incredibly subjective—and in fact even the frameworks the SEC uses are themselves controversial. The proposed rule would force corporations and their officials to speak regularly on such issues, explaining their views and opinions. And this compelled speech is made all the more problematic given that the purpose of the proposed rule is to drive policy changes. In short, the proposed rule compels speech for purposes of forcing change in the controversial area of the climate and environment.

Anticipating laws and regulations like the one proposed here, the D.C. Circuit held in the context of an SEC regulation requiring disclosures about "conflicts minerals": "Why, for example, could Congress not require issuers to disclose *the labor*

conditions of their factories abroad or the political ideologies of their board members, as part of their annual reports? Those examples, *obviously repugnant to the First Amendment*, should not face relaxed review just because Congress used the 'securities' label." *NAM*, 800 F.3d at 555. The court was stating the obvious: the First Amendment prohibits the SEC from seeking disclosure of political issues, even when the SEC tries to frame them as bland disclosure requirements.

Requiring detailed disclosures about environmental conditions of a company's factories and production, as well as board and official opinions about climate change, falls within that very same group of "obviously repugnant" disclosures. At least in *NAM*, the SEC could claim that Congress had required it to demand such disclosures. But there is no plausible basis for such a claim here by the SEC for such broad climate disclosures. This has First Amendment relevance because whether a matter is "controversial" can be informed by whether it is within the agency's standard scope. The further the agency goes outside its scope, the more likely it is to be "controversial." *See* Peirce, *We Are Not the Securities and Environment Commission*, *supra* ("[T]he information is unrelated, or only tangentially related, to the statutory objectives [of the SEC]," meaning "it likely is controversial" for the SEC to demand such information.).[9]

Another factor demonstrates the controversial nature of the proposed rule's disclosure requirements: the SEC is not "evenhanded." The proposed rule does not ask about directly analogous matters that are relevant yet contrary to the SEC's view on climate—e.g., there is no requirement to provide risk profiles in the event the government stops providing subsidies to "green" companies, or risks in the event the government withdraws from its non-binding commitments like the Paris Accords (as has already happened previously). As then-Judge Kavanaugh noted in a case about compelled country-of-origin labeling, one telltale sign of information being "controversial" for purposes of compelled speech is when the regulation is not "evenhanded" across different applications. *Am. Meat Inst. v. U.S. Dep't of Agric.*, 760 F.3d 18, 34 (D.C. Cir. 2014) (Kavanaugh, J., concurring).

Similarly, the proposed rule would impose moral opprobrium by trying to shame companies that do not satisfy the SEC's views on climate and emissions and

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[9] As noted above, *see* Parts ___ & ___, *supra*, constitutional avoidance is a strong basis for construing the SEC's statutory authority to exclude the ability to promulgate the proposed rule in the first place. That consideration was unavailable in *NAM* because Congress had expressly required the SEC to promulgate rules on conflict mineral disclosures.

make them targets for activists. In *NAM*, the court held that the First Amendment prohibited an SEC regulation requiring certain minerals to be labeled as "non-conflict free" or "conflict free." The court recognized that requiring companies to "convey[] moral responsibility" "interferes with th[e] exercise of the freedom of speech under the First Amendment." 800 F.3d at 530. Here, the proposed rule likewise seeks to make certain companies label themselves—except this time they must identify themselves as polluters responsible for climate change and its negative consequences.

It makes no difference that companies could try to explain why they are not in fact evil polluters. In *NAM*, the SEC "argue[d] that issuers can explain the meaning of 'conflict free' in their own terms," and thus the regulation did not violate the First Amendment. 800 F.3d at 556. The D.C. Circuit rejected that view, holding that "the right to explain compelled speech is present in almost every such case and is inadequate to cure a First Amendment violation." *Id.*

B. The Proposed Rule Fails Heightened Review.

Because the proposed rule seeks controversial information, it triggers strict scrutiny, which it fails. The SEC must show a compelling governmental interest and narrow tailoring. *NIFLA*, 138 S. Ct. at 2371. Intermediate scrutiny should not apply because the proposed rule regulates far more than "speech proposing a commercial transaction." *Central Hudson Gas & Electric Corp. v. Public Service Commission*, 447 U.S. 557, 561–62 (1980). But even if intermediate scrutiny did apply, the proposed rule would still fail.

There is no sufficient government interest because the SEC has not demonstrated that requiring such exhaustive disclosures causes some important effect. In fact, the evidence is to the contrary. *See* Part V, *supra*. The SEC may claim that matters of climate and environment are of utmost importance, but that would merely confirm that the SEC is not regulating disclosures but instead regulating the environment directly (which it lacks statutory authority to do). The SEC must demonstrate that *disclosure* specifically of such information serves a strong governmental interest.

The SEC will surely claim that providing more information to investors is a strong government interest, but as then-Judge Kavanaugh aptly noted, the claim that providing more information is a compelling or even "substantial" government interest is a flawed and circular theory. "[T]he Government broadly contends that it has a substantial interest in 'providing consumers with information,'" but "it is plainly not enough for the Government to say simply that it has a substantial interest in giving

consumers information. After all, that would be true of any and all disclosure requirements." *AMI*, 760 F.3d at 31 (Kavanaugh, J., concurring).

And the SEC will surely claim that it is satisfying popular demand for this information, but again, then-Judge Kavanaugh, quoting a Second Circuit opinion, correctly concluded in *AMI* that "'consumer curiosity alone is not a strong enough state interest' to sustain a compelled commercial disclosure," even when it is of accurate, factual information. *AMI*, 760 F.3d at 32 (quoting *Int'l Dairy Foods Ass'n v. Amestoy*, 92 F.3d 67, 74 (2d Cir. 1996)).

The proposed rule even bizarrely claims that because investors do not agree on the value of climate disclosures, it is *more* important that the SEC mandate blanket disclosures, 87 Fed. Reg. at 21,427 (claiming that this "[u]ncertainty in [investors'] responses means mandatory disclosures have the potential to improve information provision to investors"), which means that the *less* useful investors think particular information is, the *more* power the SEC will assert to mandate disclosure of that information. That is exactly backwards under heightened scrutiny.

Without a sufficient government interest, the proposed rule fails heightened scrutiny.

There also is a lack of narrow tailoring. The proposed rule uses a "one-size-fits-all sledgehammer" and would require an exhaustive catalogue of disclosures, many with only the most tangential connection (if any) to corporate performance. Compare this to the narrowly tailored pre-existing materiality standard (i.e., the version before the SEC tried to redefine it to include nearly everything), which is finely-tuned and flexible to each company's specific situation.

And, as noted above, the proposed rule is underinclusive because it does not ask about related matters that are relevant, like risk profiles in the event the government stops providing subsidies to "green" companies, or risks in the event the government withdraws from its non-binding commitments like the Paris Accords (as has already happened previously).

IX. The Proposed Rule Would Violate the Nondelegation and Private Nondelegation Doctrines.

If the authorizing statutes *do* permit the SEC to require disclosure of such broad and open-ended information, they would violate the nondelegation doctrine because the Executive (really, a so-called independent agency, which only heightens the violation) would have *carte blanche* to require information from companies without any hint of a meaningful limitation imposed by Congress.

A. The Proposed Rule Would Violates the Original Understanding of Nondelegation.

The Founders "separated powers within the Federal Government: The legislative power went to Congress; the executive to the president; and the judicial to the courts. That is the equilibrium the Constitution demands. And when one branch impermissibly delegates its powers to another, that balance is broken." *Tiger Lily, LLC v. U.S. Dep't of Hous. & Urb. Dev.*, 5 F.4th 666, 673 (6th Cir. 2021) (Thapar, J., concurring).

The original understanding of nondelegation prohibited any transfer of Congress's vested legislative powers to another entity. *See Gundy v. United States*, 139 S. Ct. 2116, 2135–37 (2019) (Gorsuch, J., joined by Roberts, C.J. and Thomas, J., dissenting). Article I of the Constitution begins: "*All* legislative Powers herein granted shall be vested in a Congress" (emphasis added), and the Constitution vests legislative power nowhere else.[10] This meant that Congress must "make[ ] the policy decisions when regulating private conduct" and only can "authorize another branch to 'fill up the details'" or "make the application of that rule depend on executive fact-finding." *Id.*; *see also Paul v. United States*, 140 S. Ct. 342, 342 (2019) (Kavanaugh, J., statement respecting the denial of certiorari) ("[M]ajor national policy decisions must be made by Congress and the President in the legislative process, not delegated by Congress to the Executive Branch.").

The absolute bar on delegating this power elsewhere was a fundamental principle underlying the separation of powers and on which the Constitution was premised. John Locke called the legislative power "a positive voluntary grant" by the people to the legislature, and that grant was "only to make laws, and not to make legislators," meaning a legislature "can have no power to transfer their authority of making laws, and place it in other hands." John Locke, *Two Treatises of Government* bk. II, ch. XI, § 141, at 381 (1690). St. George Tucker echoed this sentiment shortly after the Constitution was ratified, explaining that the separation of powers—including nondelegation of the legislative power—"has been uniformly the policy, and

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[10] The legislative power is the power to "adopt generally applicable rules of conduct governing future actions by private persons." *Gundy*, 139 S. Ct. at 2133 & nn.17–18 (Gorsuch, J., joined by Roberts, C.J., and Thomas, J., dissenting) (collecting sources); *see also Whitman v. Am. Trucking Ass'ns*, 531 U.S. 457, 487 (2001) (Thomas, J., concurring) ("[T]here are cases in which ... the significance of the delegated decision is simply too great for the decision to be called anything other than 'legislative.'").

constitutes one of the fundamental principles of the American governments." 1 St. George Tucker, *Blackstone's Commentaries* App. 203 (1803). And the Founders were deeply influenced by Montesquieu, who warned that "[w]hen the legislative and executive powers are united in the same person, or in the same body of magistrates, there can be no liberty," as those who "enact tyrannical laws" would "execute them in a tyrannical manner." 1 *The Complete Works of M. De Montesquieu* bk. 11, ch. VI, at 199 (1777).

Consistent with these views, James Madison explained during the Ratification Debates that "[i]f nothing more were required, in exercising a legislative trust, than a general conveyance of authority—without laying down any precise rules by which the authority conveyed should be carried into effect—it would follow that the whole power of legislation might be transferred by the legislature from itself, and proclamations might become substitutes for law." 4 *The Debates in the Several State Conventions on the Adoption of the Federal Constitution* 560 (Jonathan Elliot ed., 2d ed. 1836).

If the statutory grant of power to SEC is so broad and amorphous that the SEC can label almost anything as "in the public interest" and thereby demand disclosures on it, then the SEC has the power to "adopt generally applicable rules of conduct governing future actions by private parties," *Gundy*, 139 S. Ct. at 2133 (Gorsuch, J., joined by Roberts, C.J., and Thomas, J., dissenting), and therefore fails the original understanding of the nondelegation test.

B. The Proposed Rule Would Also Violate the More Modern Intelligible-principle Test.

The intelligible-principle test permits an agency to undertake legislative action if Congress provided an "intelligible principle." *J.W. Hampton, Jr., & Co. v. United States*, 276 U.S. 394, 409 (1928). Under that test, Congress still must "clearly delineate[ ]" the "boundaries of th[e] delegated authority." *Skinner v. Mid-Am. Pipeline Co.*, 490 U.S. 212, 214 (1989). What suffices as an intelligible principle will vary based on "'the extent and character'" of the power sought to be delegated, *Mistretta v. United States*, 488 U.S. 361, 372 (1989), and "the degree of agency discretion that is acceptable varies according to the scope of the power congressionally conferred," *Whitman*, 531 U.S. at 475.

Here, the SEC lays claim to an incredibly broad power: to regulate environmental and climate policies of nearly every company and individual in the country, directly or indirectly via the guise of an exhaustive set of forced disclosures. But if the SEC can convert itself into the EPA and then give itself the same powers

that States possess over corporate and individual behavior, there are no meaningful statutory "boundaries" on the SEC's power, which means it lays claim to the power to do this very same backdoor regulation of any and every topic, no matter how outside the traditional scope of the SEC's power.

C. The Proposed Rule Would Violate the Private Nondelegation Doctrine by Outsourcing Policy Standards to Private Groups and Foreign Entities.

Delegation to "private persons" is "legislative delegation in its most obnoxious form," because "it is not even delegation to an official or an official body, presumptively disinterested, but to private persons whose interests may be and often are adverse to the interests of others in the same business." *Carter v. Carter Coal Co.*, 298 U.S. 238, 311 (1936). In such cases, "there is not even a fig leaf of constitutional justification." *Dep't of Transp. v. Ass'n of Am. R.Rs.*, 575 U.S. 43, 62 (2015) (Alito, J., concurring). "Private entities are not vested with 'legislative Powers.' Nor are they vested with the 'executive Power,' which belongs to the President." *Id.* (citations omitted). Thus, "[t]o ensure the Government remains accountable to the public, it cannot delegate regulatory authority to a private entity." *Texas v. C.I.R.*, 596 U.S. ___, 2022 WL 892263 at *2 (Mar. 28, 2022) (statement of Alito, J., joined by Thomas and Gorsuch, JJ., respecting the denial of certiorari) (cleaned up). Needless to say, delegating such authority to *foreign* governments would be even worse than private nondelegation because Americans have no influence with those foreign governments, which often have interests diametrically opposed to those of the United States and its citizens and investors.

But that is exactly what has happened here: "What [i]s essentially a legislative determination" is now "made not by Congress or even by the Executive Branch but by a private group"—or group of foreign government officials. *Id.*; *cf. Rettig*, 993 F.3d at 410 (Ho, J., joined by Jones, Smith, Elrod, and Duncan, JJ., dissenting from denial of rehearing en banc) ("[T]his case involves a delegation of lawmaking power, not to another governmental entity, but to private bodies wholly unaccountable to the citizenry.").

The proposed rule would require companies to peg their reporting structure and baselines to the United States' non-binding "commitments" to reduce emissions pursuant to the Paris Accords and UN Climate Change Conference. 87 Fed. Reg. at 21,337 n.18, 21,353, 21,361. But those agreements are not American laws in any sense of the word (they were not passed through bicameralism, nor through the Senate as a treaty), and thus they are subject to change at any moment based on the acts of foreign governments. Outsourcing binding policy standards to foreign

governments is an egregious violation of the Constitution. The Supreme Court has said that delegation to *private* entities is the "most obnoxious form" of delegation, *Carter*, 298 U.S. at 311, but it pales in comparison to the SEC's proposed delegation to *foreign governments*.

There is also a private nondelegation violation because the proposed rule would "require that GHG emissions disclosure[s] be subject to third-party attestation" that the disclosure "is free from material misstatement," 87 Fed. Reg. at 21,393, 21,396, which outsources the SEC's own review and enforcement powers to private consultants. *See Rettig*, 993 F.3d at 410 (Ho, J., joined by Jones, Smith, Elrod, and Duncan, JJ., dissenting from denial of rehearing en banc). The proposed rule even acknowledges how rare this scenario is: "Our rules typically do not require registrants to obtain assurance over disclosure provided outside of the financial statements, including quantitative disclosure." 87 Fed. Reg. at 21,393. And although illegal delegations cannot be cured by an agency's self-imposed limitations, *see Whitman*, 531 U.S. at 472 (holding that only Congress's limitations matter for determining whether a delegation is invalid), it is still noteworthy that the proposed rule acknowledges openly that it "does not aim to create or adopt a specific attestation standard for assuring GHG emissions," 87 Fed. Reg. at 21,395, confirming that there will be no meaningful limitations placed on these private parties' attestation authority.[11]

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For all the reasons detailed above, the proposed rule would be illegal and unconstitutional. The SEC should withdraw the proposed rule rather than continue with this rulemaking.

Sincerely,

Amb. C. Boyden Gray

[11] To the extent the proposed rule indicates that it would automatically deem PCAOB, AICPA, and IAASB attestation standards to satisfy the SEC's requirements, *see* 87 Fed. Reg. at 21,401, that also violates the private nondelegation doctrine because those standards may change in the future at the whim of those private organizations, and the SEC cannot delegate the setting of standards or approval of standards to private parties.

Attachment 1:
Declaration of Jonathan Klick

DECLARATION OF JONATHAN KLICK

1. My name is Jonathan Klick. I am over the age of 18 and am competent to make this declaration. The facts set forth in this declaration are based on my personal knowledge and are submitted solely in my individual capacity. They should not be attributed to University of Pennsylvania.

2. I am the Charles A. Heimbold Jr. Professor of Law at the University of Pennsylvania Carey Law School. I am also the Erasmus Chair of Empirical Legal Studies at the Erasmus University Rotterdam, a position I have held since 2009. Before becoming joining the University of Pennsylvania in 2008, I was the Jeffrey A. Stoops Professor of Law and Economics at the Florida State University. I was the Maurice R. Greenberg Visiting Professor at Yale Law School in 2013. Additionally, I have been a visiting professor at the law schools of Columbia University, the University of Southern California, and Northwestern University. I have held visiting professor positions in the law and economics departments of Waseda University (Japan), University of Ljubljana (Slovenia), Bar Ilan University (Israel), University of Canterbury (New Zealand), University of Hamburg (Germany), and Goethe-Universität Frankfurt (Germany). I have also served as a lecturer at Germany's Max Planck Institute and the Swiss National Bank's Study Center Gerzensee. I was a senior economist with the Rand Corporation from 2007-2009. I am the editor of the *International Review of Law and Economics*, a peer reviewed economics journal.

3. I have extensive knowledge of empirical legal studies and empirical policy evaluation, as well as corporate law and corporate finance, subjects I have taught at the University of Pennsylvania and Columbia University, as well as at a host of other institutions. My scholarship has been published in many peer-reviewed economics, statistics, and policy journals, including *The Journal of Economic Perspectives*, *The Journal of the Royal Statistical Society, The Journal of Law & Economics*, *The Journal of Law, Economics, and Organization*, *The Journal of Legal Studies*, and *The American Law and Economics Review*, among others . I have also published papers in *The Stanford Law Review*, *The Columbia Law Review*, and *The University of Chicago Law Review*.

4. I regularly teach empirical methods, scientific evidence, and benefit cost analysis to state and federal judges, as well as regulators in the U.S. through programs organized by the University of Pennsylvania and George Mason University.

5. I am attaching a true and correct copy of my Curriculum Vitae to this affidavit.

6. The Securities and Exchange Commission's (SEC) proposal "to require registrants to provide certain climate-related information in their registration statements and annual reports, including certain information about climate-related financial risks and climate-related financial metrics in their financial statements" suggests that these mandated disclosures will "provide consistent, comparable, and reliable—and therefore decision-useful—information to investors to enable them to make informed judgments about the impact of climate-related risks on current and potential investments. "[1] The SEC declares that such disclosures are "in the public interest and would protect investors" and thus fall within the commission's statutory authority under the Securities Act and the Securities Exchange Act. Likewise, according to the SEC, the proposed disclosures "will promote efficiency, competition, and capital formation."[2]

7. The SEC presents little more than hand-waving to support the claim that the proposal will further its regulatory mandate. Ideally, before moving ahead, the Commission should provide a rigorous benefit-cost analysis.

8. In the absence of such an analysis, there are several reasons to be skeptical of the welfare benefits of the proposed disclosure mandate. Among the reasons for skepticism are: 1) there is little reliable empirical evidence that mandating climate-disclosures will improve the functioning of financial markets; 2) existing SEC rules already require firms to disclose material environmental risks and have done so for decades; 3) much of the relevant environmental data is already collected by the U.S. government and is readily available to market participants; 4) requiring the new disclosures will generate large compliance costs for firms, many of which will disclose pointless, non-material information simply to avoid regulatory and litigation risks that would not exist but for the new requirements, harming shareholders in the process; 5) these compliance costs, all other things equal, will be particularly burdensome for smaller firms; and 6) the social-engineering goals that are the clear impetus for this proposal are better addressed elsewhere in the federal government for reasons of regulatory competence and legitimacy. These reasons are examined more fully below.

9. The nearly 500-page SEC proposal provides no attempt to quantify the net benefits of its mandated disclosures, instead relying on conclusory qualitative statements about the benefits. Much of the SEC's discussion of the benefits of the proposal invokes research on the value of purely financial disclosures from

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[1] https://www.sec.gov/rules/proposed/2022/33-11042.pdf at p. 7.

[2] https://www.sec.gov/rules/proposed/2022/33-11042.pdf at p. 7.

which the Commission merely assumes a straightforward extrapolation to justify claimed (though unquantified) benefits of the required climate-related disclosures.

10. The proposal does place nominal costs of the disclosures on the order of $10 billion annually.[3] Even these costs underestimate the economic cost of the proposal given that they only include accounting costs, not the opportunity costs of complying with the proposed disclosures.

11. Beyond the straightforward regulatory shortcomings of the SEC's proposal, it is reasonable to ask what the limiting principle is regarding what the Commission can require firms to track and disclose. While purely financial information has a direct link to the buying and selling of securities or the casting of shareholder votes, this proposal enters new territory in that it requires disclosures premised merely on some investors' public policy preferences.

12. The proposal claims environmental risks affect financial risks, but even if that is true, firms are already obligated to disclose material risks under existing SEC rules. It is reasonable to wonder how long before some groups of investors push the SEC to require quarterly report cards on extra-financial policy metrics detailing how firms are addressing concerns over diversity, inequality, human rights, family values, trade deficits, and a host of other policy topics. While any issue conceivably could affect business performance and risk, mandated disclosures should be limited to metrics that universally influence business and financial outcomes (e.g., profits, capital structure, etc.) leaving other disclosures to a materiality standard.[4] One-size-fits-all rules increase costs without ensuring commensurate benefits. Question begging with respect to improving markets is inadequate; the SEC has not shown its work to justify this proposal as being in the public interest.

I. Benefit-Cost Analysis of Financial Regulations

13. In *Business Roundtable v. SEC* (647 F.3d 1144 [D.C. Cir. 2011]), the circuit court criticized the SEC for not engaging in a rigorous benefit-cost analysis in striking down the SEC's proxy access rule (Rule 14a-11) as arbitrary and capricious. The SEC's analysis of its proxy access rule bears a striking similarity

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[3] See https://www.sec.gov/rules/proposed/2022/33-11042.pdf at PRA Table 4. Requested Paperwork Burden under the Proposed Amendments.

[4] Another concern with disclosure creep is that as more things are disclosed, investors with limited attention will be distracted from other, perhaps more important disclosures (such as the existing financial disclosures). This is an implication of the work presented in Paul Heidhues, Johannes Johnen, and Botond Kőszegi (2021), "Browsing versus Studying: A Pro-market Case for Regulation," Review of Economic Studies, 88(2): 708–729.

to the analysis provided in the climate-related disclosures proposal in that in both instances the SEC merely nods in the direction of mixed evidence on the effects of the proposed rule claiming that there will be benefits without rigorously quantifying those benefits and comparing them to the costs of the proposal.

14. More generally, as Posner and Weyl (2014) have noted, even if not strictly required, it is odd to forgo benefit-cost analysis for financial regulations.[5] They make a compelling case that the economic costs and benefits of financial regulations are much more amenable to monetary quantification than the regulations in other areas, such as health and safety, where the U.S. formally requires benefit-cost analysis as part of the regulatory process. If, indeed, it is the case that climate-related disclosures are beneficial to investors, these benefits are financial benefits (e.g., eliminating the cost of investor research, improved financial performance, lower market transactions costs due to more liquid markets, reduced risk, etc.) which should be compared to the cost imposed on firms as they comply with these regulations.

15. The SEC provides an estimate of the lower bound of its proposals' costs[6] in its PRA Table 4 "Requested Paperwork Burden under the Proposed Amendments" but does nothing to put the expected benefits in quantified monetary terms. It is fanciful of the SEC to claim its climate-related disclosure proposal is in the public interest without subjecting the rule to a comparison of benefits with its costs.

16. What is perhaps worse than the failure to monetize the benefits of the proposed climate-related disclosures, the SEC has no systematic evidence that these disclosures will bring any benefits at all beyond a few claims that SEC mandated financial disclosures provide benefits to investors, extrapolating this to imply that mandated climate-related disclosures would have comparable benefits even though citations in the proposal itself indicate that empirical work on environmental disclosures in general is quite limited and decidedly mixed.[7]

17. The literature review explicitly relied on by the SEC concludes, in part:

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[5] See, for example, Eric A. Posner and E. Glen Weyl (2014), "Benefit-Cost Paradigms in Financial Regulation," Journal of Legal Studies, 43(s2): S1-S34.

[6] These accounting costs are lower bounds because they do not account for the value foregone by a firm as it uses its resources to comply with the regulation rather than invest in productive activities.

[7] See Hans B. Christensen, Luzi Hail, and Christian Leuz (2021), "Mandatory CSR and Sustainability Reporting: Economic Analysis and Literature Review," Review of Accounting Studies, 26: 1176–1248 cited by the SEC https://www.sec.gov/rules/proposed/2022/33-11042.pdf at 333.

> extant literature suggests that mandatory [Corporate Social Responsibility] CSR reporting has the potential to improve information to investors and other stakeholders. However, the magnitude of the resulting information effects from a CSR reporting mandate depends crucially on the extent to which firms currently withhold material CSR information. If firms largely comply with existing securities laws and already provide all material CSR-related information, then CSR standards based on financial (single) materiality should not produce much new information for investors. In this case, CSR standards could still have benefits, but they would come from standardization of reporting practices and better comparability across firms, including cost savings to firms and investors. If instead compliance with existing disclosure requirements is rather low when it comes to CSR information—as some evidence suggests—but the mandate is able to force out new and better information, then we expect capital markets to respond accordingly. In that case, CSR reporting could increase liquidity, lower the cost of capital, and improve capital allocation. However, forcing firms to provide new information likely also entails proprietary costs and heightened scrutiny by stakeholders. The former could reduce firms' incentives to innovate with respect to CSR; the latter could have desirable and undesirable effects on firms' behavior, which we discuss below. We lack empirical evidence on the underlying compliance question, so the magnitude of the information effects is hard to predict. Moreover, net effects of a mandate are largely an empirical matter on which we currently do not have much research.[8]

18. Throughout its analysis, the SEC proceeds as if the potential for some positive effects of mandated disclosure is enough to justify regulation without going to the effort to quantify those benefits or even allow for the possibility that countervailing costs could be greater.

19. By the structure of the SEC's argument, because financial disclosures have positive value, it is probably the case that the mandated climate-related disclosures have value according to the SEC. Without subjecting each specific set of disclosures to rigorous benefit-cost analysis, this argument could be used to justify any disclosure requirements proffered by the SEC. Disclosure and standardization can bring benefits; therefore, the regulation is justified, the story goes.

[8] Ibid, at 1230-1231.

20. While it is true in the artificial world of the economics classroom any provision of information to market participants makes markets function better[9] (assuming the information is available to all), we do not live in an economics classroom (and the SEC does not even exist in that classroom). In the real world, someone must pay for the information provision, and there is no guarantee that the cost of provision will be less than the incremental benefits generated by the information. Determining whether any specific disclosure mandate is likely to be in the public interest requires rigorous benefit-cost analysis based on a robust empirical literature. In the case of the climate-related disclosure proposal, the SEC has neither the benefit-cost analysis nor a strong empirical literature to justify its proposed disclosures.

II. Evidence Mixed at Best

21. In the scant literature the SEC cites that is specific to climate-related disclosures, it focuses on papers that are of questionable reliability. For example, for the proposition that mandatory disclosures improve market liquidity, the SEC cites[10] to Grewal, Hauptmann, and Serafeim (2021).[11] In this paper, the authors examine the voluntary disclosure of ESG metrics (as a fraction of Sustainability Accounting Standards Board—SASB—ESG metrics) by firms and the related effect on a metric of informativeness of the firm's stock return.[12]

22. There are a number of methodological problems with this paper,[13] but the biggest involves the fact that the estimates are based on voluntary disclosures,

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[9] Formally, even in the classroom, the information provision, as long as there are no asymmetries, will not make the market function worse and might make it perform better.

[10] https://www.sec.gov/rules/proposed/2022/33-11042.pdf at fn 987.

[11] Jody Grewal, Clarissa Hauptmann, and George Serafeim (2021), "Material Sustainability Information and Stock Price Informativeness," Journal of Business Ethics, 171: 513–544.

[12] Specifically, they use the variable "synchronicity" which measures what fraction of a firm's daily stock returns are explained by a market variable and an industry return variable divided by the fraction not explained by those variables. The basic idea is that, left with little firm-specific information, investors will determine a firm's valuation based on general market and industry expectations, whereas investors with more firm-specific information will include it in their valuations.

[13] For example, the authors cluster their standard errors at the firm level when they should be clustering at the industry level (and perhaps also at the period level). Clustering accounts for dependence among observations. Since the synchronicity variable is constructed using industry returns any unmodeled investor beliefs about the industry will generate dependence among firms within the industry. In effect, by clustering at the firm level, the authors are operating as if they have many more independent observations than they actually do. If within industry dependence is positive (i.e., the error terms among firms in a given industry are positively correlated), this will have the effect of understating the calculated standard errors which, in turn, understates the uncertainty associated with the authors' estimates. For a more detailed discussion of this issue, see A. Colin Cameron and Douglas L. Miller (2015), "A Practitioner's Guide to Cluster-Robust Inference," Journal of Human Resources,

implying they may be driven substantially by selection effects. In fact, when the authors attempt to address selection, the results change substantially. Though they continue to find statistically significant effects in the same direction (i.e., more disclosures lead to more informativeness of stock return), the magnitudes change by a factor of five. There are two ways to view these results – one possibility is that the selection effects exist, and they bias the causal estimates downward. This is the interpretation the authors choose, but it depends critically on believing their attempt at addressing the selection.

23. To address the selection, they implement a difference-in-difference model using the staggered adoption of SASB standards for ESG disclosures across industry, using firms in industries that have yet to adopt SASB standards as the "control" group and firms in industries that have adopted as the "treatment" group. This approach requires that firms in different industries really are comparable. The normal approach to support the comparability assumption is to demonstrate that the two groups exhibit "parallel trends."[14] The authors inform the reader, "We validate the parallel trends assumption between our treated and control samples, observing similar trends in material ESG disclosure up until 2013 (the year of the first SASB standards release), followed by a larger increase in material disclosure for treated firms relative to control firms in years 2014 and 2015. "[15] Unfortunately, the parallel trends assumption needs to be verified for the outcome variable, in this case their synchronicity

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50(2): 317-372. For a finance-specific discussion, see Mitchell A. Petersen (2009), "Estimating Standard Errors in Finance Panel Data Sets: Comparing Approaches," Review of Financial Studies, 22(1): 435–480. The punchline of this methodological issue is that it is likely the case Grewal, Hauptmann, and Serafeim (2021) overstate the precision of their estimates (i.e., present the estimates as less noisy than is justified) which in turn could invalidate their claims of statistical significance regarding their estimates. Other issues involve including industry fixed effects rather than firm fixed effects in most of their regression analyses. The latter would better account for idiosyncratic firm specific characteristics that are likely to be related both to the informativeness of a firm's stock returns and its decision to make ESG disclosures. Essentially, by not accounting for idiosyncratic features of the firm in their estimates, Grewal, Hauptmann, and Serafeim (2021) any estimated effects of disclosures could just as likely be due to non-disclosure-related differences among the firms, invalidating any causal conclusions in this research.

[14] The basic idea is that for the two groups to be comparable in the treatment period (but for the effect of the treatment itself), it is expected that they were comparable in the pre-treatment period. This assumption does not ensure comparability in the post treatment period (something could have changed), but since it is impossible to observe comparability of the treatment group (without getting the treatment) and the control group after treatment is applied, we are left with the second best diagnostic of examining whether the two groups performed similarly before the treatment was applied. For more discussion on this issue, see Andrew Goodman-Bacon (2021), "Difference-in-Difference with Variation in Treatment Timing," Journal of Econometrics, 225(2): 254-277.

[15] Jody Grewal, Clarissa Hauptmann, and George Serafeim (2021), "Material Sustainability Information and Stock Price Informativeness," Journal of Business Ethics, 171: 513–544 at 530.

metric, which is something that the authors apparently did not do. They present no discussion of having compared synchronicity pre-treatment between the two groups and there are no results from such an exercise presented. Thus, one is left with no way of judging whether the control group provides the plausible counterfactual necessary to draw a causal inference outside of intuition. As a basic matter, firms in different industries are likely to be different in all sorts of ways and any change in the industry coincidentally correlated with the timing of the SASB adoption would invalidate this analysis. Further, when there is such an enormous difference between the two sets of estimates (again, perhaps as large as fivefold), prudence dictates skepticism. Grewal, Hauptmann, and Serafeim (2021) does not meet basic academic standards for reliability in empirical work.[16]

24. The other research cited by the SEC in the same footnote (cited as M.E. Barth, S.F. Cahan, L. Chen, and E.R. Venter, Integrated Report Quality: Share Price Informativeness and Proprietary Costs, SOCIALLY RESPONSIBLE INVESTMENT EJOURNAL (2021)) is even more questionable.[17] First, the article is published merely on a working paper site, the Social Science Research Network (SSRN), which provides neither peer review nor peer editing. While some of the SSRN "e-journals" involve more active participation by the SSRN curators, none rises to the level of a peer edited journal, as commonly understood. Second, the article, in finding that there is a relationship between the quality of a firm's integrated reporting and synchronicity (Table 4), the authors use the non-standard one-tailed test of statistical significance to give the impression that their results are more certain than they really are. Using the more common two-sided test, their main result would only be statistically significant at the 10 percent level. Even this is likely overstated, since, as in the earlier article, the authors should be clustering on the industry level, in which case their standard errors would likely be larger, and the result would not

[16] The SEC also relies on other work by two of these three authors by citing J. Grewal, E.J. Riedl, and G. Serafeim, Market Reaction to Mandatory Nonfinancial Disclosure, 65 (7) Management Science 3061-3084 (2019) at https://www.sec.gov/rules/proposed/2022/33-11042.pdf fn 848 for the proposition that securities returns are affected by mandated ESG disclosures only to later note that this paper is unreliable ("the empirical design is based on matching, but there are reasons to believe that the treatment and control groups differ along important dimensions. Further, there is no event study plot, and results are not shown for cumulative abnormal returns after controlling for common risk factors like the Fama-French 3-factor model. It is therefore difficult to discern whether the passage of the disclosure rules is actually driving the aggregate market response.") at https://www.sec.gov/rules/proposed/2022/33-11042.pdf fn 967.

[17] Barth, Mary E. and Cahan, Steven F. and Chen, Lily and Venter, Elmar R., Firm-specific Information and Proprietary Costs: Evidence from Mandated Integrated Reports (April 19, 2022). Available at SSRN: https://ssrn.com/abstract=3857927 cited in https://www.sec.gov/rules/proposed/2022/33-11042.pdf at fn 987.

even be statistically significant at the 10 percent level. Perhaps even more problematic, in their Table 7 results, they find an inexplicable asymmetry in the effects of firms improving the quality of their reporting (stock returns are more informative) and firms reducing the quality of reporting (stock returns are also more informative though not statistically significant). It is difficult to imagine a model where investors learn more about firms through better reporting but do not learn less about firms through worse reporting. This research is unreliable and does not constitute a scientifically sound foundation for claiming that climate disclosures will improve the functioning of securities markets.

25. In addition to citing unreliable research in support of its proposal, the SEC also cites irrelevant research in pushing its regulation. For example, the SEC proposal asserts "In addition, firms that choose to disclose emissions have lower costs of equity and loan spreads," and cites work by Dhaliwal et al. (2011) in support. Putting aside methods problems with this work,[18] the results in this paper are, at best, irrelevant to the SEC's assertion and might be fairly characterized as invalidating the proposal's assertion. For instance, the authors find no effect of voluntary ESG disclosures in and of themselves on a firm's cost of capital, writing: "It appears that CSR disclosure per se is not significantly associated with a change in a firm's future cost of equity capital.[19]" Instead, they find that firms disclosing positive CSR metrics face a lower future cost of capital. This result suggests that it is not the act of disclosing that drives positive capital market reactions but doing and publicizing positive CSR activities. In fact, the results get stronger when the authors drop disclosure of environmental reports.[20] Another source for this assertion is again an unpublished SSRN working paper and it too finds not that disclosure is associ-

[18] Methods issues should not be ignored. There is no attempt to isolate causal effects, industry fixed effects are used instead of firm fixed effects which would be a more rigorous attempt to limit the effect of confounding characteristics of a firm, and a host of other issues leave this research unreliable.

[19] Dhaliwal, D. S., Li, O. Z., Tsang, A., & Yang, Y. G. (2011). Voluntary Nonfinancial Disclosure and the Cost of Equity Capital: The Initiation of Corporate Social Responsibility Reporting. The Accounting Review, 86(1), 59–100 at 74.

[20] Ibid, see Table 4, Panel B, specification III.

ated with better credit terms but disclosure of positive environmental metrics.[21] For a third source, the SEC again chooses an unpublished SSRN working paper[22] that does not find what the SEC suggests it does. When the authors examine a matching model, they do not in general find that firms that choose to disclose climate risk experience a statistically significant difference in their cost of equity than do firms that do not disclose. It is only when they do what they call a "doubly robust" approach do they find statistically significant differences. But it is not clear that their "doubly robust" approach is valid, as they offer no citation to any justification of the approach in the econometrics or statistics literatures (or any citation at all). While there are modern methods that go under the heading of doubly robust,[23] this article does not appear to be using them.[24] Without greater justification or explanation, no one should credit this research.

III. Benefits Likely Small

26. There are a number of reasons to think a more serious analysis of the benefits of the climate-related disclosure mandate would yield little incremental value. First, the available empirical analyses indicate that investors are already well informed about firms' material climate risks. Second, existing rules already require that firms disclose material risks arising from environmental factors. Third, much of the relevant underlying data are already available publicly via disclosures required by the EPA.

27. The SEC claims that mandating disclosures will make it easier for investors to find and compare firms' relevant climate-related information, but the SEC itself cites at least one study suggesting that mutual fund investors (often viewed as an investor group with the lowest information instead passively relying on fund managers for their cues) appear to already be aware of climate risk and direct their capital accordingly. Right in the abstract of Reboredo and Otero (2021) it states, "Our results suggest that mutual fund investors are

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[21] Kleimeier, Stefanie and Viehs, Michael, Carbon Disclosure, Emission Levels, and the Cost of Debt (January 7, 2018). Available at SSRN: https://ssrn.com/abstract=2719665.

[22] Matsumura, Ella Mae and Prakash, Rachna and Vera-Munoz, Sandra C., Climate Risk Materiality and Firm Risk (February 5, 2022). Available at SSRN: https://ssrn.com/abstract=2983977

[23] In economics, see Dmitry Arkhangelsky and Guido W. Imbens (forthcoming), "Double-Robust Identification for Causal Panel Data Models," Econometrics Journal, and in biostatistics, see Antonelli, J., Cefalu, M., Palmer, N., & Agniel, D. (2018). Doubly robust matching estimators for high dimensional confounding adjustment. Biometrics, 74(4), 1171–1179.

[24] Matsumura, et al appear to engage in propensity score matching and then to estimate a regression on the matched pairs.

aware of climate-related transition risks as evidenced by their investment decisions.[25]" Interestingly, this paper's results show a great deal of heterogeneity in how much investors care about information on a firm's exposure to climate-risk with sensitivity of fund flows being much greater in mutual funds bearing the socially responsible investment designation, as well as in funds with worse financial performance.[26] This indicates that investors who are interested respond to the information already available.

28. Bolton and Kacperczyk (2021) provide indirect evidence that investors are already informed and act accordingly regarding firms' climate risks, finding that firms with higher carbon emissions generate higher returns in cross sectional analysis. To increase confidence in a causal interpretation, they examine the effect of increasing emissions in an industry on the average return in that industry, likewise finding a statistically significant positive relationship. They rule out that this positive relationship is due to unexpected profitability or other sources of risk, leaving them to conclude that investors are demanding higher returns to compensate them for the risks posed by high emission firms. The existence of this premium is hard to understand unless investors already know about the risks posed by these firms. They conclude that their "results are consistent with an interpretation that investors are already demanding compensation for their exposure to carbon emission risk. "[27]

29. A complementary paper by Ilhan, Sautner, and Vilkov (2020) reinforces this implication.[28] Studying options, they find that purchasing downside tail risk protection for carbon-intense firms is statistically significantly more expensive relative to the price of similar protection for cleaner firms. Furthering confidence in the causal interpretation of their results, they show that when the background policy risk decreases, as proxied by the election of Donald Trump, they show that the main effect goes away (i.e., there is no longer a cost increase associated with hedging downside risk for firms associated with more carbon production). This "natural experiment" is particularly impressive in that the surprising nature of Trump's election provides a source of exogenous

[25] Juan C. Reboredo and Luis A. Otero (2021), "Are investors aware of climate-related transition risks? Evidence from mutual fund flows," Ecological Economics, 189: 107148 cited by the SEC https://www.sec.gov/rules/proposed/2022/33-11042.pdf at fn. 17.

[26] Juan C. Reboredo and Luis A. Otero (2021), "Are investors aware of climate-related transition risks? Evidence from mutual fund flows," Ecological Economics, 189: 107148 at Table 8.

[27] Patrick Bolton and Marcon Kacperczyk (2021), "Do investors care about carbon risk?" Journal of Financial Economics, 142(2): 517-549.

[28] Emirhan Ilhan, Zacharias Sautner, and Grigory Vilkov (2020), "Carbon Tail Risk," Review of Financial Studies, 34(3): 1540-1571.

variation in the degree to which firms engaged in more pollution face regulatory risk. This set-up mimics a randomized experiment to limit the degree to which other variables could be confounding the empirical estimates. These dynamics are hard to explain if individuals are not aware of (and sensitive to) the underlying climate risks posed to these firms. These results are not consistent with the view that investors have difficulty assessing a firm's climate-related risks absent SEC mandated disclosures.

30. As for the quantitative effects of climate-related disclosures, putting aside the methods concerns raised above regarding the Grewal et al. paper cited by the SEC, the magnitudes of the effects of disclosures on measures of market health and robustness are often quite small. It is easiest to look at the effect they estimate of a firm releasing a sustainability report since the marginal effect there is a change from 0 (no report) to 1 (report). In most cases, they find no statistically significant effect of a firm releasing a sustainability report on their measures of market information and liquidity. As for their main measure of disclosures, it is measured as a fraction of recommended disclosures, so it is a little difficult to conceive of the relevant magnitudes of their estimated effects, especially when combined with their synchronicity outcome given its intangible nature as a measure of residual variation (which most people will have difficulty conceptualizing). However, it may be more concrete to examine the marginal effect on the authors' measures of liquidity such as spread.[29] Their point estimate of -0.144 implies that if a firm went from zero disclosures to making all disclosures, the average daily bid-ask spread for that firm would decline by about 15 percent. Perhaps a more natural comparison, however, would be to ask how would the bid ask spread change if the disclosure fraction increased by a standard deviation (as observed in the data).[30] Framed this way, one would expect the average bid ask spread to decline by less than 3 percent.[31] Similar magnitudes would apply for the other measures of market liquidity. These are not large effects.

IV. Mandating Redundancy

31. Perhaps the reason the studies above find that investors already act as if they are well-informed about a firm's climate risks is that material ESG risks already require disclosure. As the SEC proposal itself notes, "The Commission

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[29] Defined as the natural logarithm of the average daily bid ask spread magnitude scaled by the stock price (i.e., average spread as a fraction of stock price).

[30] A standard deviation is a common measure of volatility and so might be more representative than examining a change from 0% to 100% given that many firms already make some disclosures, and the SEC proposal does not require disclosure of all of the SASB ESG metrics.

[31] The coefficient of -0.144 multiplied by the disclosure standard deviation of 0.185 equals 2.7 percent.

first addressed the disclosure of material environmental issues in the early 1970s when it issued an interpretive release stating that registrants should consider disclosing in their SEC filings the financial impact of compliance with environmental laws."[32] It goes on, "After almost a decade of consideration, the Commission adopted rules in 1982 mandating disclosure of information relating to litigation and other business costs arising out of compliance with federal, state, and local laws that regulate the discharge of materials into the environment or otherwise relate to the protection of the environment. In addition to these specific disclosure requirements, the Commission's other disclosure rules requiring, for example, information about material risks and a description of the registrant's business, could give rise to an obligation to provide disclosure related to the effects of climate change."[33]

32. Among others, Regulation S-K includes many triggers for disclosing ESG risks. To note just a few: item 103 requires disclosure of litigation or regulatory action that the firm reasonably believes will generate material risk; item 105 is a catchall that covers "material factors that make an investment in the registrant or offering speculative or risky"; item 303 which requires disclosure of "material information relevant to an assessment of the financial condition and results of operations of the registrant including an evaluation of the amounts and certainty of cash flows from operations and from outside sources. The discussion and analysis must focus specifically on material events and uncertainties known to management that are reasonably likely to cause reported financial information not to be necessarily indicative of future operating results or of future financial condition"; item 305 which covers quantitative and qualitative disclosures about market risk; and if that's not enough, items 1201-1208 add extra requirements for firms engaged in oil and gas production. Beyond these specific items, material risks likely will be included in the management discussion and analysis sections of the firms' filings, and all of these issues show up again when discussing acquisitions that affect ESG risks.

33. In its discussion draft, the SEC ESG subcommittee suggested that the current, unguided approach has not resulted in consistent, comparable, complete and meaningful disclosure. However, they go on to admit that highly prescriptive approaches, such as those adopted in Europe, "may result in the production of metrics that are not needed to assess an issuer's material risks, and unnecessary cost.[34]" Hoping for some Goldilocks "just right" level of prescription, optimistically ignores the fact that one size does not fit all in terms of material

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[32] https://www.sec.gov/rules/proposed/2022/33-11042.pdf at 15.

[33] https://www.sec.gov/rules/proposed/2022/33-11042.pdf at 16 (citations omitted).

[34] https://www.sec.gov/files/potential-recommendations-of-the-esg-subcommittee-12012020.pdf at 4.

risks. This is surely true across industries (as hinted by creating special S-K items for the oil and gas industry), but is likely true even within them (e.g., the relevance of the risk of a carbon tax is quite different for Tesla than it is Ford though both firms are nominally in the same industry).

34. Exxon, for example, has been disclosing risks arising from climate change regulation and changing consumer preferences in its annual reports for the better part of a decade.[35] The same is true for Ford,[36] General Electric,[37] Wal-Mart,[38] and many other U.S. firms, big and small. It is true those disclosures are not directly comparable with each other, but that is because the risks and opportunities faced by each of these companies are not comparable either. This is not a problem with the format or the content of the disclosures waiting to be solved by regulatory guidance; instead, it is a reflection of firm heterogeneity. The SEC proposes to mandate comparability by, among other things, making the disclosures machine readable, but it is unclear what valuable information exists that could be meaningfully compared firm to firm in the same industry, much less across different industries.

35. The materiality framework currently used in securities regulation accounts for this heterogeneity, while any attempt at regularization is bound to either be so over-inclusive that it generates valueless disclosures that cost real resources or so under-inclusive that very little is gained relative to the current framework. As indicated above, there are reliable papers using modern sophisticated empirical methodologies that find investors respond in predictable ways to not only changes in a firm's characteristics that are relevant to climate risk (such as emissions), but they also recalibrate their valuations when background factors external to the firm itself (for example, the election of a president less likely to implement strict environmental standards) change in ways affecting the underlying expected risks of the firm. Results like that are consistent with the idea that the current materiality standard (as opposed to the proposed mandated rules) is sufficient to provide market participants with the relevant information necessary to assess financial risks faced by firms.

36. There is some evidence, in fact, that mandating particular environmental disclosures does not provide more useful information to market participants. In a

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[35] https://corporate.exxonmobil.com/Investors/Investor-relations/Investor-relations-publications-archive#Form10K

[36] https://shareholder.ford.com/investors/financials-and-filings/default.aspx#annual

[37] https://www.ge.com/investor-relations/annual-report

[38] https://stock.walmart.com/investors/financial-information/annual-reports-and-proxies/default.aspx

paper completely ignored by the SEC, Christensen et al.[39] examines the effect of mandated disclosures on disagreements among financial intermediaries providing information to investors (i.e., rating agencies), finding that when countries mandate ESG disclosures, there is increasing disagreement among the ratings of those intermediaries which in turn has negative consequences for the financial markets. Using a worldwide sample, the authors examine country-specific disclosure mandates, exhibiting significant variation allowing them to separately analyze environment, social, and governance specific mandates in a natural experiment framework. Further, the empirical methods in the paper are sophisticated (e.g., as opposed to some of the work cited by the SEC, this paper includes firm fixed effects and allows for dynamic treatment effects) providing reliable causal estimates of the effects of disclosure mandates.

37. They find that when firms are required to engage in mandatory ESG disclosure, rating agency disagreement (as measured by the standard deviation of a firm's ratings across the rating agencies) increases. This result holds even when the researchers control for firm fixed effects, period fixed effects, and rating agency fixed effects, and the results hold regardless of whether the effect of the mandate is modeled as a discrete change or as a dynamic change. The estimated effect of mandates on disagreement is statistically significant and robust across the various specifications.[40] The authors then show that this disagreement among the ratings agencies is associated with a number of bad outcomes in the market. Specifically, they find a statistically significant increase in the magnitude of price swings and the volatility of firm returns. They also estimate an increase in the bid-ask spread, though that effect is not statistically significant.[41] They also find evidence that this increase in ratings agency disagreements leads to reductions in both equity and debt issuance by firms.[42]

38. The authors conclude, "In contrast to evidence in other settings where greater disclosure helps reduce disagreement among information intermediaries, we find that greater ESG disclosure leads to greater ESG disagreement across ESG rating agencies. These findings are robust to including firm fixed effects and using a difference-in-differences design with staggered mandatory ESG

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[39] Christensen, Dane M.; Serafeim, George; Sikochi, Anywhere (2022), "Why is Corporate Virtue in the Eye of The Beholder? The Case of ESG Ratings," Accounting Review, 97(1): 147-175.

[40] See Table 6.

[41] See Table 8.

[42] See Table 9.

disclosure shocks. These findings also appear to be primarily driven by the environmental and social disclosures, rather than governance disclosures. We also find that ESG disclosure appears to amplify disagreement about ESG metrics, particularly for ESG outcomes. Overall, our results show that greater ESG disclosure does not appear to help resolve ESG rating disagreement. "[43] These results, at a minimum, highlight the problematic nature of the SEC's assumption that because mandatory financial disclosures have generated benefits for the functioning of financial markets, the same will be true of climate-related disclosures. This reliable, natural experiment-based research paper finds not only do the benefits found for financial disclosures not appear to extrapolate to climate disclosures, but there may actually be negative unintended consequences with indications that markets are less robust when environmental disclosures are mandated.

V. Let Me Google That for You

39. Beyond the voluntary disclosures and those prompted by the existing SEC materiality standard, there is already significant information collected by the government and provided to the public related to firms' climate-related activities. For example, according to the Environmental Protection Agency, "The Greenhouse Gas Reporting Program (GHGRP) collects Greenhouse Gas (GHG) data from large emitting facilities, suppliers of fossil fuels and industrial gases that result in GHG emissions when used, and facilities that inject carbon dioxide underground. "[44] Even more conveniently, the EPA provides a ready-made spreadsheet that links those data to "their highest level U.S. parent company. "[45] As of the date of this writing, these data are available in a consistent format annually for the period 2010-2020. Further, using the facility IDs in that dataset, it is easy to link the parent companies with a wealth of other information about their GHG emissions as well as other pollutant datasets held by the EPA,[46] allowing one to pinpoint (with either a street address or latitude and longitude coordinates) exactly where a firm's GHGs are being produced, allowing interested members of the public, including investors, to even judge sub-national (e.g., state) regulatory risks that could affect a firm. As the SEC itself notes, "The EPA estimates that the required reporting under their rule

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[43] Christensen, Dane M.; Serafeim, George; Sikochi, Anywhere (2022), "Why is Corporate Virtue in the Eye of The Beholder? The Case of ESG Ratings," Accounting Review, 97(1): 147-175 at 169.

[44] https://www.epa.gov/ghgreporting/data-sets

[45] https://www.epa.gov/system/files/other-files/2021-10/ghgp_data_parent_company_10_2021.xlsb

[46] For example, https://www.epa.gov/system/files/other-files/2021-10/2020_data_summary_spreadsheets.zip . The EPA also has tools to examine a facility's enforcement and compliance history; see https://echo.epa.gov/facilities/facility-search?srch=adv

covers 85-90% of all GHG emissions from over 8,000 facilities in the United States."[47]

40. The SEC implies that these existing disclosures (as well as state and international requirements faced by many firms) are somehow inadequate because some climate-relevant pollutants are not covered. However, given the EPA's long-standing regulatory experience and competence in these areas (as opposed to the complete lack of experience or competence on these matters at the SEC), deference to that agency on what constitutes material risks would seem to be in order.

VI. The Cost of Disclosure

41. Analysts have long hypothesized that disclosure requirements represent a drag on the formation of public companies. Many believe this especially affects smaller firms, given that many of the disclosure costs are scale-invariant and, therefore, impose a relatively large burden on smaller-scale enterprises. Robert Bartlett (2009) provides indirect evidence of this effect in the context of complying with 2002's Sarbanes-Oxley Act in which small and medium-sized firms that went private after the act went into effect were less likely to use high-yield debt (which also triggered Sarbanes-Oxley-related reporting requirements) to finance their transactions than was the case in pre-Sarbanes-Oxley going private transactions.[48] More direct measures of the cost of Sarbanes-Oxley compliance can be found in Iliev (2010) and Dharmapala (2016) both of which put the compliance costs of Sarbanes-Oxley on the order of $5 million for a marginal firm.[49]

42. A more recent study examining the Sarbanes-Oxley disclosure requirements, as well as a 1992 SEC rule that expanded the set of smaller firms that could provide less disclosure (financial, business operations, executive compensation, etc.), a 2002 rule that accelerated the filing of annual disclosures, and the

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[47] https://www.sec.gov/rules/proposed/2022/33-11042.pdf at 298.

[48] Robert P. Bartlett (2009), "Going Private but Staying Public: Reexamining the Effect of Sarbanes-Oxley on Firms' Going-Private Decisions," University of Chicago Law Review: 76(1): Article 2, available at: https://chicagounbound.uchicago.edu/uclrev/vol76/iss1/2

[49] Both Peter Iliev (2010), "The Effect of SOX Section 404: Costs, Earnings Quality, and Stock Prices," Journal of Finance, 65(3): 1163-1196 and Dhammika Dharmapala (2016), "Estimating the Compliance Costs of Securities Regulation: A Bunching Analysis of Sarbanes-Oxley Section 404(b)," CESIFO WORKING PAPER NO. 6180 exploit thresholds triggered by a firm's public float that allowed for compliance delays for smaller firms. Iliev compared firms on either side of the threshold in a difference-in-difference framework, while Dharmapala examined the distribution of float sizes around the threshold both before and after Sarbanes-Oxley went into effect. Both approaches yielded comparable compliance cost estimates.

creation of the "emerging growth company" designation under the 2011 JOBS Act which allowed for smaller companies to provide less disclosure, including more abbreviated time periods in the management discussion and analysis section of their annual and quarterly reports likewise finds large costs of compliance across this more varied scope of disclosures.[50]

43. Similar to the Dharmapala paper, this research compares the distribution of firms' public floats around the regulatory thresholds for application of the rule, surmising that if firms find compliance with the rule to be costly, it is worth forgoing some public funding to avoid it. Obviously, firms will not sacrifice more in terms of the value of public funding than the cost they hope to avoid, but marginal firms may find it advantageous to implicitly "pay" some amount of funding if doing so allows them to avoid an even higher compliance cost. By examining how much public funding these marginal firms forgo, the authors can place a "revealed preference" estimate on the cost of the regulation. One of the benefits of this study design is that it allows the researcher to compare any differences in the distribution of firms around the threshold where the regulation applies to counterfactual distributions in periods where the regulation does not exist, increasing confidence in the causal interpretation of the estimate. The researchers can examine whether there are comparable jumps in the distribution at other points that are not meaningful with respect to the regulation. If no comparable jumps are observed, this too increases the likelihood that any estimated effect is caused by the regulation.

44. Across the four regulatory thresholds examined, the researchers find compliance costs on the order of 4 percent of market capitalization for the effected firms. Further, the authors find that "Smaller firms bear disproportionate amounts of regulatory costs relative to their size because a large portion of these costs are fixed."[51] They also find that these costs reduce the likelihood a firm will go public in the first place.

45. The SEC's implication that it intends for the ESG disclosures to be similar to financial disclosures is suggestive that costs may be comparable. Intuitively, however, there are reasons to think the ESG disclosures will be even more costly. The studied financial disclosures are mostly expansions of processes that firms already were undertaking, using well-established internal and external resources such as their existing auditors. ESG disclosures likely will involve entirely new processes and resources, both inside and outside of the

[50] Michael Ewens, Kairong Xiao, and Ting Xu (2021), "Regulatory Costs of Being Public: Evidence from Bunching Estimation," NBER Working Paper 29143.

[51] Ibid, p. 5.

firm. Because of this, it is reasonable to believe that existing figures in the literature may be lower bound estimates of the cost of the proposed ESG disclosures. It is safe to assume that any ultimate disclosure regime will cost firms millions of dollars annually, with the cost falling disproportionately on smaller firms.

46. The SEC places its own cost estimate in excess of $10 billion annually. This estimate is constructed using a range of inputs from firms' experiences in complying with other country's disclosure mandates to U.S. firms' experience with complying with EPA data provision requirements. Almost surely this is a lower bound. For starters, these costs are accounting costs, whereas the real economic cost would include the opportunity costs of these expenditures. Time and resources spent on complying with the SEC rule are not available for productive activities within the firm. Beyond this, the compliance costs with the EPA requirements do not include retention of outside auditors. Using standard audit fees as a guide likely understates the eventual costs as these disclosures will require audit firms to expand the scope (as opposed to just the scale) of their services. Additionally, as the SEC acknowledges[52] but does not cost out, these required disclosures will inevitably lead to shareholder litigation which is often costly in terms of time, financial resources, and reputation. Either this litigation, and its attendant costs, will manifest or, perhaps just as bad, firms will engage in wasteful defensive tactics (e.g., over-comply with the mandate, hire more and more expensive experts to assure the public the firm is doing everything correctly, agree to preemptive settlements, etc.) to avoid this litigation.

47. All of these considerations virtually guarantee that the SEC regulation will cost billions of dollars while the benefits, as discussed above, are speculative and highly uncertain. There is even the possibility, based on Christensen et al (2022), that the presumed benefits of disclosure are negative. Absent a rigorous benefit-cost analysis that quantifies the asserted benefits (and appropriately discounts them for the obvious uncertainty), proceeding with this mandate is not justified.

VII. If Everybody Wants the Disclosure, How Can It Be Bad?

48. In place of actual evidence on the benefits of its proposed mandate, the SEC provides the attestations of institutional investors such as Blackrock and Vanguard calling for mandatory disclosure, as well as other regulatory stakeholders such as Pricewaterhouse Coopers indicating that these disclosures will help investors to find and compare climate-related information. The latter is

[52] https://www.sec.gov/rules/proposed/2022/33-11042.pdf at 294.

sort of like listening to a fox's argument that leaving the henhouse door open will make it easier to get your morning eggs and should be dismissed just as quickly. But as the SEC notes repeatedly, many institutional investors representing trillions in investment dollars collectively appear to support a climate-related disclosure mandate.

49. There are at least a few reasons to question the value of these comments as evidence in favor of the value of mandated disclosure. First, given the large amount of capital they represent and the resources under their control, it is largely implausible that these investors could not obtain the relevant information from the sources noted above or from the companies themselves.[53] Instead, Barzuza et al (2020) have offered a theory that these institutional investors simply use these kinds of statements to signal to investors in the millennial generation who collectively have shown an interest in pursuing social interests through their investment behavior, largely independent of any concerns for the functioning of financial markets.[54] Regardless, as pointed out in a comment by 22 prominent law and finance professors, when climate-related shareholder proposals are voted on by shareholders, very few pass, suggesting that there is not a favorable consensus around the proposition that investors generally want something like the SEC proposal.[55]

VIII. Stick to Finance

50. Given the paucity of evidence that the proposed disclosures will have any beneficial effects on the health and functioning of the financial markets, the SEC proposal begins to look like an attempt to achieve environmental gains through the backdoor. While such a goal might be laudable, the SEC has neither the experience nor the competence to do the EPA's job. More or different disclosures could easily be required of firms by the EPA as part of its existing data collection requirements. It is presumptuous of the SEC to determine that the existing data collection is inadequate.

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[53] For example, see Caroline Flammer, Michael Toffel, and Kala Viswanathan (2021), "Shareholder activism and firms' voluntary disclosure of climate change risks," Strategic Management Journal. Also, Tao Chen, Hui Dong, and Chen Lin (2020), "Institutional shareholders and corporate social responsibility," Journal of Financial Economics, 135: 483-504.

[54] Michal Barzuza, Quinn Curtis & David H. Webber, Shareholder Value(s): Index Fund ESG Activism and the New Millennial Corporate Governance, 93 USC Law Review 1243, 1244 (2020).

[55] See Lawrence A. Cunningham et al (2022), File No. S7-10-22 Proposal on Climate-Related Disclosures for Investors, at 7.

IX. Conclusion

51. The SEC is proposing to mandate a costly set of disclosures without demonstrating these disclosures would improve the functioning of the financial markets. While a rigorous benefit cost analysis should be performed, there are a number of reasons to believe the asserted benefits of these disclosures will prove to be small. Firms with material climate-related risks are already required to disclose these risks to investors, and other public sources already track much of the relevant information. These intuitions likely contribute to the failure of the literature to find robust benefits of climate-related disclosures on metrics of financial market health.

Executed on: 6/15, 2022

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EDUCATION

J.D., *George Mason University School of Law*, Arlington Virginia, Awarded May 2003 (*cum laude*)
Robert A. Levy Fellow in Law and Liberty (Tuition Waiver and Stipend); Whitney Writing Prize

Ph.D., Economics, *George Mason University*, Fairfax Virginia, Defended November 2001
Fields: Public Choice, Industrial Organization and Public Policy

M.A., Economics, *University of Maryland at College Park*, Awarded May 1999
Fields: Public Finance, Political Economy of Growth & Income Distribution, Microeconometrics

B.S., Economics, *Villanova University*, Villanova Pennsylvania, Awarded May 1997 (*summa cum laude)*
Villanova University Presidential Scholar and British Marshall Scholarship Finalist (100 nationally)

PROFESSIONAL EXPERIENCE

University of Pennsylvania: Charles A. Heimbold, Jr. Professor of Law (Fall 2021 – Present); Professor of Law (Summer 2008 – Present); Visiting Professor of Law (Fall 2007).

Erasmus University Rotterdam: Erasmus Chair of Empirical Legal Studies (2009 – Present).

Lodestar Law & Economics: Chief Economist (2021 – Present).

Waseda University: Visiting Law Professor (Summer 2016).

Yale Law School: Maurice R. Greenberg Visiting Professor (Fall 2013).

University of Ljubljana Faculty of Economics: Visiting Professor (Summer 2013).

Bar Ilan University Faculty of Law: Visiting Professor (December 2012).

University of Canterbury Department of Economics and Finance: Erskine Visitor (Summer 2010).

Property and Environment Research Center: Julian Simon Fellow (Summer 2009); Lone Wolf Fellow (Summer 2012).

The RAND Corporation, Institute for Civil Justice: Senior Economist (2007 – 2009).

Northwestern University Searle Center: Visiting Scholar (January 2009); Instructor in Judicial Education Program (Spring 2009 – Spring 2010); Senior Economist (Spring 2009 – Spring 2010).

University of Hamburg: Visiting Professor of Law and Economics (Summer 2008, 2010, 2011).

Columbia Law School: Visiting Professor (Spring 2008).

University of Southern California School of Law: Visiting Professor (August/September 2007).

Northwestern University School of Law: Visiting Professor (November 2006).

Florida State University: Visiting Professor (Spring 2022); Assistant Professor of Law (Summer 2004 – Summer 2007); Jeffrey A. Stoops Professor of Law (Summer 2005 – Spring 2008); Associate Professor (August 2007 – Spring 2008); Courtesy Professor of Economics (Summer 2004 – Spring 2008).

TEACHING EXPERIENCE

Antitrust (Penn, Waseda); Corporate Finance (Florida State, Columbia); Corporations/Business Associations (Penn, Florida State, Waseda); Econometrics (Canterbury – Graduate Level); Econometrics (George Mason – Undergraduate Level); Empirical Law and Economics (Penn; Florida State, Erasmus, Hamburg, Bar Ilan, Goethe-Universität Frankfurt, Max Planck Research School, Ljubljana, Study Center Gerzensee, Lucerne Graduate Academy); Evidence Based Crime Prevention (Penn Criminology Department); Expert Evidence (Penn); Law and Economics (Penn, Florida State, Villanova University); Law and Economics of the Firm (Penn – JD/MBA); Micro/Macro (Prince George's County Community College, University of Maryland, George Mason); Police and Crime Policy Seminar (Florida State); Statistics for Lawyers (Penn, Florida State, Max Planck Institute Hamburg);Torts (Penn, Yale)

JONATHAN KLICK

REFEREED PUBLICATIONS

- "Sobering Up After the Seventh Inning: Alcohol and Crime Around the Ballpark," (with John MacDonald) *Journal of Quantitative Criminology*, 37(3): 813-834 (2021).
- "The Ineffectiveness of 'Observe and Report' Patrols on Crime," (with Marco Fabbri) *International Review of Law and Economics*, 65: 105972 (2021).
- "Deterrence and Liability for Intentional Torts," (with John MacDonald) *International Review of Law and Economics*, 63: 105926 (2020).
- "Medicare Secondary Payer and Settlement Delay," (with Eric Helland) *Journal of Empirical Legal Studies*, 15(2): 356-377 (2018).
- "What Should Empirical Legal Economists Do?" *Journal of Institutional and Theoretical Economics*, 174 (1): 29-33 (2018).
- "Reducing False Guilty Pleas and Wrongful Convictions Through Exoneree Compensation," (with Murat Mungan) *Journal of Law and Economics*, 59(1): 173-189 (2016).
- "The Effect of Private Police on Crime: Evidence from a Geographic Regression Discontinuity Design," (with John MacDonald and Ben Grunwald) *Journal of the Royal Statistical Society Series A*, 179(3): 831-846 (2016).
- "The Developmental Effect of State Alcohol Prohibitions at the Turn of the 20th Century," (with Mary Evans, Eric Helland, and Ashwin Patel) *Economic Inquiry*, 54(2): 762-777 (2016).
- "Preemption in the Rehnquist and Roberts Courts: An Empirical Analysis," (with Michael Greve, Michael Petrino, and J.P. Sevilla) *Supreme Court Economic Review*, 23: 353-392 (2015).
- "The Effect of Any Willing Provider and Freedom of Choice Laws on Prescription Drug Expenditures," (with Joshua Wright) *American Law and Economics Review*, 17(1): 192-213 (2015).
- "Discounting and Criminals' Implied Risk Preferences," (with Murat Mungan) *Review of Law and Economics*, 11(1): 19-23 (2015).
- "Appellate Caseload and the Switch to Comparative Negligence," (with Jef DeMot and Michael Faure) *International Review of Law and Economics*, 42(1): 147-156 (2015).
- "Forfeiture of Illegal Gains, Attempts, and Implied Risk Preferences," (with Murat Mungan) *Journal of Legal Studies*, 43(1): 137-153 (2014).
- "Valid Inference in Single Firm, Single Event Studies," (with Jonah Gelbach and Eric Helland) *American Law and Economics Review*, 15(2): 495-541 (2013).
- "The Effect of Abortion Liberalization on Sexual Behavior: International Evidence," (with Sven Neelsen and Thomas Stratmann) *American Law and Economics Review*, 14(2): 457-487 (2012).
- "Does Anyone Get Stopped at the Gate? An Empirical Analysis of State Adoption of the *Daubert* Trilogy," (with Eric Helland) *Supreme Court Economic Review*, 20: 1-33 (2012).
- "The Effect of Contract Regulation on Franchising," (with Bruce Kobayashi and Larry Ribstein) *Journal of Institutional and Theoretical Economics*,168(1), 38-53 (2012).
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- "Strong Claims and Weak Evidence: Reassessing the Predictive Ability of the IAT," (with Hart Blanton, James Jaccard, Barbara Mellers, Gregory Mitchell, and Philip Tetlock) *Journal of Applied Psychology*, 94(3): 567-582 (2009).
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- "Differential Victimization: Efficiency and Fairness Justifications for the Felony Murder Rule," (with Nuno Garoupa) *Review of Law and Economics*, 4(1): 407-418 (2008).
- "Social Networks, Self Denial, and Median Preferences: Conformity as an Evolutionary Strategy," (with Francesco Parisi) *Journal of Socio-Economics*, 37(4): 1319-1327 (2008).
- "Do Spa Visits Improve Health: Evidence from German Micro Data," (with Thomas Stratmann) *Eastern Economic Journal*: 34(3): 364-374 (2008).
- "Abortion Access and Risky Sex Among Teens: Parental Involvement Laws and Sexually Transmitted Diseases," (with Thomas Stratmann) *Journal of Law, Economics, and Organization*, 24(1): 2-21(2008).
- "Diabetes Treatments and Moral Hazard," (with Thomas Stratmann) *Journal of Law & Economics*, 50(3): 519-538 (2007).

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- "Medical Malpractice Reform and Physicians in High Risk Specialties," (with Thomas Stratmann) *Journal of Legal Studies*, 36(S2): S121-S142 (2007).
- "The Tradeoff Between Regulation and Litigation: Evidence from Insurance Class Actions," (with Eric Helland) *Journal of Tort Law*, 1(3): Article 2 (2007).
- "The Effect of Judicial Expedience on Attorney Fees in Class Actions," (with Eric Helland) *Journal of Legal Studies*, 36(1): 171-187 (2007).
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- "A Law and Economics Perspective on Terrorism," (with Francesco Parisi and Nuno Garoupa) *Public Choice*, 128(1-2): 147-168 (2006).
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- "Subsidizing Addiction: Do State Health Insurance Mandates Increase Alcohol Consumption?," (with Thomas Stratmann) *Journal of Legal Studies*, 35(1): 175-198 (2006).
- "Preemption in the Rehnquist Court: A Preliminary Empirical Assessment," (with Michael Greve), *Supreme Court Economic Review*, 14: 43-94 (2006).
- "Are Mental Health Insurance Mandates Effective?: Evidence from Suicides," (with Sara Markowitz) *Health Economics*, 15(1): 83-97 (2006).
- "Limited Autocracy," *Review of Law and Economics*, 1(2): 293-304 (2005).
- "Intra-Jurisdictional Tax Competition," (with Francesco Parisi) *Constitutional Political Economy*, 16(4): 387-395 (2005).
- "Using Terror Alert Levels to Estimate the Effect of Police on Crime," (with Alexander Tabarrok) *Journal of Law and Economics*, 48(1): 267-279 (2005).
- "Data Watch: Tort-Uring the Data," (with Alexander Tabarrok and Eric Helland) *Journal of Economic Perspectives*, 19(2): 207-220 (2005).
- "The IOM Report: Too Quick to Diagnose Bias," (with Sally Satel) *Perspectives in Biology and Medicine*, 48(1): S15-S25 (2005).
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- "The Disunity of Unanimity," (with Francesco Parisi) *Constitutional Political Economy*, 14(2): 83-94 (2003).
- "The Differential Calculus of Consent," (with Francesco Parisi) *Journal of Public Finance and Public Choice*, 20(2-3): 115-123 (2002).
- "Do Dollars Make a Difference?: The Relationship Between Expenditures and Test Scores in Pennsylvania's Public Schools," *American Economist*, Vol. 44(1): 81-87 (2000).

LAW REVIEW PUBLICATIONS

- "Surveying the Not Yet Dead," UC Davis Law Review, 53(5): 2647-2654 (2020).
- "Requiem for a Paradox: The Dubious Rise and Inevitable Fall of Hipster Antitrust," (with Joshua Wright, Elyse Dorsey, and Jan Rybnicek) *Arizona State Law Journal*, 51(1): 293-369 (2019).
- "The Logic and Limits of Event Studies in Securities Fraud Litigation," (with Jill Fisch and Jonah Gelbach) *Texas Law Review*, 96(3): 553-621 (2018).
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- "Everything's Bigger in Texas Except the Medmal Settlements," (with Tom Baker and Eric Helland) *Connecticut Insurance Law Journal*, 22(1): 1-46 (2016).
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- "Shleifer's Failure," *Texas Law Review*, 91(4): 899-909 (2013).
- "Recessions and the Social Safety Net: The Alternative Minimum Tax as a Counter-Cyclical Fiscal Stabilizer," (with Brian Galle) *Stanford Law Review*, 63(1): 187-246 (2010).

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- "Federalism, Variation, and State Regulation of Franchise Termination," (with Bruce Kobayashi and Larry Ribstein) *Entrepreneurial Business Law Journal*, 3(2): 355-380 (2009).
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- "Mandatory Waiting Periods for Abortion and Female Mental Health," *Health Matrix*, 16(1): 183-208 (2006).
- "Government Regulation of Irrationality: Moral and Cognitive Hazards," (with Greg Mitchell) *Minnesota Law Review*, 90(6): 1620-1663 (2006).
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- "The Micro Foundations of Standard Form Contracts: Price Discrimination vs. Behavioral Bias," *Florida State University Law Review*: 32(2): 555-569 (2005).
- "Functional Law and Economics: The Search for Value-Neutral Principles of Law Making," (with Francesco Parisi) *Chicago-Kent Law Review*, 79(2): 431-450 (2004).
- "Econometric Analyses of U.S. Abortion Policy: A Critical Review," *Fordham Urban Law Journal*, 31: 751-782 (2004).

BOOK CONTRIBUTIONS, ETC.

- "Antitrust Enforcement and Inequality," (with Joshua Wright) *Distributional Impacts of Regulation*, forthcoming.
- "Big Tech's Digital Robber Barons," Regulation, 44(3): 26-29 (2021).
- Review of the Literature on Diversity on Corporate Boards, AEI Report (2021).
- "Is the Digital Economy Too Concentrated?" GAI Report on the Digital Economy (2020).
- "Empirical Analysis of Fiduciary Law," (with Max Schanzenbach) *Oxford Handbook of Fiduciary Law* (Oxford University Press, 2019).
- *History of Law and Economics*, editor with Henry Butler (Edward Elgar Publishing, 2018).
- "A Price for Injustice," (with Murat Mungan) *Regulation*, 40(2): 12-15 (2017).
- "Roam if You Want to?" (with Gideon Parchomovsky) *Regulation*, 40(1): 18-22 (2017).
- *Law and Economics of Federalism*, editor (Edward Elgar Publishing, 2017).
- "Empirical Law and Economics," (with Jonah Gelbach) *Oxford Handbook of Law and Economics* (Oxford University Press, 2017).
- "Infantilization by Regulation," (with Greg Mitchell) *Regulation*, 39(2): 32-37 (2016).
- "The Value of Training in Quantitative Methods for Judges," *Economic Evidence in EU Competition Law* (Intersentia, 2016).
- "Regulation and Litigation: Complements or Substitutes," (with Eric Helland) *The American Illness: Essays on the Rule of Law* (Yale University Press, 2013).
- "Why Aren't Regulation and Litigation Substitutes?: An Examination of the Capture Hypothesis," (with Eric Helland) *Regulatory Breakdown? The Crisis of Confidence in U.S. Regulation* (University of Pennsylvania Press, 2012).
- "Mobile Phones and Crime Deterrence: An Underappreciated Link," (with John MacDonald and Thomas Stratmann) *Handbook of Criminal Law* (Law and Economics Handbook Series, Edward Elgar, 2012).
- "Global Justice and Trade," (with Fernando Teson) *Global Justice and International Economic Law: Opportunities and Prospects* (Cambridge University Press, 2012).
- "Fire Suppression Policy, Weather, and Western Wildland Fire Trends: An Empirical Analysis," (with Jason Johnston) *Wildfire Policy: Law and Economics Perspectives* (RFF Press, 2012).
- "Abortion Access and Risky Sex," (with Thomas Stratmann) *Handbook of Family Law* (Law and Economics Handbook Series, Edward Elgar, 2011).
- "The Law and Economics of Regulatory Competition," *Production of Legal Rules, Encyclopedia of Law and Economics*, 2nd ed. (Edward Elgar, 2011).

BOOK CONTRIBUTIONS, ETC. (CONTINUED)

- "Legal Origins and Empirical Credibility," (with Eric Helland) *Does Law Matter? On Law and Economic Growth*, Ius Commune Europaeum 100 (Intersentia Publishers, 2011).
- *The Empirical Revolution in Law and Economics: Inaugural Lecture for Erasmus Chair in Empirical Law and Economics* (Eleven International Publishing, 2011).
- "Response to Reducing Soda Consumption," (with Eric Helland) *Regulation*, 34(2): 3 (2011).
- "Slim Odds," (with Eric Helland) *Regulation*, 34(1): 20-23 (2011).
- "The AMT's Silver Lining," (with Brian Galle), *Regulation*, 33(3): 24-29 (2010).
- "The Dangers of Letting Someone Else Decide," Slippery Slopes and the New Paternalism, Cato Unbound (2010).
- "Revealing Revealed Preferences," Slippery Slopes and the New Paternalism, Cato Unbound (2010).
- "Police, Prisons, and Crime," (with Alexander Tabarrok) *Law and Economics of Crime* (Edward Elgar Publishing, 2010).
- "A More Equitable and Efficient Approach to Insuring the Uninsurable," (with Eric Helland) *Our Fragmented Health Care System: Causes and Solutions* (Oxford University Press, 2010).
- "Terrorism," (with Nuno Garoupa and Francesco Parisi) *Criminal Law and Economics* (Edward Elgar Publishing, 2009).
- "Functional Law and Economics," (with Francesco Parisi) *Theoretical Foundations of Law and Economics* (Cambridge University Press, 2009).
- "What Drives the Passage of Damage Caps?" (with Catherine Sharkey) *Empirical Studies of Judicial Systems Around the Globe* (Institutum Jurisprudentiae, Academia Sinica, 2008).
- "Econometric Studies of Law," "Functional Law and Economics," "Multivariate Methods in Legal Studies," and "Formal Methods in Legal Scholarship," *Encyclopedia of Law and Society* (Sage Publications, 2007).
- *The Health Disparities Myth: Diagnosing the Treatment Gap* (with Sally Satel): AEI Press, 2006.
- "Are Doctors Biased?" (with Sally Satel) *Policy Review*, 136(April & May): 41-54 (2006).
- "First, Do No Harm . . ." (with Thomas Stratmann) *Regulation*, 26(1): 9 (2003).
- "Drug Re-Importation's No-Win Solution," *Regulation*, 25(1): 6-7 (2002).

PRESENTATIONS

- Chinese University of Political Science and Law, 70th Anniversary Conference (June 2022).
- Florida State University College of Law Faculty Workshop (March 2022).
- Law and Economics Center Conference on Woke Capitalism (February 2022).
- Latin American Law and Economics Association Annual Meeting (2021).
- Keynote Address, Polish Association of Law and Economics Annual Meeting (September 2021).
- Penn Law Faculty Workshop (July 2021).
- La Pontificia Universidad Católica del Perú, Law and Economics Lecture (May 2021)
- George Mason Law and Economics Workshop (March 2021).
- Texas A&M Crime Workshop (August 2020).
- Penn Law Faculty Workshop (February 2020).
- Rotterdam Institute of Law and Economics Workshop (January 2020).
- Amsterdam Center for Law and Economics Workshop (January 2020).
- Georgetown Law and Economics Workshop (November 2019).
- George Mason Law and Economics Workshop (November 2019).
- Penn Antitrust Symposium (October 2019).
- FTC Hearing, Roundtable with State Attorneys General (June 2019).
- Instituto Tecnológico Autónomo de México Economics Department Seminar (April 2019).
- Instituto Tecnológico Autónomo de México Law School Seminar (April 2019).
- Rotterdam Institute of Law and Economics Seminar (February 2019).
- Tilburg University Economics Department Seminar (January 2019).
- Columbia University Law and Economics Seminar (October 2018).
- Herbert Smith Freehills Connected and Autonomous Vehicles Conference (April 2018).

PRESENTATIONS (CONTINUED)

- Erasmus University Young Scholars' Conference Keynote Speech (April 2018).
- Vanderbilt University Law School Seminar (March 2018).
- University of North Carolina Law School Seminar (March 2018).
- West Virginia University Economics Seminar (February 2018).
- George Mason Law Review Antitrust Symposium (February 2018).
- Washington & Lee Journal of Civil Rights and Social Justice Symposium (November 2017).
- Penn Program on Regulation, The Distribution of Regulatory Impacts in the US (October 2017).
- Bloomberg Government, Health Disparities in Medicare Bundled Payments (October 2017).
- Penn Law Faculty Workshop (September 2017).
- Conference on Empirical Legal Studies Asia, Advanced Empirical Methods (June 2017).
- Journal of Institutional and Theoretical Economics Conference (June 2017).
- Villanova University Law School Workshop (March 2017).
- Erasmus University Rotterdam, Experiments at the Crossroads of Law and Economics (March 2017).
- George Mason University, Philosophy, Politics, and Economics Workshop (February 2017).
- UCLA, Law and Economics Workshop (February 2017).
- Indiana University, Ostrom Workshop, Symposium on Natural Resource Governance (October 2016).
- University of Missouri School of Law, Paternalism Conference (October 2016).
- Notre Dame University, Law and Economics Workshop (September 2016).
- Waseda University, Symposium on the Determinants of Health and Healthcare Costs (July 2016).
- Hitotsubashi University, Institute of Economic Research (June 2016).
- American Law and Economics Association Annual Meeting (May 2016).
- Erasmus University Rotterdam, European Doctorate in Law and Economics Seminar (March 2016).
- University of Chicago, Law and Economics Workshop (February 2016).
- Hebrew University of Jerusalem, Law and Economics Workshop (January 2016).
- University of Virginia, Law and Economics Workshop (October 2015).
- University of Sassari, Institutions, Individual Behavior, and Economic Outcomes Workshop (June 2015).
- Chinese University of Political Science and Law, University Lecture (May 2015).
- Chinese University of Political Science and Law, Rise of the Regulatory State Conference (May 2015).
- Florida State University, Global Justice Seminar (February 2015).
- University of Texas, Law and Economics Workshop (November 2014).
- University of Bologna, Keynote Address, EDLE Meeting (November 2014).
- Rutgers Camden, Healthcare Entitlements Discussion (November 2014).
- University of Leeds, Keynote Address, Behavioral Approach to Law Conference (June 2014).
- Erasmus Experiments at the Crossroads of Law and Economics Workshop (April 2014).
- Cardozo School of Law, Faculty Workshop (March 2014).
- NYU Colloquium on Market Institutions and Economic Processes (February 2014).
- George Washington University Law School Faculty Workshop (February 2014).
- University of Toronto Law and Economics Workshop (February 2014).
- LEC Workshop for Law Professors on Risk, Injury, Liability, & Insurance (February 2014).
- NYU Law and Economics Workshop (January 2014).
- Yale Faculty Seminar (December 2013).
- American Law and Economics Association Annual Meeting (May 2013).
- Villanova University, Department of Economics (February 2013).
- Hospital of University of Pennsylvania, Radiology Department Seminar (January 2013).
- Law and Economics Center, Law and Economics of Contracts (January 2013).
- Florida State University College of Law Workshop (January 2013).
- Bar-Ilan University Faculty of Law Seminar (December 2012).
- University of Haifa Faculty of Law Seminar (December 2012).
- Conference on Empirical Legal Studies, Stanford University (November 2012).
- University of Texas Law School Law and Economics Seminar (October 2012).

PRESENTATIONS (CONTINUED)

- Max Planck Research School Uncertainty Topics Keynote Speech (October 2012).
- University of Ljubljana Faculty of Economics Seminar (October 2012).
- University of Pennsylvania Law School Faculty Seminar (October 2012).
- Georgetown University Law Center Law and Economics Workshop (September 2012).
- Property and Environment Research Center Conference on Environmental Finance (August 2012).
- Property and Environment Research Center Workshop (July 2012).
- Cornell University, Empirical Health Law Conference (April 2012).
- Brooklyn Law School, Federalist Society Workshop (March 2012).
- Washington University in St. Louis Law School, Federalist Society Workshop (March 2012).
- Penn/NYU Law & Finance Conference (February 2012).
- West Virginia University Economics Seminar, (February 2012).
- Rotterdam Institute of Law and Economics Workshop (December 2011).
- Regulatory Breakdown Conference, Penn Program on Regulation (September 2011).
- Journal of Institutional and Theoretical Economics Conference (June 2011).
- Law and Economics Center, Workshop on Empirical Methods for Law Professors (May 2011).
- Queen's University, Faculty of Law, Law and Economics Workshop (April 2011).
- European Masters in Law and Economics Program, Mid-Year Meeting Keynote Lecture (February 2011).
- AALS, Law and Economics Panel (January 2011).
- Law and Economics Center, American Disease Conference (December 2010).
- University of Arizona/Resources for the Future, Wildfire Symposium (November 2010).
- George Mason University, Levy Workshop (November 2010).
- Erasmus University Rotterdam, European Doctorate in Law and Economics Seminar (October 2010).
- Erasmus University School of Law, Inaugural Empirical Legal Studies Chair Lecture (November 2010).
- University of Amsterdam, Center for the Study of EU Contract Law, Workshop (October 2010).
- University of Otago, Economics Department Seminar (September 2010).
- University of Canterbury, Economics and Finance Department Seminar (September 2010).
- University of Hamburg, Hamburg Lectures on Law and Economics (July 2010).
- Penn Law European Society, Academic Program Lecture (June 2010).
- American Law and Economics Association, Annual Conference (May 2010).
- St. Louis Lawyers Chapter of the Federalist Society, Health Care Reform Lecture (April 2010).
- Temple University Beasley School of Law, Human Behavior Colloquium (April 2010).
- University of Virginia Law School, Olin Conference on Crime (March 2010).
- Erasmus University School of Law, Behavioral Approaches to Contract and Tort Group (January 2010).
- European Doctorate in Law and Economics Program, Erasmus University Rotterdam (January 2010).
- University of Illinois Corporate Colloquium (November 2009).
- New York Law School Federalist Society, Health Care Lecture (October 2009).
- Fordham University Federalist Society, Health Care Reform Debate (October 2009).
- University of Pennsylvania, Wharton Research Scholars Seminar (September 2009).
- Property and Environment Research Center (August 2009).
- Harvard Medical School, Race Disparities Panel (April 2009).
- Northwestern University Federalist Society Panel Discussion (November 2009).
- Stanford Law School, Law and Economics Workshop (February 2009).
- University of Virginia School of Law, Law & Economics Workshop (January 2009).
- Southern Economic Association, Annual Meeting (November 2008).
- Northwestern University, Searle Center, Symposium on Civil Liability (October 2008).
- University of Pennsylvania Law School, Faculty Retreat (September 2008).
- Harvard University, Petrie-Flom Center, Our Fragmented Health Care System (June 2008).
- CUNY Graduate Center/NBER, Seminar in Health, Labor, and Demography (May 2008).
- Columbia University, Empirical Methods and the Law Workshop (May 2008).
- The Rand Corporation, Institute for Civil Justice Annual Board Meeting (March 2008).

PRESENTATIONS (CONTINUED)

- George Mason University, Philosophy, Politics, and Economics Workshop (March 2008).
- Columbia University Law School, Faculty Workshop (March 2008).
- Claremont McKenna College/RAND, The Future of Securities Litigation Conference (February 2008).
- University of Michigan Law School, Law and Economics Workshop (February 2008).
- American Economic Association, Annual Meeting (January 2008).
- Harvard Law School, Law and Economics Workshop (November 2007).
- Conference on Empirical Legal Studies (November 2007).
- Emory University School of Law, Faculty Colloquium (November 2007).
- Rice University/University of Houston Economics, Microeconomics Workshop (October 2007).
- University of Pennsylvania Law School, Faculty Workshop (October 2007).
- George Mason University School of Law, Levy Fellows Workshop (October 2007).
- The RAND Corporation, Institute for Civil Justice Workshop (September 2007).
- University of Southern California School of Law, Faculty Workshop (September 2007).
- University of Southern California School of Law, Faculty Workshop (August 2007).
- Yale Law School, Faculty Enrichment Lectures (July 2007).
- Florida State College of Law, Primer on Statistics for Legal Scholars (July 2007).
- Federal Trade Commission, Behavioral Economics and Consumer Policy Workshop (April 2007).
- Yale Law School, Law Economics and Organization Workshop (March 2007).
- Florida State University, Center for Demography and Population Health Workshop (March 2007).
- University of Toronto, Law & Economics Workshop (February 2007).
- Florida State University Department of Economics, Faculty Workshop (March 2007).
- University of Georgia School of Law, Faculty Workshop (February 2007).
- University of Southern California School of Law, Law and Economics Workshop (February 2007).
- Cornell Department of Policy Analysis and Management, Faculty Workshop (November 2006).
- Boston University School of Law, Faculty Workshop (November 2006).
- University of Illinois College of Law, Faculty Workshop (November 2006).
- Northwestern University School of Law, Faculty Workshop (October 2006).
- Conference on Empirical Legal Studies (October 2006).
- American Law and Economics Association, Annual Meeting (May 2006).
- University of Maryland Department of Economics, Labor/Public Workshop (April 2006).
- Columbia University School of Law, Blue Sky Workshop (March 2006).
- American Enterprise Institute, Health Disparities Myth Panel (February 2006).
- William & Mary School of Law, Faculty Workshop (February 2006).
- Georgetown University Law Center, Law and Economics Workshop (February 2006).
- George Mason University School of Law, Levy Workshop (February 2006).
- Northwestern University School of Law, Faculty Workshop (February 2006).
- American Association of Law Schools, Annual Meeting (January 2006).
- International Society for New Institutional Economics, Annual Meeting (September 2005).
- Northwestern University School of Law, Law and Economics Workshop (September 2005).
- University of California Berkeley, Law and Economics Workshop (August 2005).
- Southeastern Association of Law Schools, Annual Meeting (July 2005).
- American Law and Economics Association, Annual Meeting (June 2005).
- West Virginia University Department of Economics, Faculty Workshop (January 2005).
- Southern Economics Association, Annual Meeting (November 2004).
- International Society for New Institutional Economics, Annual Meeting (September 2004).
- American Law and Economics Association, Annual Meeting (May 2004).

PROFESSIONAL SERVICE

- Editor, *International Review of Law and Economics* (2012 – Present).
- Dean's Distinguished Fellow, Villanova University Charles Widger School of Law (2017-2020).
- Instructor: Various Law and Economics Center Training Programs (judges, law professors, regulators, etc); Global Antitrust Institute; European Doctorate in Law and Economics; European Masters in Law and Economics.
- External Reviewer for Chair/Tenure/Appointments Candidates: Harvard University Law School; Columbia University Law School; NYU School of Law; Northwestern University School of Law; University of Michigan Law School; Georgetown University Law School; Washington University Law; Cornell Law School; Boston University Law School; Emory University Law; University of Toronto Law School; UC Irvine Law School; Duke University School of Law; George Mason University School of Law; William & Mary Law School; University of Alberta Law School; Mercer University School of Law; Institutum Jurisprudentiae Academia Sinica; Clemson University; Claremont McKenna College; Cornell University; UNC Chapel Hill; West Virginia University; University of Southern California Medical School; University of Southern California School of Pharmacy; University of Wisconsin; ITAM.
- Grant Reviewer: National Science Foundation; Smith Richardson Foundation; Hong Kong Research Grants Council, Israel Science Foundation; French National Research Agency; Research Foundation Flanders; Netherlands Organization for Scientific Research (NWO), Eutopia European University.
- Referee: *Journal of Law & Economics*; *Journal of Legal Studies*; *Journal of Law, Economics, and Organization*; *American Law & Economics Review*; *International Review of Law and Economics*; *Law & Social Inquiry*; *Supreme Court Economic Review*; *Review of Law and Economics*; *Journal of Empirical Legal Studies; Review of Economics and Statistics; American Economic Journal: Applied Economics*, *Journal of Public Economics*; *Review of Industrial Organization; Journal of Health Economics; American Journal of Health Economics; Health Affairs; Journal of Policy Analysis and Management*; *European Journal of Health Economics*; *European Journal of Political Economy; Public Choice*; *Journal of Institutional Economics; Economic Inquiry*; *Southern Economic Journal*; *Health Services Research Journal; Eastern Economic Journal*; *Contemporary Economic Policy*; *Social Science Quarterly*; *Policy Studies Journal*; *Social Science & Medicine*; *Social Science Research; Criminology; Journal of Criminal Justice; Journal of Quantitative Criminology; Journal of Crime and Justice; Journal of Experimental Criminology; Journal for the Scientific Study of Religion; Economics and Human Biology; Harvard Law Review*; *Stanford Law Review; University of Pennsylvania Law Review; Adaptive Behavior; MDPI Sustainability; PLOS One*; *Moral Philosophy and Politics*; Aspen Publishers; Edward Elgar Publishing; Wolters Kluwer Law & Business Publishing; Oxford University Press; Cambridge University Press, Harvard University Press, Columbia University Press, University of Chicago Press.

C.V. current as of June 16, 2022 (https://www.law.upenn.edu/faculty/jonathan-klick)

Attachment 2:
Declaration of Roy W. Spencer

DECLARATION OF ROY W. SPENCER

1. My name is Roy W. Spencer. I am over the age of 18 and am competent to make this declaration. The facts set forth in this declaration are based on my personal knowledge and are submitted solely in my individual capacity. They should not be attributed to the University of Alabama in Huntsville.

2. I am a Principal Research Scientist at the University of Alabama in Huntsville and received my Ph.D. in meteorology at the University of Wisconsin-Madison in 1981. Before becoming a Principal Research Scientist, I was a Senior Scientist for Climate Studies at NASA's Marshall Space Flight Center, where I and Dr. John Christy received NASA's Exceptional Scientific Achievement Medal for our global temperature monitoring work with satellites.

3. I have extensive knowledge of meteorology and climate science, beyond the above credentials. I have over 40 peer-reviewed publications and 6 books, all in those fields. Most notably our 2017 paper *UAH Version 6 global satellite temperature products: Methodology and results* describes our latest global temperature monitoring technique from satellite data

4. Most recently, I published *Global Warming Skepticism for Busy People*. The book discusses the evidence for limited warming from humanity's greenhouse gas emissions, and the evidence against warming-induced changes in storms or drought.

5. In justifying its new proposed rule, "The Enhancement and Standardization of Climate-Related Disclosures for Investors" ("Proposed Rule") the Securities and Exchange Commission stresses its belief in the mounting physical risks to business assets posed by climate change caused by greenhouse gas ("GHG") emissions.

6. The physical risks it fears include both acute and chronic risks.[1] Acute physical risks are defined as short-term, "event-driven," risks, such as those from the "increased severity of extreme weather events, such as cyclones, hurricanes, or floods."[2] Chronic physical risks refer to "longer-term shifts in climate patterns

[1] 87 Fed. Reg. at 21,349 (Apr. 11, 2022).

[2] TCFD, *Recommendations of the Task Force on Climate-related Financial Disclosure,* (June 2017) https://assets.bbhub.io/company/sites/60/2021/10/FINAL-2017-TCFD-Report.pdf (hereinafter "TCDF Report").

(e.g., sustained higher temperatures) that may cause sea level rise or chronic heat waves."[3]

7. In assessing the relevance of these risks, SEC asserts that "many" physical risks associated with climate change "have already impacted"[4] companies and that there is a "consensus" that in the long term climate change "poses significant global risk."[5]

8. In support of these claims the Proposed Rule turns mainly to two sources: (1) Recommendations of the Task Force on Climate-related Financial Disclosures[6]; and (2) the Financial Stability Oversight Council Report on Climate-Related Financial Risk.[7] But neither the Proposed Rule nor the reports identify substantial scientific evidence to support their claims. The FSOC Report appears to rely exclusively on a single dataset to support its claim of increased acute climate-related financial risk and the Proposed rule appears to rely on only one other peer-reviewed study (projecting increased wildfire risk). I discuss both below.

9. This is unsurprising as the well-developed and rigorous body of scientific evidence on these issues points strongly in the opposite direction. While there are acute risks to businesses posed by the weather, there is significant evidence that the extreme weather events that cause these risks are *not* increasing and that the damage from natural disasters in lives lost and in economic cost relative to GDP are decreasing.

10. Further, while there is a scientific consensus that global temperatures have increased and are continuing to increase, there is great uncertainty in the magnitude and timescale of this temperature increase. There is even greater uncertainty about the risks that will (or will not) flow from these changes.

11. The SEC also requires disclosure of GHG emissions because "reducing its GHG emissions by 50-52 percent by 2035," as the FSOC Report explains, is "necessary . . . to limit the rise in average global temperatures to 1.5°C."[8]

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[3] *Id.*

[4] 87 Fed. Reg. at 21,350.

[5] 87 Fed. Reg. at 21,339 n.40.

[6] TCDF Report.

[7] Financial Stability Oversight Committee, *Report on Climate-Related Financial Risk*, (2021) https://home.treasury.gov/system/files/261/FSOC-Climate-Report.pdf (hereinafter "FSOC Report").

[8] FSOC Report.

12. While such reductions may be necessary, they are not sufficient. Even if U.S. GHG emissions are reduced to zero, global GHG emissions will remain largely unchanged because U.S. emissions make up only a small fraction of the world's total and the largest emitters are projected to increase emissions in the near term.

13. Finally, the SEC's risk analysis tries to have it both ways. In addition to the climate risks just discussed, the SEC puts a heavy emphasis on "transition risks" it states are likely to be associated with the enactment of climate-related regulatory policy necessary to *stop* climate change.

14. Viewed as alternatives, this makes some sense: a penny of prevention may be worth a pound of cure. Either we face the risks of climate change unprepared *or* we expend resources to mitigate that risk. But the SEC illogically views them as cumulative—baselessly assuming that the anticipated costs of transition will not in fact mitigate the anticipated harms of climate change one whit. This is like making a risk assessment where you buy insurance and then assume that insurance won't cover anything.

15. Taken together, these flaws in the SEC's proposal suggest that the agency's recommendations aren't related to any financially material risks, much less material risks that covered businesses aren't already disclosing. Compared with other financial risks, the uncertainty associated with climate-related risks is enormous, and mandatory reporting is therefore likely only to confuse and burden our capital markets.

I. SEC's assertion that acute "physical risks have already impacted" many businesses misrepresents the actual trends in natural disasters.

16. Contrary to the assertion in the proposed rule, "acute risks" from extreme weather events, such as hurricanes, floods, tornadoes, and wildfires are not increasing.[9]

17. The frequency of hurricanes making landfall in the United States has declined slightly since 1900.[10] Further, the hurricanes that are occurring are not increasing in intensity. As Bjorn Lomborg explains, the "frequency of Category 3 and above hurricanes making landfall since 1900 is also trending slightly

[9] 87 Fed. Reg. at 21,350.

[10] Philip Klotzbach, et al., *Continental U.S. Hurricane Landfall Frequency and Associated Damage: Observations and Future Risks*, Bulletin of the American Metorological Society (July 1, 2018), https://journals.ametsoc.org/bams/article/99/7/1359/70330/Continental-U-S-Hurricane-Landfall-Frequency-and

down."[11] While there has been some increase in strong hurricanes in recent decades, this is not a rise from pre-industrial baselines but "a recovery from a deep minimum in the 1960s–1980s."[12]

18. While absolute damage from hurricanes is increasing somewhat, this is almost entirely linked to increasing development along vulnerable coastlines. Today, hurricanes around the world cause damage worth 0.04% of global gross domestic product (GDP)[13]. Even if the proportion of strong hurricanes does increase, damage from hurricanes is still projected to drop to only 0.02% of global GDP by 2100 because as the world economy gets richer infrastructure tends to become more resilient.[14]

19. A similar story can be told with flooding. Flooding costs as a share of GDP have declined nearly tenfold since the beginning of the 20th century, to 0.05% of GDP, while annual flood death risk in fatalities per million dropped nearly threefold.[15]

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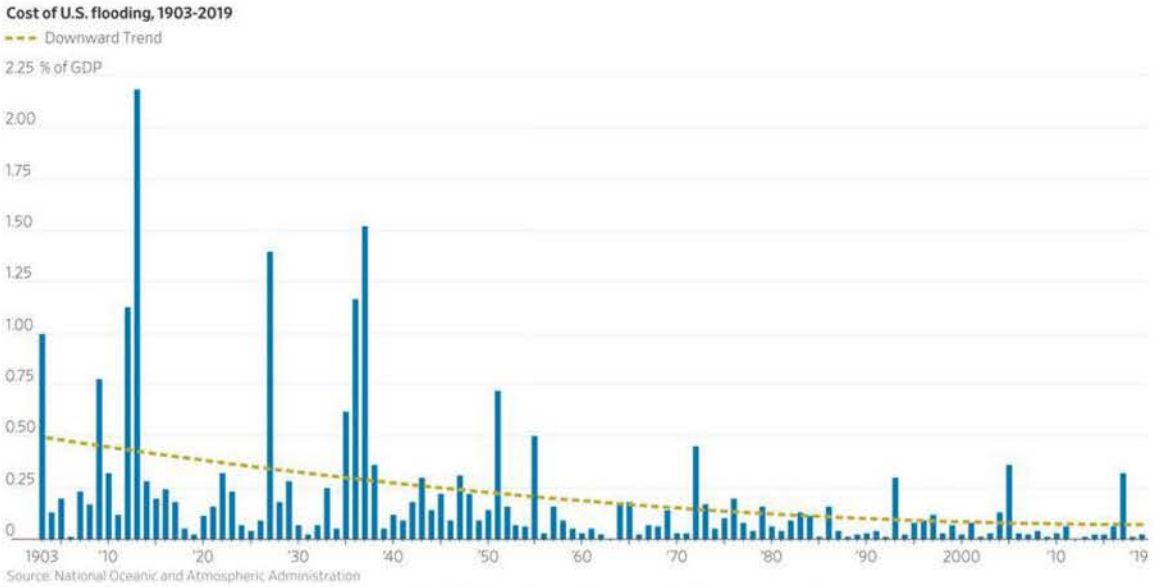
[11] Bjorn Lomborg, *Hurricane Ida Isn't the Whole Story on Climate*, Wall St. J. (Sep. 15, 2021), https://www.wsj.com/articles/hurricane-ida-henri-climate-change-united-nations-un-galsgow-conference-natural-disaster-infrastructure-carbon-emissions-11630704844.

[12] Gabriel A. Vecchi, et al., *Changes in Atlantic major hurricane frequency since the late-19th century*, 12 Nature Communications (July 13, 2021), https://www.nature.com/articles/s41467-021-24268-5

[13] Bjorn Lomborg, *Hurricane Ida Isn't the Whole Story on Climate*, Wall St. J. (Sep. 15, 2021), https://www.wsj.com/articles/hurricane-ida-henri-climate-change-united-nations-un-galsgow-conference-natural-disaster-infrastructure-carbon-emissions-11630704844.

[14] Robert Mendelsohn, et al., The impact of climate change on global tropical cyclone damage, Nature Climate Change (Jan. 15, 2012), https://www.nature.com/articles/nclimate1357.

[15] Bjorn Lomborg, The World Is Getting Safer From Floods, Wall St. J. (Sep. 8, 2021), https://www.wsj.com/articles/flood-climate-change-ipcc-united-nations-infrastructure-deaths-cost-severe-weather-11631134276.



Cost of U.S. Flooding, 1903-2019.[16]

20. Increases in absolute flood costs are more connected to growing development in floodplains. The number of homes exposed to floods in Atlanta, for example, increased 58% in the twenty years between 1990 and 2010.[17] Absolute damage increased because the number of homes impacted increased, not because the number or intensity of floods increased.

21. This trend is noted in a peer-reviewed article cited by the U.N. Intergovernmental Panel on Climate Change (IPCC) report on flood damage, Inga J. Sauer et al., *Climate signals in river flood damages emerge under sound regional disaggregation,* 12 Nature Communications 2128 (2021), https://doi.org/10.1038/s41467-021-22153-9, which finds that increased exposure to flooding and increased resilience to flooding—and not climate-change induced changes in flooding—are the largest drivers of flood damage changes globally.

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[16] Bjorn Lomborg, The World Is Getting Safer From Floods, Wall St. J. (Sep. 8, 2021), https://www.wsj.com/articles/flood-climate-change-ipcc-united-nations-infrastructure-deaths-cost-severe-weather-11631134276.

[17] Alex P. Ferguson & Walker S. Ashley, *Spatiotemporal analysis of residential flood exposure in the Atlanta, Georgia metropolitan area*, 87 Natural Hazards 989 (Mar. 24, 2017), https://link.springer.com/article/10.1007/s11069-017-2806-6.

22. Additionally, there has been no observable increase in the frequency of major tornadoes over time.[18] While some research has suggested that increased global temperatures will create conditions more favorable to the formation of severe thunderstorms and tornadoes, such effects are not detectable in observations today.[19] As much as tornadoes are "exhibiting changes that may be related to climate change" the "scientific understanding is not yet detailed enough to confidently project the direction and magnitude of future change."[20]

23. The single peer-reviewed study the proposed rule references to support their claim that acute physical risks are increasing is Aurora A. Gutierrez et al., *Wildfire Response to Changing Daily Temperature Extremes in California's Sierra Nevada*, 7 Science Advances (Nov. 17, 2021). But this study does not find an increasing trend in wildfires, but projects one based on correlations of fire spread with daily maximum temperatures.

24. There is not robust evidence that wildfires are increasing. As a meta-study in the Philosophical Transactions of the Royal Society explains, while there is a "widely held perception of increasing fire and fire impacts at the global and some regional scales" these perceptions are "not well supported by the realities that the available data show."[21]

25. Instead, there is increasing evidence suggesting that there is overall less fire in the landscape today than there was centuries ago.[22] What fires do occur seem to be more significantly influenced by non-climate related factors like forest management practices[23] and the growth of the wildland-urban interface.[24]

26. Further, over the past decades there is no clear trend of increasing direct losses from fire (such as losses of life or infrastructure) and the risk of death from fire

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[18] Sarah Gibbens, Why we still don't fully understand the tornado-climate change relationship, Nat. Geo. (Dec.13, 2021), https://www.nationalgeographic.com/environment/article/why-we-do-not-understand-the-tornado-climate-change-relationship.

[19] Harold E. Brooks, et al., *Increased variability of tornado occurrence in the United States*, 346 Science 349 (Oct. 17, 2014), https://www.science.org/doi/full/10.1126/science.1257460.

[20] K. Hayhoe, et al., Fourth National Climate Assessment, Ch. 2: Our Changing Climate (2018) https://nca2018.globalchange.gov/chapter/2/.

[21] Stefan H. Doerr & Cristina Santín, *Global trends in wildfire and its impacts: perceptions versus realities in a changing world,* 371 Phil. Trans. R. Soc. (June 5, 2016), http://doi.org/10.1098/rstb.2015.0345.

[22] *Id.*

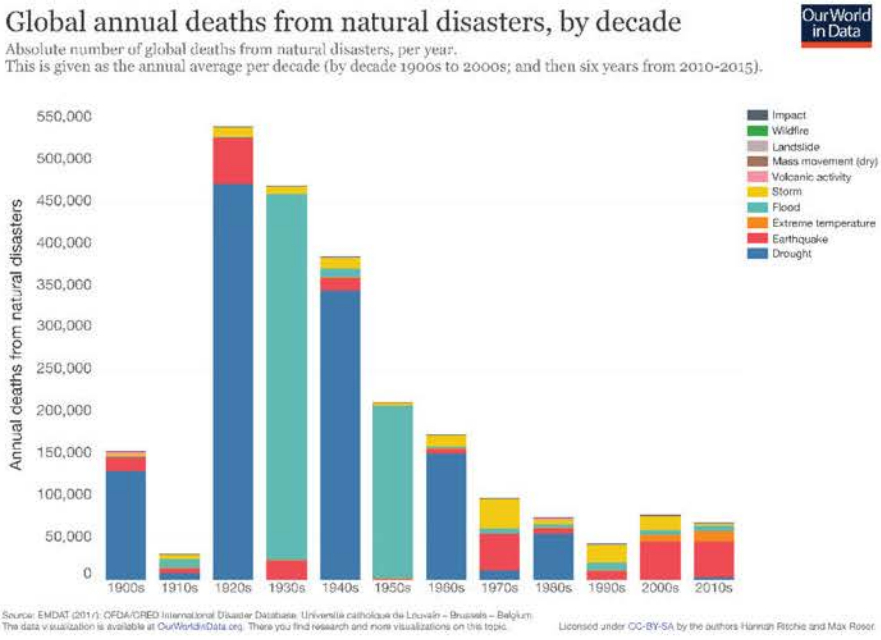
[23] *See* Harold S. J. Zald,& Christopher J. Dunn, Severe fire weather and intensive forest management increase fire severity in a multi-ownership landscape, 28 Ecological Applications 1068 (Apr. 26, 2018), https://doi.org/10.1002/eap.1710.

[24] *See,* Volker C. Radeloff et al., *Rapid growth of the US wildland-urban interface raises wildfire risk,* 115 PNAS 3314 (Mar. 12, 2018), https://doi.org/10.1073/pnas.1718850115.

is low compared with other natural hazards.[25] As a result, any increased risk from wildfire damage has far more to do with irresponsible development and an unwillingness for American policy makers to make "boring" infrastructure expenditures on things like bridges or forest management.

27. The natural disasters that do occur cause far fewer deaths than they did a century ago because the worst killers—droughts and floods—have been mitigated by technological improvements.[26] Most deaths from natural disasters in the 21st century have resulted from earthquakes, which are not directly associated with climate change.

28. Further, data and evidence show that the overall economic damages associated with extreme weather have in fact decreased when measured in the context of global GDP.[27]



Global annual deaths from natural disasters by decade.[28]

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[25] Stefan H. Doerr & Cristina Santín, *Global trends in wildfire and its impacts: perceptions versus realities in a changing world,* 371 Phil. Trans. R. Soc. (June 5, 2016), http://doi.org/10.1098/rstb.2015.0345.

[26] C. Boyden Gray, Fossil Fuels and a Positive Vision for American Energy, 21 Geo. J. L. & Pub. Pol. (forthcoming 2022), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4088564.

[27] Roger Pielke Jr., *Statement of Dr. Roger Pielke Jr. to the Committee on Banking, Housing, and Urban Affairs of the United States Senate,* (July 20, 2021), https://www.banking.senate.gov/imo/media/doc/Pielke%20Testimony%207-20-21.pdf.

[28] *Id.*

29. The data referred to in the proposed rule[29] and the FSOC Report[30] which reference an increase in "billion dollar" events based on a National Oceanic and Atmospheric Administration (NOAA) dataset are also misleading. "What the dataset actually shows is a combination of poor methodology and the consequences of a growing society, with more people and property in locations exposed to loss from extreme weather. It is not an indicator of climate change. Climate data, not economic data, should be used for that purpose."[31] By ignoring the change in growth, the dataset excludes severe past events. As Rupert Darwall explains, "a $600 million hurricane in 1985 (Hurricane Kate) would have been about a $2 billion hurricane today, but that fact is not included in NOAA's dataset."[32]

30. This is why, in the 2006 Hohenkammer Consensus Statement, 32 leading climate experts declared: "Analyses of long-term records of disaster losses indicate that societal change and economic development are the principal factors responsible for the documented increasing losses to date."[33] A more accurate view of the data shows the opposite of what the NOAA dataset implies, that direct economic losses from disasters have declined over the past 30 years over 0.3% of global GDP to under 0.25% of global GDP.[34] Given no increasing severity of extreme weather events and large increases in the deployment of more resilient technology, these results are unsurprising.

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[29] 87 Fed. Reg. at 21,336 n.10.

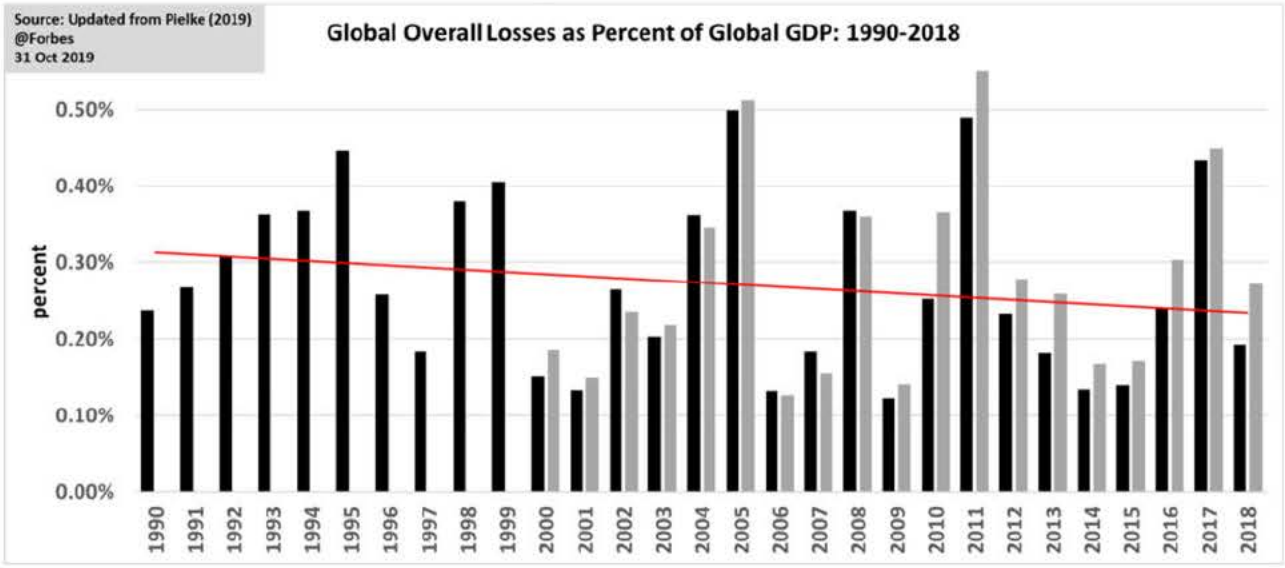
[30] FSOC Report 12.

[31] Roger Pielke Jr., *Statement of Dr. Roger Pielke Jr. to the Committee on Banking, Housing, and Urban Affairs of the United States Senate,* (July 20, 2021), https://www.banking.senate.gov/imo/media/doc/Pielke%20Testimony%207-20-21.pdf.

[32] Rupert Darwall, *Climate-Risk Disclosure: A Flimsy Pretext for a Green Power Grab, Real Clear Briefings (Nov. 2021)*, https://assets.realclear.com/files/2021/11/1910_realclear-climateriskdisclosure-ruper-darwall-v6f.pdf

[33] Peter Höppe and Roger Pielke Jr., *Climate Change and Disaster Losses Workshop: Understanding and Attributing Trends and Projections* (2006), https://sciencepolicy.colorado.edu/research_areas/sparc/research/projects/extreme_events/munich_workshop/ccdl_workshop_brochure.pdf.

[34] Roger Pielke, Surprising Good News on the Economic Costs of Disasters, Forbes (Oct. 31, 2019), https://www.forbes.com/sites/rogerpielke/2019/10/31/surprising-good-news-on-the-economic-costs-of-disasters



Global disaster losses as a percent of global GDP, 1990 to 2019. Data from Munich Re (black), Aon (grey) and World Bank.[35]

31. The most straightforward consequence of climate change, an average global warming, is largely borne out by the data. Since the 1970s, unusually hot summer days have become more common in the United States, but unusually cold winter temperatures have become less common, particularly very cold nights.[36]

32. But while both extreme hot and extreme cold can be fatal, extreme cold is far more deadly.[37] A 2015 meta-study in *Lancet* found that 17 times more deaths are attributable to low temperatures than to high.[38]

33. Some recent news stories have suggested that climate change is already causing 5 million deaths a year—but the research cited finds a different result.[39] As C. Boyden Gray explains,

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[35] Roger Pielke, Surprising Good News on the Economic Costs of Disasters, Forbes (Oct. 31, 2019), https://www.forbes.com/sites/rogerpielke/2019/10/31/surprising-good-news-on-the-economic-costs-of-disasters

[36] *Climate Change Indicators: Weather and Climate*, EPA (last visited Apr. 29, 2022), https://www.epa.gov/climate-indicators/weather-climate.

[37] C. Boyden Gray, *Fossil Fuels and a Positive Vision for American Energy*, 21 Geo. J. L. & Pub. Pol. (forthcoming 2022), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4088564.

[38] Antonio Gasparini, et al., Mortality risk attributable to high and low ambient temperature: a multicountry observational study, 386 Lancet 369 (May 20, 2015), https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(14)62114-0/fulltext.

[39] C. Boyden Gray, *Fossil Fuels and a Positive Vision for American Energy*, 21 Geo. J. L. & Pub. Pol. (forthcoming 2022), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4088564.

The referenced 2021 study did indeed find that 5 million deaths a year were linked to "non-optimal temperatures" of which 90% were cold-related and 10% heat-related.[40] But these are deaths associated with climate—not climate change. The authors also perform a time series analysis, examining the change in climate related deaths over 16 years, and find a net *decrease* in mortality over that period. While heat-related deaths increased somewhat this was more than offset by reductions in cold-related deaths, and the authors suggest that climate related mortality has decreased by about 166,000 deaths per year.[41]

34. While there are no doubt some physical risks posed by acute weather events, the scientific evidence shows that these are of decreasing—rather than increasing—significance.

II. SEC's required disclosure of "chronic risks" are far too speculative.

35. The SEC further points to "chronic risks" businesses may face as the result of changes in longer term weather patterns "such as sustained higher temperatures, sea level rise, drought, and increased wildfires, as well as related effects such as decreased arability of farmland, decreased habitability of land, and decreased availability of fresh water."[42] But as the proposed rule explains, there are deep challenges with quantifying these risks because of their "uncertainty and complexity" and the "multidimensional nature of the information" at issue.[43]

36. The first dimension of this uncertainty flows from the uncertainty of which warming model is most accurate. The IPCC Sixth Assessment report, cited repeatedly in the proposed rule, is good evidence of this uncertainty. The report gives several possible warming scenarios.

37. The worst-case scenario, RCP8.5, projects a 5°C global surface temperature rise. But the scientific consensus is that this scenario is incredibly unlikely.[44] RCP8.5 was originally intended to explore an unlikely and high-risk future. To

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[40] Qi Zhao et al., Global, regional, and national burden of mortality associated with non-optimal ambient temperatures from 2000 to 2019: a three-stage modelling study, 5 Lancet Planet Health (2021) https://doi.org/10.1016/S2542-5196(21)00081-4

[41] C. Boyden Gray, *Fossil Fuels and a Positive Vision for American Energy*, 21 Geo. J. L. & Pub. Pol. (forthcoming 2022), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4088564.

[42] 87 Fed. Reg. at 21,350.

[43] 87 Fed. Reg. at 21,427

[44] Zeke Hausfather & Glen P. Peters, Emissions – the 'business as usual' story is misleading, Nature Comment (Jan. 29, 2020), https://www.nature.com/articles/d41586-020-00177-3.

achieve this scenario, the world would require virtually no emissions reductions and an unprecedented fivefold increase in coal use by 2100.[45]

38. But, some climatologists believe that "global coal use peaked in 2013, and while increases are still possible, many energy forecasts expect it to flatline over the next few decades."[46]While worst-case scenarios can be a useful thought exercise, they cannot be the main driver of risk assessment.

39. Instead of 5°C, a 2 to 3°C temperature rise is far more likely. This smaller temperature rise will be far more manageable.[47] The IPCC's sixth assessment report states that with warming of 2 to 3° C we are likely to see the most catastrophic effects of climate change, like the melting of the Greenland or West Antarctic Ice Sheets, only "over multiple millennia."[48] This is far slower than the impending and extreme and catastrophic risks generally associated with the 5° C warming.

40. There are other uncertainties associated with the model. The projections of climate models depend in large part on projections of future GHG emissions. As Roger Pielke explains, these emissions scenarios are thus "a key input for the climate models that aim to project the future behavior of the climate. But emissions scenarios are themselves dependent on variables such as population growth, economic growth, technological change, land use change, and so on."[49] Each of these variables themselves interact in complex ways as people adapt to the various changes.

41. This uncertainty is acknowledged by the proposed rule—and regulated entities are even required to account for it in their disclosure of "transition risks"—but is likely far more limiting to businesses' abilities to make accurate projections than is acknowledged.

42. Beyond emissions uncertainty, there is also uncertainty in how these emissions will change global temperatures. The Earth's climate is a complex system, involving interconnected physical processes.

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[45] *Id.*

[46] *Id.*

[47] C. Boyden Gray, *Fossil Fuels and a Positive Vision for American Energy*, 21 Geo. J. L. & Pub. Pol. (forthcoming 2022), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4088564.

[48] IPCC, Climate Change 2021: The Physical Science Basis. Working Group I Contribution to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change, Box TS9.

[49] Roger Pielke & Justin Ritchie, *How Climate Scenarios Lost Touch With Reality,* 37 Issues in Science and Technology 74 (2021), https://issues.org/climate-change-scenarios-lost-touch-reality-pielke-ritchie/.

> Projecting global temperature changes requires modeling the mechanisms of countless physical process—processes often chaotic or stochastic and spanning different length scales. Lower-level mechanisms, like the absorption of CO_2 into seawater, are tightly coupled to higher level mechanisms, like large-scale ocean circulation. The mechanisms interact in complicated reinforcing and balancing feedback loops and often rely on scarce data or extrapolations beyond current conditions.[50]

43. Uncertainty about how changing climate will feedback into other climate forcing mechanisms provides more uncertainty. Increases in atmospheric temperature may cause global icesheets to melt, which would likely in turn reduce albedo and increase the absorption of solar radiation, creating positive feedback and raising global temperatures.[51] Or the same temperature increase may cause greater water vaporization, increasing cloud coverage, and increasing albedo, which would reduce solar radiation and lower global temperatures.[52] Predictions of the primary effects are possible—though by no means straight forward—but predictions of aggregate secondary effects are not much more than speculation.

44. Similarly, variability associated with ocean circulations could contribute to atmospheric cooling, or releases of GHGs frozen deep within the oceans could lead to increased atmospheric GHG production and increased warming.[53]

45. Some of the largest contributors to uncertainty in climate modeling are physical mechanisms that are not caused by anthropogenic activities or predictable with atmospheric temperature rise. For example, solar and volcanic variability are some of the largest drivers of temperature change in climate models.[54] If there is an increase in major volcanic eruptions, the increase in atmospheric particulate matter could have a global cooling effect, as could the decrease in solar radiation after the Grand Modern Maximum, the peak in observed solar activity and radiation that occurred in the late 20th century.[55]

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[50] C. Boyden Gray, *Fossil Fuels and a Positive Vision for American Energy*, 21 Geo. J. L. & Pub. Pol. (forthcoming 2022), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4088564.

[51] Kristina Pistone et al., *Radiative Heating of an Ice-Free Arctic Ocean,* 46 Geophysical Research Letters 7474–7480 (2019).

[52] https://www.science.org/doi/10.1126/science.296.5568.727

[53] C. Boyden Gray, *Fossil Fuels and a Positive Vision for American Energy*, 21 Geo. J. L. & Pub. Pol. (forthcoming 2022), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4088564.

[54] John Fyfe et al., Significant impact of forcing uncertainty in a large ensemble of climate model simulations, 118 Proceedings of the National Academy of Sciences (2021) https://doi.org/10.1073/pnas.2016549118

[55] C. Boyden Gray, *Fossil Fuels and a Positive Vision for American Energy*, 21 Geo. J. L. & Pub. Pol. (forthcoming 2022), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4088564.

46. An inspection of climate models, including consensus models like those used by the IPCC, bear out this uncertainty. While long term trends suggest overall warming, the magnitude and speed of the warming have been predicted far less accurately. Initial warming trends predicted by early models were falsified during the global warming hiatus, when from 1998 to 2012 global surface temperatures remained nearly constant.[56]

47. Climate models have also historically overpredicted temperature rise. In a study applying existing models to predict past temperature trends, economist Ross McKitrick and climatologist John Christy found that,

> Comparing observed trends to those predicted by models over the past years reveals a clear and significant tendency on the part of models to overstate warming. All 102 [models from the Climate Model Intercomparison Project Number 5] warm faster than observations, in most individual cases the discrepancy is significant, and on average the discrepancy is significant. . . . While the observed analogue exhibits a warming trend over the test interval it is significantly smaller than that shown in models, and the difference is large enough to reject the null hypothesis that models represent it correctly, within the bounds of random uncertainty.[57]

48. This discrepancy across all models, as the authors note, suggests a "warming bias at a sufficiently strong rate" to reject the notion that any of these climate models provides a "realistic" assessment of warming.[58]

49. But risks of future chronic warming are not, by themselves, what businesses are being asked to assess. Instead, they are asked to follow extrapolations from these models to predictions of the effect of long-term weather changes on business operations.

50. But each weather or climatological event has, "a host of possible natural and anthropogenic causes in addition to anthropogenic climate change."[59] As the National Academy of Science explains, confidence in the linkage between temperature rise and other effects is "greatest for those extreme events that are related to an aspect of temperature, such as the observed long-term warming of

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[56] Xiao-Hai Yan, et al., The global warming hiatus: Slowdown or redistribution?, 4 Earth's Future 472 (Nov. 22, 2016), https://agupubs.onlinelibrary.wiley.com/doi/pdf/10.1002/2016EF000417.

[57] Ross McKitrick & John Christy, *A test of the tropical 200- to 300-hPa warming rate in climate models.* 5 Earth and Space Science 529 (Sep. 21, 2018), https://doi.org/10.1029/2018EA00040.

[58] *Id.*

[59] National Academies of Sciences, Engineering, and Medicine, *Attribution of Extreme Weather Events in the Context of Climate Change*, (2016), https://doi.org/10.17226/21852.

the regional or global climate . . . . There is little or no confidence in the attribution of severe convective storms and extratropical cyclones."[60]

51. The economic impact of "chronic risks" is far more dependent on non-climate-change-related mitigation measures taken than it is on the rise of global temperatures. For example, as noted above, wildfires are far more strongly correlated with forest management practices and increasing population density and hence need for fire suppression in the wildland–urban interface than with a rise in global temperatures.[61]

52. One study, applying climate models predicting an increase in flooding, found that with no adjustments sea-level rise would cause $55 trillion in flood damage annually, as much as 5% of projected world GDP.[62] But with moderate mitigation (the construction and maintenance of dikes, at a maximum cost of $31 billion under RCP2.6, or about 0.00002% of world GDP) the total costs of flooding would *decrease* from today's levels to only 0.008% of world GDP.[63]

53. Finally, some of these chronic risks asserted by the SEC are simply incorrect. For example, the SEC suggests that businesses must account for risks such as the "decreased arability of farmland."[64] But global warming will most likely increase the total arable land in the United States, possibly by more than 15%.[65]

54. Further, over the next 80 years, all climate change scenarios predict virtually no change in habitability throughout North America.[66]

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[60] *Id.*

[61] Stefan H. Doerr & Cristina Santín, *Global trends in wildfire and its impacts: perceptions versus realities in a changing world,* 371 Phil. Trans. R. Soc. (June 5, 2016), http://doi.org/10.1098/rstb.2015.0345.

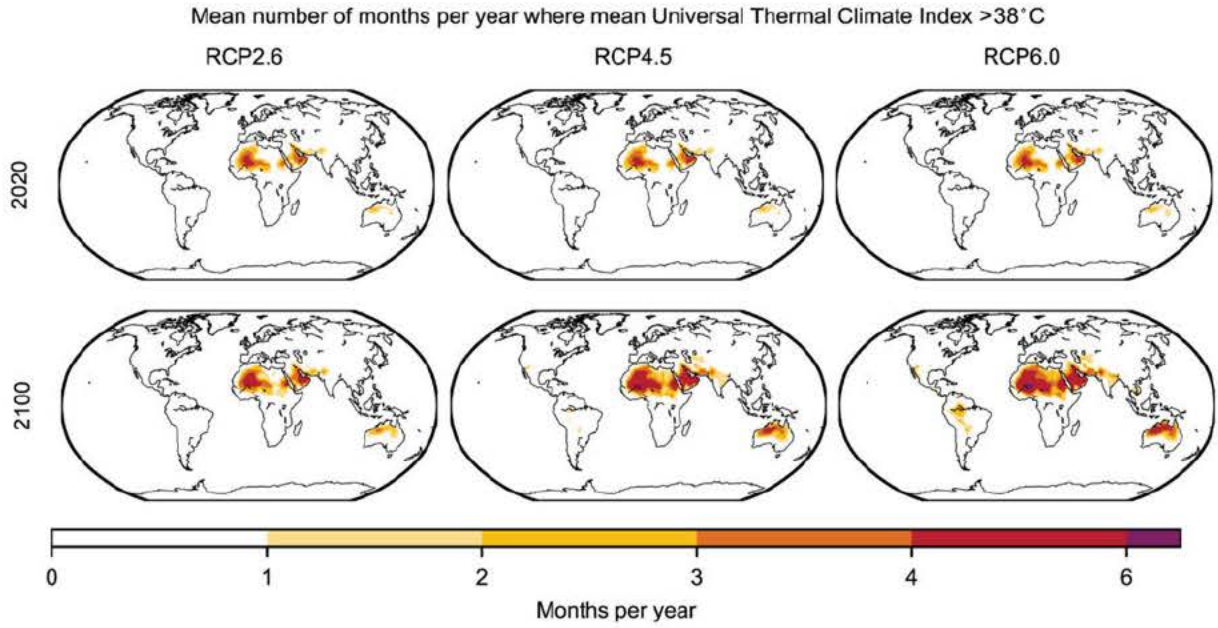
[62] Jochen Hinkel, et al., *Coastal flood damage and adaptation costs under 21st century sea-level rise*, 111 PNAS (Feb. 3, 2014), https://doi.org/10.1073/pnas.1222469111.

[63] *Id.*

[64] 87 Fed. Reg. at 21,350.

[65] *See, e.g.*, Xiao Zhang & Ximing Cai, Climate change impacts on global agricultural land availability, 6 Env. Research Letters (Mar. 18, 2011), https://doi.org/10.1088/1748-9326/6/1/014014;

[66] Christopher Lyon, et al., *Climate change research and action must look beyond 2100*, 28 Global Change Biology 349 (Sep. 24, 2021), https://doi.org/10.1111/gcb.15871.



There is virtually no change in inhabitable land by 2100 in North America.[67]

55. In fact, the most likely change will come in regions are those currently considered too cold to be regularly habitable (like most of Canada and Alaska) as warming will slightly increase the habitability of these areas.[68]

56. These uncertainties and inaccuracies make it impossible for businesses to accurately assess the "chronic risks" identified in the proposed rule.

III. Even if the U.S. GHG emissions were eliminated it would not substantially alter the world's climate trajectory.

57. The United States is responsible for about 15% of global GHG emissions, about half of those emitted by China.[69] China produced nearly 13 billion tons in 2019, as much as the United States, India, Russia, and Japan combined.[70]

58. By substituting natural gas for coal in much of its electricity production, the United States power sector has stopped being the largest contributor to its

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[67] Extract from Figure 3 of Christopher Lyon, et al., *Climate change research and action must look beyond 2100*, 28 Global Change Biology 349 (Sep. 24, 2021), https://doi.org/10.1111/gcb.15871.

[68] Climate Change 2021: The Physical Science Basis. Working Group I Contribution to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change, Box TS9.

[69] EPA, *Global Greenhouse Gas Emissions Data*, https://www.epa.gov/ghgemissions/global-greenhouse-gas-emissions-data (last updated Feb. 25, 2022).

[70] The Chinese Companies Polluting the World More Than Entire Nations, Bloomberg News (Oct. 24, 2021), https://www.bloomberg.com/graphics/2021-china-climate-change-biggest-carbon-polluters/.

GHG emissions. Overall United States GHG emissions have fallen from a peak of over 6 billion tons of CO2e in 2007 to just 5.1 billion in 2019—roughly equivalent to emissions in 1980.[71]

59. In contrast, emissions in much of the developing world—including China—are growing.[72]

60. Even if the United States takes dramatic steps to reduce GHG emissions, this is unlikely on its own to make any significant difference in global GHG emissions. Because climate change has global consequences and is dependent on global levels of GHG emissions, the risks associated with the U.S. failing to reach emissions reductions of "50 percent by 2035" or "net-zero emissions" by 2050 are essentially zero.[73] As a result, an individual company's GHG emissions do not correlate with these global risks.

IV. SEC's required disclosure of both "physical risks" and "transition risks" contradict one another.

61. The proposed rule requires the disclosure of both long-term "physical risks" associated with a failure to enact climate change related policies come to pass.[74] The proposed rule requires disclosures of "transition risks" or risks that "potential adoption of climate-related regulatory policies including those that may be necessary to achieve the national climate goals that may be or have been adopted in the United States and other countries."[75] But these risks appear to contradict one another.

62. As detailed in Section II, long-term or chronic physical risks are premised largely on climate change scenarios in which GHG emissions are not sufficiently mitigated. If the world adopts "climate-related regulatory policies . . . necessary to achieve" climate goals than most of the physical risks anticipated to flow from extreme climate change will not come to pass. Or if the worst physical risks do occur, this can only be because the climate-related regulatory policies that would lead to risks disclosed under the category of "transition risks" did not occur.

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[71] U.S. Energy Information Administration, Environment, https://www.eia.gov/totalenergy/data/browser/xls.php?tbl=T11.01&freq=m

[72] Lauri Myllyvirta, *Analysis: China's carbon emissions grow at fastest rate for more than a decade*, Carbon Brief (May 20, 2021), https://www.carbonbrief.org/analysis-chinas-carbon-emissions-grow-at-fastest-rate-for-more-than-a-decade.

[73] 87 Fed. Reg. at 21,406 (presenting examples of target GHG emissions).

[74] 87 fed. Reg 21, 349.

[75] *Id.*

63. Because of the small role of individual nations in contributing to climate change it is theoretically possible that the United States could adopt strict climate-related regulatory policies—creating "transition risks"—and yet still suffer the worst consequences of climate change—"physical risks."

64. But this is unlikely because in this regard, climate change is like a prisoner's dilemma.[76] Every nation benefits if others restrain their pollution, but would prefer not to have to restrain its own. As a result, it is predictable that nations will only reduce GHG emissions in a manner proportionate to other nations. If every nation enacts climate-related regulations than companies will face transition risks but will not face physical risks. If, on the contrary, no nation enacts strict regulations than physical risks may come to pass, but transition risks will not. It is illogical to require the disclosure of both.

Executed on: June 17, , 2022

Roy W Spencer

Roy W. Spencer

[76] Tim Harford, *Climate change and the prisoner's dilemma*, Financial Times (Jan. 24, 2020), https://www.ft.com/content/5312691c-3d3c-11ea-b232-000f4477fbca

Attachment 3:
Declaration of James R. Copland

DECLARATION OF JAMES R. COPLAND

1. My name is James R. Copland. I am over the age of 18 and am competent to make this declaration. The facts set forth in this declaration are based on my personal knowledge and are submitted solely in my individual capacity. They should not be attributed to the Manhattan Institute.

2. I am a senior fellow at the Manhattan Institute and director of Legal Policy. Before joining Manhattan Institute, I was a management consultant with McKinsey and Company in New York. I am vice chairman of a privately held company, which I have served as a director since 1997, and I serve and have served on many other private, public, and nonprofit boards. I clerked for Ralph K. Winter on the U.S. Court of Appeals for the Second Circuit. I hold a J.D. and an M.B.A. from Yale, where I was an Olin Fellow in Law and Economics; an M.Sc. in the politics of the world economy from the London School of Economics; and a B.A. in economics from the University of North Carolina at Chapel Hill, where I was a Morehead Scholar.

3. I have extensive knowledge of law and economics and in particular of corporate governance and securities law. I have authored many policy briefs, book chapters, articles, and opinion pieces in a variety of publications, including *the Harvard Business Law Review* and *Yale Journal on Regulation*, the *Wall Street Journal*, *National Law Journal*, and *USA Today*.

4. In 2020, I published *The Unelected: How an Unaccountable Elite is Governing America* (Encounter Books). The book discusses, in part, how independent administrative agencies, in collusion with private actors, churn out thousands of new regulations a year. The proliferation of rules and the severity of sanctions give enormous discretion to unelected enforcement agents—upending the rule of law.

5. I am attaching a true and correct copy of my Curriculum Vitae to this affidavit.

6. In justifying its new proposed rule, "The Enhancement and Standardization of Climate-Related Disclosures for Investors" ("proposed rule") the Securities and Exchange Commission points to the "growing investor demand for climate-related risk disclosures."[1]

7. But the demand that the SEC points to is not the demand of retail investors. Instead, the primary drivers for the proposed rule are asset managers, who are simply looking out for their own interests: their personal desires to mitigate cli-

[1] 87 Fed. Reg. at 21,340.

mate change, for how companies should be run, and to extract additional capital and status from their customers while sidestepping their fiduciary duties to the same.[2] The proposed rule plays into these desires.

8. As Commissioner Hester Peirce has explained, "Many calls for enhanced climate disclosure are motivated not by an interest in financial returns from an investment in a particular company, but by deep concerns about the climate or, sometimes, superficial concerns expressed to garner goodwill."[3]

9. Many of those calling for these disclosures have said as much. For example, the Task Force on Climate-Related Financial Disclosures (TCFD), which is mentioned 243 times in the proposed rule and on whose recommendation the "disclosure framework is modeled,"[4] states that climate disclosures are necessary "to channel investment to sustainable and resilient solutions, opportunities, and business models."[5]

10. There are also other, less idealistic, motivations at play. Compliance with the mandated climate-risk disclosures—like other environmental, social, and governance (ESG) disclosures—will be a complex exercise beset with many uncertainties.[6] The proposal would require companies to become mini-climate-science think tanks. There's no reason to think that companies' analyses will be useful, accurate, or relevant to investors. But they will cost a lot to prepare. This is a boon for climate consulting firms, who will reap large benefits because companies will need to consult them to prepare disclosures and attestations.[7] It is also a boon for large asset managers, who can use climate-metrics to attract additional assets under management while charging greater fees per assets managed. And it is a boon to asset managers and CEOs alike, who may feel pressure from their activists, politicians, and peers to be on the "right side" of a current political issue and now have the cover to pursue these political ends with

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[2] *See* 87 Fed. Reg. at 21,340 ("Several major institutional investors, which collectively have trillions of dollars in investment under management, have demanded climate-related information....").

[3] Comm'r Hester M. Peirce, *We Are Not the Securities and Environment Commission—At Least Not Yet*, Mar. 21, 2022, https://www.sec.gov/news/statement/peirce-climate-disclosure-20220321

[4] 87 Fed. Reg. at 21,343.

[5] Task Force on Climate-Related Financial Disclosures, *About*, https://www.fsb-tcfd.org/about/ (last accessed Mar. 30, 2022).

[6] *See* 87 Fed. Reg. at 21,427.

[7] *See* 87 Fed. Reg. at 21,352 ("climate consulting firms are available to assist registrants in making this determination."); 87 Fed. Reg. at 21,393 ("The proposed rule would also "require that GHG emissions disclosure[s] be subject to third-party attestation.").

the imprimatur of the SEC.[8] And since everyone else has to do the same, the costs are unlikely to put them at a competitive disadvantage, at least with respect to publicly held companies.

11. In any event, the proposed rule will do little to mitigate climate-related risk or protect investors from those risks. Whatever risks may be linked to greenhouse gas (GHG) emissions, these risks are borne at a global scale. Forcing disclosure of individual companies' GHG emissions will not reduce the total GHG, but merely encourage companies to divest "dirty" assets to private companies or private equity firms or to nationally owned foreign companies like PetroChina. This harms American capital markets (and the investors they serve) and gives a windfall to the ultra-wealthy set of people who can benefit from private equity investment opportunities. It will not work as an indirect way to regulate GHG emissions.

12. The proposed rule's transition risks are also far too speculative to support accurate risk assessment. The United States' non-binding commitments, such as those made in the Paris Agreement, are not currently legally enforceable and are subject to change with changing presidential administrations—as they did after the 2016 and 2020 elections. Regulatory risks, as far as they are predictable, are already priced in. If the proposed rule changes anything, it is only by pernicious bootstrapping that would mandate pre-compliance with environmental rules that do not yet exist (and may never exist).

I. The SEC's proposed rule is not about protecting the market from climate-related risk, but about directing "capital to favored businesses and to advance favored political and social goals."[9]

13. In defending the proposed rule, the SEC claims there has been "significant investor demand for information about how climate conditions may impact their investment."[10] But the groups to which the SEC points seem to want the exact opposite: information about how their investment decisions impact climate conditions.

14. Rupert Darwall has explained that "ESG emerged from the ethical investment or Socially Responsible Investing (SRI) movement. . . . The first SRI fund, Pio-

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[8] For a detailed explanation of how CEO's and mutual fund advisors alike work to appease shareholder activists, see Bernard S. Sharfman, *How the SEC Can Help Mitigate the "Proactive" Agency Costs of Agency Capitalism*, 8 Am. U. Bus. L. Rev. 1, 16–18 (2019).

[9] Peirce, *We Are Not the Securities and Environment Commission—At Least Not Yet*, *supra*.

[10] 87 Fed. Reg. at 21,340.

neer Investments, began in 1928 as an ecclesiastical fund committed to Christian values emphasizing "the avoidance of morally questionable investments, not the pursuit of better risk-adjusted returns."[11] ESG is the modern successor to SRI, but emphasis has shifted from mere divestment to a more concerted pressure campaign, where groups of activist shareholders work to force companies to divest themselves of activities.[12]

15. Prof. Lawrence Cunningham explained that the proposed rule's citations skew "heavily toward organizations that are prominent environmentalists, not prominent investors."[13] Of the investors the proposed rule most often cites towards "skew toward those focused on social and political investing and many are non-U.S. entities."[14] Of the other 36 organizations the proposed rule cites at least five times, 12 are explicitly climate advocacy groups. *Id.*

16. This philosophy of pressuring companies to change behavior to mitigate climate change is at the core of almost all the groups calling for these disclosures.

17. The Investor Agenda, referenced on 87 Fed. Reg. at 21,340, states that its investment goals are to "set a net-zero target," to achieve "net-zero emissions by 2050 or sooner," to "phase out investments in thermal coal."[15] These changes are "fundamental to the kind of society we want to see, to the planet's future, to how business operates."[16]

18. The Net Zero Asset Managers initiative, referenced on 87 Fed. Reg. at 21,340, states that it is "committed to supporting the goal of net zero greenhouse gas emissions by 2050 or sooner, in line with global efforts to limit warming to 1.5 degrees Celsius; and to supporting investing aligned with net zero emissions by 2050 or sooner."[17]

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[11] Rupert Darwall, *Capitalism, Socialism, and ESG*, Real Clear Briefing (May 2021), https://www.realclearpolitics.com/docs/2021/rupert_darwall_capitalism_socialism_and_esg_may_2021.pdf

[12] *Id.*

[13] Letter of Lawrence A. Cunningham, Professor Emeritus of George Washington University to the Securities and Exchange Commission in Response to the Proposal on Climate-related Disclosures for Investors (Apr. 25, 2022), https://www.sec.gov/comments/s7-10-22/s71022-20126528-287180.pdf.

[14] *Id.*

[15] *Investment,* The Investor Agenda, https://theinvestoragenda.org/focus-areas/investment/ (last accessed May 4, 2022).

[16] Paul Simpson, CDP CEO and founding partner of The Investor Agenda, *The role of investors and governments in the transition to a net zero economy: a conversation with Kwasi Kwarteng MP*, The Investor Agenda (Apr. 7, 2021), https://theinvestoragenda.org/blog/kwasi-kwarteng-mp/.

[17] The Net Zero Asset Managers initiative, https://www.netzeroassetmanagers.org/ (last accessed May 4, 2022).

19. The Glasgow Financial Alliance for Net Zero, referenced on 87 Fed. Reg. at 21,341, has a goal to "transform the global financial system in order to finance the investment in a net-zero economy."[18]

20. The Financial Stability Board, referenced on 87 Fed. Reg. at 21,343, explains that "over time progress in identifying and addressing climate-related financial risks will support a shift towards sustainable finance." [19]

21. CERES, referenced on 87 Fed. Reg. at 21,338 and 21 times in total, is "working to decarbonize six of the highest-emitting sectors. We're building a zero emissions economy by driving greater corporate ambition, transparency, and accountability for aggressive reductions in greenhouse gas emissions." Their website explains that they "work to achieve strong commitments and action from key companies and spur a competitive cascade among sector peers, including by addressing Scope 3 indirect emissions throughout supply and value chains." They accomplish these goals through their "powerful networks" and through their sponsorship of the "influential global Climate Action 100+ initiative."[20]

22. The Climate Action 100+, referenced on 87 Fed. Reg. at 21,341, is an "investor-led initiative to ensure the world's largest corporate greenhouse gas emitters take necessary action on climate change."[21] The initiative "was formed in the wake of the 2015 Paris Agreement" and they believe that securing "greater disclosure of climate change risks and robust company emissions reduction strategies . . . is essential to achieve the goals of the Paris Agreement."[22]

23. The Climate Action 100+ initiative counts as members many of the other investors the proposed rules notes have been calling for these disclosures: BlackRock, State Street, AllianceBernstein, Boston Common Asset Management, Calvert Research and Management, Domini Impact Investments, Parametric Portfolio, and others (referenced on 87 Fed. Reg. at 21,339).[23]

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[18] The Glasgow Financial Alliance for Net Zero, (Nov. 2021), https://assets.bbhub.io/company/sites/63/2021/11/GFANZ-Progress-Report.pdf

[19] FSB, *FSB Roadmap for Addressing Climate-Related Financial Risks* 3 (July 7, 2021), https://www.fsb.org/2021/07/fsb-roadmap-for-addressing-climate-related-financial-risks.

[20] *Ceres Ambition 2030*, Ceres, https://www.ceres.org/climate/ambition2030 (last accessed May 4, 2022).

[21] About, Climate Action 100+, https://www.climateaction100.org/about/ (last accessed May 4, 2022).

[22] *Id.*

[23] *Investor Signatories*, Climate Action 100+, https://www.climateaction100.org/whos-involved/investors/ (last accessed May 4, 2022).

24. In each case, the main motivation of the group does not appear to be protecting financial performance from the risks of climate change but using financial vehicles to drive companies to reduce climate change.

25. Climate-related financial disclosures are then just a means to an end. In creating a broad disclosure scheme, climate activists open the door to public shaming and to aggressive enforcement actions, by the SEC, other agencies, state, and local officials, and in particular to private lawsuits by the plaintiffs' bar.

26. Because there is great uncertainty in determining the short and long-term risks from climate change, any disclosures of risks associated with them will also be uncertain. By mandating disclosures for physical climate risk likely to fall within the envelope of natural variability, the SEC would expose issuers and investors to the greater uncertainties of climate litigation risk.[24] Lawsuits over this risk are almost certain.[25]

II. The SEC's proposed rule masks conflicts of interest.

27. While climate activists may want this information so that they may push the planet in a "greener" direction, others have less altruistic motivations for calling for these disclosures.

28. Materiality traditionally concerns information relevant to investors in their valuation of securities. But for reasons discussed subsequently, it is unlikely that the climate-related risk disclosures being called for will have anything to do with the true value of the securities and thus are not material to *investors*. But forcing these disclosures *is* important to the self-interested groups calling for the disclosures: financial services firms, asset managers, and CEO's who hold others' assets in a fiduciary relationship.

29. ESG has been an increasing focus for groups in the financial services sector. In past two years U.S. firms have spent more than $3.5 billion buying "green" ratings companies and data providers.[26] Additionally, the Big Four audit firms are

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[24] Rupert Darwall, *Capitalism, Socialism, and ESG*, Real Clear Briefing (May 2021), https://www.realclearpolitics.com/docs/2021/rupert_darwall_capitalism_socialism_and_esg_may_2021.pdf

[25] *Id. See also* James R. Copland, *The Unelected: How an Unaccountable Elite Is Governing America* (Encounter Books 2020), especially chapter 12.

[26] Jean Eaglesham, *Wall Street's Green Push Exposes New Conflicts of Interest*, Wall Street Journal (Jan. 29, 2022), https://www.wsj.com/articles/wall-streets-green-push-exposes-new-conflicts-of-interest-11643452202.

pushing toward ESG. For example, PricewaterhouseCoopers last year said ESG was a focus of its $12 billion investment plan.[27]

30. Commissioner Pierce explains, "assessing the present materiality of potential consequences of ongoing and future climate change will be difficult, but have no fear, 'climate consulting firms are available to assist registrants in making this determination.' Score one for the climate industrial complex!"[28] The Commissioner is correct. The market for helping companies with climate-related risk and other ESG reporting is worth an estimated $1.6 billion and is forecast to increase by 21% each year over the next six years, according to U.K.-based research firm Verdantix.[29] "The growth rate across several areas of ESG professional services is very strong," said Kim Knickle, a research director at Verdantix.[30] This value is bolstered by the mandated reporting called for in the proposed rule.

31. These firms stand to make a great deal of money in helping registrants prepare their disclosures. The proposed rule estimates the cost of compliance to be about $15.3 billion, with over $3.5 billion of that in the first year alone.[31] And the SEC admits that it underestimates true costs because it cannot "fully and accurately quantify" the costs of emissions reporting.[32] As detailed by Commissioner Peirce, the "unprecedented" nature of the disclosures coupled with the speculative nature—particularly of scope 3 emissions—and the assurance requirement, means companies will likely have to pay quite a bit for assurance.[33]

32. Because companies desire favorable climate-risk disclosures—and because the metrics for risk outlined by the SEC in the proposed rule are so complex and uncertain—there is the potential for conflicts of interest, where rating firms are encouraged to help companies prepare the most favorable depiction of their risk.

33. This conflict of interest prompted the International Organization of Securities Commissions to highlight the multiple services offered by many ESG-ratings

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[27] Mark Maurer, *PwC to Spend $12 Billion on Hiring, Expanding Expertise in AI, Cybersecurity*, Wall Street Journal (June 15, 2021), https://www.wsj.com/articles/pwc-to-spend-12-billion-on-hiring-expanding-expertise-in-ai-cybersecurity-11623758400.

[28] Peirce, *We Are Not the Securities and Environment Commission—At Least Not Yet*, *supra*.

[29] Jean Eaglesham, *Wall Street's Green Push Exposes New Conflicts of Interest*, *supra*.

[30] *Id.*

[31] *See* 87 Fed. Reg. at 21,439.

[32] 87 Fed. Reg. at 21,441.

[33] Peirce, *We Are Not the Securities and Environment Commission*, *supra*.

firms and recommend its members, including the SEC, consider requiring ESG ratings and data firms to "identify, disclose and, to the extent possible, mitigate potential conflicts of interest."[34] The SEC pays only lip-service to this warning in the proposed rule.[35]

34. But this is not where most of the money stands to be gained. ESG raters typically get most of their income from asset managers, who package together top-scoring companies to create "green" products that are sold to investors at elevated rates.[36]

35. And the asset managers themselves stand to make a good deal of money. At the end of 2020, ESG funds had average fees of 0.2% while standard ETFs that invest in U.S. large-cap stocks had a 0.14% fee on average—a relative 43% difference.[37]

36. Even a seemingly small increase in fees can have a big impact when scaled. As Michael Wursthorn explains, "A firm managing $1 billion in a typical ESG fund, for example, would garner $2 million in annual fees versus managing the standard ETF's $1.4 million."[38] BlackRock, one of the leading proponents of climate-risk disclosures and ESG in general, has $10 trillion in assets under management.[39]

37. The growth of passively rated funds has been good to the Big Three asset managers: BlackRock, Vanguard, and State Street. The Big Three together control more than $20 trillion in assets and in 90% of public companies, one of the Big Three is the largest shareholder.[40] But while their fiduciary duties to their customers lie in maximizing rates of return, their pecuniary interests lie in maxim-

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[34] Jean Eaglesham, *Wall Street's Green Push Exposes New Conflicts of Interest*, *supra*.

[35] 87 Fed. Reg. at 21,399 ("Moreover, the potential conflicts of interest, or even the appearance of such conflicts of interest, between the GHG emissions attestation provider and the registrant could raise doubts for investors about whether they can rely on the attestation service and its report.")

[36] Jean Eaglesham, *Wall Street's Green Push Exposes New Conflicts of Interest*, *supra*.

[37] Michael Wursthorn, *Tidal Wave of ESG Funds Brings Profit to Wall Street*, Wall Street Journal (Mar. 16, 2021), https://www.wsj.com/articles/tidal-wave-of-esg-funds-brings-profit-to-wall-street-11615887004.

[38] *Id.*

[39] Silla Brush & Alex Wittenberg, *BlackRock Assets Hit Record $10 Trillion, Powered by ETFs*, Bloomberg (Jan. 14, 2022), https://www.bloomberg.com/news/articles/2022-01-14/blackrock-s-assets-pass-10-trillion-for-the-first-time.

[40] Jan Fitchner, et al., *These three firms own corporate America*, Conversation (May 10, 2017), https://theconversation.com/these-three-firms-own-corporate-america-77072

izing assets under management and increasing fees. This calculus is driving asset managers to turn to higher priced products to drive higher revenue. "Green" funds provide a suitable vessel. BlackRock, for example, pulled $68 billion into its sustainable products in 2020, representing more than 60% annual growth.[41]

38. But most investors don't seem to think it is worth paying for the added climate information. Most of BlackRock's assets reside in generic ETFs which follow passive strategies and simply track indexes like the S&P 500.[42]

39. That lack of general demand does not stop asset managers, like BlackRock CEO Larry Fink, from pushing for the climate disclosures that make these funds possible. In his 2022 letter to CEOs he asks CEOs to "issue reports consistent with the Task Force on Climate-related Financial Disclosures (TCFD)."[43]

40. In the same letter, he says the quiet part out loud:

> It's been two years since I wrote that climate risk is investment risk. And in that short period, we have seen a tectonic shift of capital. Sustainable investments have now reached $4 trillion. Actions and ambitions towards decarbonization have also increased. This is just the beginning – the tectonic shift towards sustainable investing is still accelerating. Whether it is capital being deployed into new ventures focused on energy innovation, or capital transferring from traditional indexes into more customized portfolios and products, we will see more money in motion.[44]

41. While cajoling CEOs into making these disclosures has helped Fink and BlackRock make a great deal of money, their job is made much easier when the SEC adopts his requests by fiat as they do in the proposed rule.[45]

42. Asset managers stand to gain in another way. As Michal Barzuza and his co-authors suggest,

> With fee competition exhausted and returns irrelevant for index investors, signaling a commitment to social issues is one of the few dimensions on which index funds can differentiate themselves and

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[41] Michael Wursthorn, *Tidal Wave of ESG Funds Brings Profit to Wall Street, supra.*

[42] *Id.*

[43] Larry Fink's 2022 Letter to CEOs: The Power of Capitalism, https://www.blackrock.com/corporate/investor-relations/larry-fink-ceo-letter

[44] *Id.*

[45] 87 Fed. Reg. at 21,443 ("the proposed rules are broadly consistent with the TCFD framework").

avoid commoditization. For index funds, the threat of millennial migration to another fund is more significant than the threat of management retaliation.[46]

43. The CEOs themselves similarly stand to gain. By making climate commitments on behalf of the companies they represent, management can gain social status among their peers and stave off pressure from activist employees and investors.

44. But climate commitments can be expensive and are difficult to justify as consistent with a manager's fiduciary duty to shareholders. When climate-related shareholder proposals are voted on by shareholders, very few pass.[47] This failure suggests that there is not any positive consensus around corporate climate action. A CEO will find it far easier to bend to the small group of climate activists with the proposed rule providing them cover.

45. This is why, when investment managers step out of line, they are swiftly disciplined. In a May 2022, HSBC global head of responsible investing Stuart Kirk gave a presentation entitled, "Why investors need not worry about climate risk."[48] In the presentation, Kirk stated that "Unsubstantiated, shrill, partisan, self-serving, apocalyptic warnings are ALWAYS wrong," and explained that the recent surge in energy asset prices can only be explained because either "climate risk is negligible, climate risk is already in the prices, or all investors are wrong . . . If you believe the latter, then you don't believe in markets and shouldn't be regulating them."[49] Despite his presentation having received prior internal approval by the bank, HSBC suspended Kirk after giving it.[50]

III. The SEC's required disclosure of GHG emissions will neither decrease market risk from GHG emissions nor decrease GHG emissions themselves.

46. These ulterior motives—altruistic or otherwise—are important for understanding the proposed rule because otherwise it is hard to make sense of the information chosen for disclosure. The rule asks for four broad types of disclosures: total GHG emissions associated with a company, disclosure of transition risks,

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[46] Michal Barzuza, Quinn Curtis & David H. Webber, *Shareholder Value(s): Index Fund ESG Activism and the New Millennial Corporate Governance*, 93 USC L. REV. 1243, 1244 (2020).

[47] *See* Lawrence A. Cunningham et al., *Comment Letter on SEC Climate Disclosure Proposal by 22 Law and Finance Professors* (2022).

[48] The Editorial Board, *A Financier Tells Some Climate-Change Truths*, Wall Street Journal (May 23, 2022), https://www.wsj.com/articles/a-financier-tells-some-climate-truths-stuart-kirk-hsbc-mark-carney-11653340776?mod=opinion_major_pos3.

[49] *Id.*

[50] *Id.*

and disclosure of physical risk, and disclosure of a transition plan showcasing how a company plans to mitigate the aforementioned risks. In each case, the information SEC is requesting companies to disclose is complex and uncertain.[51]

47. The disclosure of GHG emissions is particularly problematic because, beyond being expensive to collect, it is unclear how an individual company's GHG emissions is tied to any risk real risks that company faces. The proposed rule identifies a handful of reasons why GHG emissions should be disclosed. First because "GHG emissions data is quantifiable and comparable across industries," second because it is useful in "transition risk analysis," and most transparently because it may be relevant in evaluating "net-zero commitments" or making "voting decisions because GHG emissions could impact the company's access to financing."

48. The first reason is untrue and irrelevant. GHG emissions are not comparable across industries because their significance varies depending on industry in question. High scope III GHG emissions from a natural gas supplier are proof that they are succeeding in their mission of providing natural gas. High scope III GHG emissions from a carbon sequestration company suggest that something has gone terribly wrong. In any event, that something is quantifiable across industries is no proof that it is relevant. No one suggests companies should disclose how many cats their board of directors own, though that too is "quantifiable and comparable across industries."

49. The second reason—that GHG emissions are helpful in "transition risk analysis"—is weakened by the highly speculative nature of that analysis.[52] What's more, as explained above, GHG emissions do not lend themselves to easy comparison across sectors, because their significance varies wildly from industry to industry.

50. The last reason, that they are relevant in evaluating "net-zero commitments" or making "voting decisions because GHG emissions could impact the company's access to financing," is exactly the reason that the climate activists described above are seeking access to this information—to streamline their ability to divest from or lead activist investor campaigns to capture a company. But if this is the case, it is not the GHG emissions that provide the financial risk but their disclosure.

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[51] 87 Fed. Reg. at 21,427 ("there are deep challenges with quantifying these risks because of their 'uncertainty and complexity'").

[52] *See* section IV, *infra.*

51. Reducing a company's GHG gas emissions has proven to have nothing to do with short term financial success and cannot have anything to do with long term success in combating climate change.

52. The last two years have been tough for green stocks. According to the Wall Street Journal, in the first six months of 2021 "exchange-traded funds that track renewable-energy indexes have posted double-digit losses. . . . BlackRock's iShares Global Clean Energy ETF has fallen 16% since December; Invesco Ltd.'s popular Solar ETF has posted a roughly 11% decline."[53] This rapid decline and other overinvestment led the Financial Crisis Observatory in Zurich to declare a "green energy bubble" last November.[54] Since their peaks in November 2021, the share prices have plummeted: electric car manufacturer Tesla by 47%; solar panel manufacturer First Solar by 46%; electric vehicle manufacturer Fisker by 64%; and lithium battery manufacturer Quantumscape Corp by 79%. In contrast, less- "green" stocks have been doing well. Exxon Mobil is up 46% over the past six months. Chevron is up 30% in the same period.

53. This changing tide has led to a sea change in perspectives on oil and gas investing. Will VanLoh, founder of Quantum Energy Partners, said that he heard concerns from large private investors last year "that the transition to cleaner energy sources meant there would be little need for new oil and gas development."[55] But after the Russian invasion of Ukraine, the firm began to hear calls from the same investors who previously rejected them. "The difference in tone and receptivity since the Russian invasion has been amazing—it has been a 180-degree change in three months," says Mr. VanLoh. "Last year, we had to convince people the oil and gas business would be around in five to seven years."[56] The same effect is felt across the industry. "Last year it was like pulling teeth getting people to talk to us," says Sam Oh, who runs Mountain Capital Management LLC, an energy-focused private-equity firm in Houston that is raising money for a new fund. "Starting around February, people began calling. Now we have a call every week."[57]

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[53] Michael Wursthorn, *Clean Energy ETFs Take a Hit, but Money Keeps Flowing In*, Wall Street Journal (June 28, 2021), https://www.wsj.com/articles/clean-energy-etfs-take-a-hit-but-money-keeps-flowing-in-11624878181.

[54] Scott Patterson, *Clean Energy Stocks Are Down but Still Have Their Spark*, Wall Street Journal (Jan. 24, 2022), https://www.wsj.com/articles/clean-energy-stocks-are-down-but-still-have-their-spark-11643020205.

[55] Gregory Zuckerman, *Big Investors Reconsider Oil and Gas Upside as Supplies Remain Tight*, Wall Street Journal (May 12, 2022), https://www.wsj.com/articles/big-investors-reconsider-oil-and-gas-upside-as-supplies-remain-tight-11652330144.

[56] *Id.*

[57] *Id.*

54. The bursting of the ESG bubble is unsurprising. As Phillippe van der Beck explained, "the high realized returns to sustainable equity investing over the past decade are primarily flow-driven and should hence not be interpreted as expected returns going forward."[58] This flow toward ESG funds—whether motivated by growing ESG concerns or information about future performance—created price pressure on the stocks that the large funds overweight. This price pressure may result in higher realized returns on the stocks in the short term but does not predict long-term success. "Given the extremely large flows to ESG funds observed in recent years, this suggests that sustainable investments would have drastically underperformed the market in the absence of the price pressure."[59]

55. Long term financial losses from the largest GHG emitters might be expected if forcing them to divest from their GHG emissions would help to reduce overall GHG emissions. But it won't. First, the GHG emissions from U.S. public companies make up a minuscule fraction of global GHG emissions.[60] And because GHG emissions cause temperature rise on a global and not a local scale, the change in one company's emissions in no way reflects the change in global levels or, consequently, local risks.

56. But if U.S. companies do attempt to reduce their scope III GHG emissions—for example by no longer extracting oil or natural gas or by selling off a particularly high emission portion of their business—global GHG emissions will not be reduced. Marcel Kahan and Edward B. Rock explain how all forms of divestment would be at best neutral and more likely counterproductive.[61]

57. First, an oil company could reduce its emissions by selling assets to other oil companies, as Shell recently did with its Permian Basin assets.[62] "While such a sale would reduce carbon emissions at the company level, it is unlikely to affect annual overall emissions as the buyer would likely generate emissions at a

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[58] Philippe van der Beck, *Flow-Driven ESG Returns*, Swiss Finance Institute Research Paper No. 21-71 at 2 (Oct. 2021).

[59] *Id.* at 3.

[60] Total U.S. GHG emissions—which include all publicly traded companies' emissions—are about 11% of the global total and falling. Kate Larsen, et al., *China's Greenhouse Gas Emissions Exceeded the Developed World for the First Time in 2019*, Rhodium Group (May 6, 2021), https://rhg.com/research/chinas-emissions-surpass-developed-countries/.

[61] Marcel Kahan & Edward B. Rock, *Systemic Stewardship with Tradeoffs*, NYU Law and Economics Research Paper No. 22-01 (Dec. 2021), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3974697 (discussing di-vestment and the offloading of assets to private and national firms)

[62] *Id.*

level equivalent to those of the selling company. Indeed, a sale to a less environmentally responsible operator could even increase emissions."[63]

58. Second, an oil company could reduce its emissions by reducing production from existing reserves.[64] But if one company cuts production, another company could profitably raise production—either by increasing output in an existing field or purchasing new fields. There are many state-owned foreign energy companies that would not be subject to the SEC's disclosure rules: Saudi Aramco, Russia's Rosneft and Gazprom, Kuwait Petroleum Corporation, Petróleos de Venezuela S.A., the Nigerian National Petroleum Corporation and China's Sinopec, to name just the largest.[65] Even within the U.S. there are roughly 9,000 independent oil producers who develop 91% of the wells and account for 83% of U.S. oil and 90% of U.S. natural gas production. If a publicly traded oil company drops their GHG emissions these foreign and private oil companies will pick them up and global GHG emissions would only get worse.[66]

59. What's worse, because these assets will likely be divested at a discount to avoid disclosure, this will ultimately move assets from a pot accessible to the average American to a pot only available to rich Americans. Unlike a legislative or regulatory solution like cap and trade—that would apply to private and public companies alike—the SEC's proposed rules apply only to publicly traded companies. The average American cannot own stake in private companies and generally invests by buying stocks or bundles of stocks holding publicly traded companies.

60. Climate disclosures will generate risks apart from normal compliance costs.[67] As Paul and Julia Mahoney explain,

> It is challenging for a company to describe how it will look in 2035 or 2050 without making substantial mistakes, which may generate litigation well before those years arrive. Disclosures that come in the form of a climate "score" or a carbon "cost" will necessarily put some publicly traded companies in the crosshairs of politicians and activists.[68]

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[63] *Id.*

[64] *Id.*

[65] *Id.*

[66] *Id.*

[67] Paul G. Mahoney & Julia D. Mahoney, *The New Separation of Ownership and Control*, 2021 COLUM. BUS. L. REV. 840 (2021).

[68] *Id.*

The result will be to drive carbon-intensive assets into "private or non-U.S. ownership" and will not provide the "climate benefits but will reduce the assets available for investment by U.S. retail investors."[69] The wealthier investors who can invest in private equity and the asset managers who sponsor those vehicles will benefit while the investment opportunities for Main Street investors will decrease.[70] This cannot be in the public interest.

IV. SEC's definition of "transition risks" is too narrow and too speculative to provide the basis for accurate risk assessment.

61. Lastly, the proposed rule's focus on transition risks is far too narrow and speculative to provide the basis for accurate risk assessment. Transition risks are defined as the potential negative financial impacts attributable to "regulatory, technological, and market changes to address the mitigation of, or adaptation to, climate-related risks."[71]

62. Why climate-related risks are narrowly chosen as focuses of regulatory risk is baffling, particularly given the far more likely risks that loom. Why are changes in climate policy singled out while the SEC ignores the far more likely regulatory risks posed by, for example, changes in supply chains owing to a large geopolitical upheaval like a Russian invasion of Eastern Europe, a global pandemic, or increased responsiveness to supply chains that use slave labor like those involved in the production of battery cells and solar panels in China?

63. Unlike these acute risks—which the SEC does not ask companies to predict—climate change is a long-term risk and there is no consensus on what its ultimate effects will be 50, 100, 200, or 500 years from now. By the proposed rule's logic, other speculative long-term risks should also be disclosed. Jonathan

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[69] *Id.*

[70] *Id.*

[71] 87 Fed. Reg. at 21,350

Berry suggests, "risks of a massive asteroid impact,[72] destruction of the electrical grid by a solar flare,[73] a communist revolution in the United States,[74] dramatic population decline,[75] a 'technological singularity,'[76] or even perhaps the Second Coming[77] should get the same billing as climate change."[78] Indeed, about as many Americans believe that Jesus will come again to Earth as agree that there will be negative impacts of climate change. 79% of Christians in the U.S. believe that Jesus Christ will return to earth.[79] The U.S. is 65% Christian, meaning about 51% of Americans believe in the second coming. In contrast, only about 43% of American's "think global warming will pose serious threat in their own lifetime."[80] If the SEC is serious about investor demand,[81] they must quickly require Second-Coming-related risk disclosures.

64. In calling for these climate-risk disclosures and encouraging companies to mitigate risk by switching to "green" technologies, the proposed rule also narrowly ignores the effect of increased regulation likely in response to the negative consequences of photovoltaics, wind turbines, and battery production. The proposed rule repeatedly suggests that companies might mitigate their risk by switching to "less carbon-intensive sources"[82] by developing "solar or other renewable energy sources,"[83] or switching to "electric vehicles."[84] But these technologies come with their own risks. For example, about half of the world's polysilicon, a key component in solar panels, is produced in the Xinjiang region—

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[72] *See* Graciela Chichilnisky, *Asteroids: Assessing Catastrophic Risks*, (July 2005) https://dx.doi.org/10.2139/ssrn.1525939.

[73] *See* Karen C. Fox, *Impacts of Strong Solar Flares*, NASA (May 13, 2013) https://www.nasa.gov/mission_pages/sunearth/news/flare-impacts.html.

[74] *See* Gordon S. Watkins, *Revolutionary Communism in the United States*, 14 AM. POL. SCI. R. (Feb. 1920), https://doi.org/10.2307/1945723.

[75] *See* Paul Mackun et al., *More Than Half of U.S. Counties Were Smaller in 2020 Than in 2010,* U.S. Census Bureau (Aug. 12, 2021) https://www.census.gov/library/stories/2021/08/more-than-half-of-united-states-counties-were-smaller-in-2020-than-in-2010.html.

[76] *See* Ray Kurzweil, THE SINGULARITY IS NEAR 2005 (projecting the singularity by the mid 21st century).

[77] Rev. 22:20 ("He which testifieth these things saith, Surely I come quickly. Amen. Even so, come, Lord Jesus.")

[78] Letter of Jonathan Berry, former Acting and Principal Deputy Assistant Secretary for Policy for the Department of Labor, to Ali Khawar, Acting Assistant Secretary of Labor (Dec. 13, 2021).

[79] *See* Russel Heimlich, The Second Coming of Jesus, Pew Research Center (Apr. 21, 2009).

[80] Lydia Saad, Are Americans Concerned About Global Warming?, Gallup (Oct. 5, 2021).

[81] *See* 87 Fed. Reg. at 21,355.

[82] *See* 87 Fed. Reg 21,354.

[83] *See* 87 Fed. Reg. at 21,355.

[84] *See* 87 Fed. Reg. at 21,355; 87 Fed. Reg. at 21380.

the location of the Uyghur genocide currently being perpetrated by Xi Jinping's Chinese Communist Party—which has led U.S. law makers to crack down on solar imports.[85] President Biden's probe into solar imports has 65% of planned U.S. solar projects at risk of failure.[86] The risk mitigation the SEC suggests may be jumping out of the frying pan and into the fire.

65. The proposed rule also suggests that registrants that operate "in a jurisdiction that has made commitments under the Paris Agreement" must disclose the risks of theoretical policy made to conform with the Agreement's aspirations.[87] But the Paris Agreement is not a binding commitment. It was never approved by Congress, and the United States has found itself "in and out and back in again."[88] The SEC's efforts to force companies to disclose how they are striving to meet these goals seem to be an effort to make these agreements binding through the back door.

66. The proposed rule's focus on transition risks related to an "anticipated reduced demand for fossil fuels," ignores the bare facts of the matter: fossil fuel demand is increasing, not decreasing. While carbon emissions are declining, American oil and gas production have continued to grow.[89] The U.S. Energy Information Administration expects U.S. fossil fuel production to reach new highs in 2023.[90] While coal is projected to continue to decline, petroleum and natural gas production are expected to continue to increase through 2050.[91]

67. The continuing increase in oil and natural gas is in part because they are essential to global manufacturing and food production.[92] Oil and natural gas are core

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[85] *See* Thomas Kaplan, et al., *U.S. Bans Imports of Some Chinese Solar Materials Tied to Forced Labor*, New York Times (June 24, 2021), https://www.nytimes.com/2021/06/24/business/economy/china-forced-labor-solar.html.

[86] Jennifer A. Dlouhy, *Biden Probe Into Solar Imports Risks 65% of Planned U.S. Projects*, Bloomberg (Apr. 19, 2022), https://www.bloomberg.com/news/articles/2022-04-19/solar-trade-probe-risks-65-of-planned-u-s-projects-group-says.

[87] 87 Fed. Reg. at 21,361.

[88] Hester Peirce, *We are Not the Securities and Environment Commission*, *supra*.

[89] *U.S. Natgas Output, Demand to Rise in 2022*, Reuters (Apr. 12, 2022), https://www.reuters.com/business/energy/us-natgas-output-demand-rise-2022-eia-2022-04-12/.

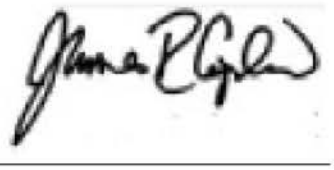
[90] U.S. Energy Information Administration, *EIA expects U.S. fossil fuel production to reach new highs in 2023*, (Jan. 21, 2022), https://www.eia.gov/todayinenergy/detail.php?id=50978.

[91] U.S. Energy Information Administration, *Energy and the environment explained*, https://www.eia.gov/energyexplained/energy-and-the-environment/outlook-for-future-emissions.php (last updated Apr. 12, 2022).

[92] C. Boyden Gray, *Fossil Fuels and a Positive Vision for American Energy*, 21 GEO. J. L. & PUB. POL. (forthcoming 2022), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4088564.

to the synthesis of fertilizers, plastics, and steel. Without fertilizer made from natural gas, our farmland could sustain only about half of the global population.[93] Without oil and gas, we could not make the 99.8% of plastics derived from these sources—essential to modern technology.[94] And without fossil fuels, steel cannot be produced, and we could not build all of the new solar panels, wind turbines, and electric vehicles the SEC thinks are so essential to the financial future of U.S. companies.[95] These are all good reasons to expect that regulatory pressure will not lead to a "reduced demand in fossil fuels."

68. Finally, regulatory risks, as far as they are predictable, are already priced in. Investors are aware of current trends in the regulatory environment and respond accordingly. Investors already have the background expectation that government pressure will lead to the adoption of more low-carbon technology. This is why a company like Tesla—with a 2021 revenue of $53.8 billion—has a market cap of $671.8 billion and a company like General Motors—with a 2021 revenue of $127 billion—has a market cap of $46.1 billion. The market knows how to account for regulatory risk, and it does not need every publicly traded company to make third-party attested prognostications about future U.S. climate policy. The only purpose those disclosures would serve is to leave companies vulnerable to lawsuits by activists.



Executed on: June 17, 2022

James R. Copland

[93] *Id.*

[94] *Id.*

[95] *Id.*

JAMES R. COPLAND IV

[redacted] [redacted]

CURRENT POSITION

Manhattan Institute for Policy Research — New York, NY
Director, Legal Policy — 2003-Present
Senior Fellow — 2010-Present

- Manage legal policy efforts for non-partisan 501(c)(3) think tank.
  - Legal policy efforts center on developing and communicating sound ideas for reforming America's civil and criminal justice systems.
  - Portfolio of projects and initiatives has included empirical analyses, policy development, and popular communications.
- Engage in written research and advocacy, as both an author and editor.
  - Have authored scores of policy white papers, book chapters, and articles in law journals, including the *Yale Journal on Regulation* and *Harvard Business Law Review*.
  - Have edited papers written by leaders in the academy and private practice.
  - Have written more than 100 popular opinion pieces leading national periodicals including *The Wall Street Journal*, *The Washington Post*, *National Law Journal*, and *USA Today*.
- Speak regularly to specialized and popular audiences on legal-policy issues.
  - Have testified before both houses of Congress, state and municipal legislative bodies, and international government bodies.
  - Have been consulted by the U.S. Sentencing Commission, the Administrative Conference of the United States, and the Executive Office of the President.
  - Have made hundreds of media appearances in such outlets as PBS, Fox News, MSNBC, CNBC, Fox Business, Bloomberg, C-Span, and NPR.

Author: The Unelected: How an Unaccountable Elite Is Governing America (Encounter Books, 2020)

- "Copland argues persuasively . . . that quite a lot of our governance comes from people we didn't vote for, and whom we cannot vote out to hold them accountable for misrule."
  —Dan McLaughlin, *National Review*
- "The clearest and most succinct summary of these complicated subjects that I have ever seen."
  —Mark Pulliam, *Law and Liberty*
- "A masterful history."
  —Philip K. Howard, author, *The Death of Common Sense*; founder, Common Good
- "Copland's insightful historical and legal analysis is a necessary precondition to any institutional solution."
  — Richard A. Epstein, Laurence A. Tisch Professor of Law, NYU Law School
- "Jim Copland knows more about this subject than almost anyone—and after you read this book, you will too."
  —Walter K. Olson, author, *The Litigation Explosion*; senior fellow, Cato Institute

Awards

Directorship 100: Published by the National Association of Corporate Directors, designating the individuals most influential over U.S. corporate governance (multiple occasions).

Legal Reform Champion: Research: Awarded by the U.S. Chamber of Commerce Institute for Legal Reform, for *Trial Lawyers, Inc.* series of publications on civil litigation in America.

PRIOR POSITIONS

McKinsey and Company — New York, NY
Associate — 2000-2002

- Worked on post-merger management for major pharmaceutical companies and banks and on high-net-worth client strategy for financial institutions.
- Assisted on development of McKinsey's internal electronic research platform.
- Assisted firm's internal asset manager on private and public equity portfolio.

United States Court of Appeals for the Second Circuit — New York, NY
Law Clerk, Chief Judge Ralph K. Winter — 1999-2000

Chase Securities, Inc. — New York, NY
Summer Associate, Investment Banking — Summer 1998

Moore & Van Allen — Charlotte, NC
Summer Associate, Corporate Law — Summer 1997

Robinson, Bradshaw & Hinson — Charlotte, NC
Summer Associate, Law — Summer 1997

EDUCATION

Yale University — New Haven, CT
Juris Doctor — 2003
Master of Business Administration — 1999
Awards: John M. Olin Fellow in Law and Economics
Coker Fellow in Constitutional Law
Leadership: Teaching Fellow in Macroeconomics, Game Theory
Yale Federalist Society, Vice President
Yale Journal on Regulation, Articles Editor, Submissions Committee

London School of Economics and Political Science — London, UK
Master of Science in Politics of the World Economy — 1995

University of North Carolina at Chapel Hill — Chapel Hill, NC
Bachelor of Arts with Highest Distinction, Economics with Highest Honors — 1994
Awards: John Motley Morehead Scholar
National Merit Scholar
Honors Prize in Economics
Phi Beta Kappa
Leadership: Student Body President
Carolina Critic, Publisher, Editor

BOARDS AND OTHER AFFILIATIONS

Elizabeth City State University (Elizabeth City, NC), *Trustee* (2021-Present)
First Presbyterian Church (New Bern, NC), *Elder* (2022-Present), *Pastor Nominating Comm.* (2020-21)
Tryon Palace Foundation, *Director* (2020-Present)
African-American Heritage & Culture Center of New Bern, *Founding Director*, *Treasurer* (2019-Present)
Government Justice Center (Albany, NY), *Director* (2018-Present)
Copland Fabrics, Inc. (Hopedale, NC), *Director* (1998-Present), *Vice Chairman* (2018-Present)
Epiphany School of Global Studies (New Bern, NC), *Trustee* (2019-2020)
Copland Industries, Inc. (Hopedale, NC), *Director* (1997-2019), *Vice Chairman* (2018-2019)
Union Church of Pocantico Hills (Sleepy Hollow, NY), *Trustee* (2014-2019), *President* (2015-2016)
Fifth Avenue Presbyterian Church (New York, NY), *Elder* (2006-2009)
University of North Carolina at Chapel Hill (Chapel Hill, NC), *Trustee* (1993-1994) (*ex officio*)

Attachment 4:
C. Boyden Gray, *Fossil Fuels and a Positive Vision for American Energy*, Georgetown Journal of Law & Public Policy (Forthcoming 2022).

A POSITIVE VISION FOR AMERICAN ENERGY

C. Boyden Gray*

ABSTRACT

To make good policy we need good data. The data against fossil fuels has been presented and used to justify radical and prescriptive energy policies. But these policies fail to appreciate the full benefits of fossil fuels: their centrality in the production of modern materials, the powering of the modern energy grid, the health of the manufacturing sector, and America's geopolitical position. At the same time, the disadvantages of fossil fuels are exaggerated: conflating the evidence of climate change with evidence of an imminent apocalypse, ignoring the strides that have already been made in pollution reduction, and overlooking the costs of a transition to solar and wind. This myopia is used to justify prescriptive policies that categorically reject disfavored forms of energy while subsidizing favored forms and ignoring the consequences.

This article argues that such prescriptivism is not the most efficient way to accomplish our goals. Our greatest climate successes have come from setting aggressive goals and allowing them to be reached through market-based and technology-neutral means. Thus, energy policy should focus on setting realistic and holistic goals for the advance of our people and our nation. America can reduce global greenhouse gas emissions while promoting American workers and families. A positive and realistic energy policy is built around four pillars. First, Congress should limit greenhouse gas emissions directly and broadly. Second, other regulatory hurdles should be streamlined to speed new and clean development. Third, other non-carbon emission regulations should be streamlined to account for the changing technological, and increasingly international landscape. Fourthly, we should direct investment in the protection of our natural resources directly. This positive approach will help build a better life for Americans and be more—not less—effective in mitigating climate change.

INTRODUCTION

Policymaking is an exercise in confronting reality. At the heart of this enterprise is the difficult work of weighing relative costs and benefits. The quality of such evaluations, however, can only be as good as the data itself. If the data is incomplete or faulty, the cost–benefit assessment will be worthless, or worse.

The dangers of this approach are evident in the current debates surrounding climate policy. Climate change towers over all other modern environmental policy questions. Yet, despite (and in

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some ways because of) the energy and resources devoted to this matter by scientists and policymakers, discussions by politicians and the press about climate policy are often only tenuously connected to anything like a dispassionate evaluation of the available scientific evidence.[2] Indeed, misleading and downright false claims in reporting on climate change is endemic.

The American people have noticed, and, unsurprisingly, public opinion has never coalesced to the point where significant legislation addressing climate issues has been politically achievable. In light of this, states and business interests like California and Blackrock have sought to drive American climate policy, often through strategies that are democratically unaccountable and legally dubious. These strategies may be in the political and financial interests of these players, but as shown below they are not grounded in sound environmental science.

There is a better way, one that recognizes the need to make policy changes considering climate change but does so in way that is grounded in climate realism and that balances the costs of climate change with the benefits of fossil fuels. We have done this before. Previous "environmental crises"—crises like acid rain, the depletion of the ozone layer, and lead poisoning—have been handled through more democratically accountable and market-based methods. Each of these efforts have been unbelievably successful and have achieved broad support. But to confront climate change, we first must accept what the scientific evidence shows about the risks of climate change and the costs of decarbonization. This article gives an account of that data and sketches out a climate policy that will support both the flouring of the planet and of its people. What we advocate for, in other words, is neither climate alarmism nor climate denial, but climate realism.

The data in favor of a clean energy revolution that largely eliminates fossil fuels have been presented at length. This article presents the countervailing evidence so that it too may factor into our calculations. To miscalculate is to abandon natural resources that have improved and prolonged billions of lives and ushered in an age of unprecedented prosperity. And while this has had environmental costs, the wide availability of affordable fossil fuels has also had many positive environmental effects, especially in limiting the negative impact of human settlements.

This article proceeds in three parts. Part I outlines some of the major advantages earth-sourced fossil fuels have over weather-dependent solar and wind, noting the positive changes to daily life that oil and natural gas brought about through the 20th century. Discussing how both oil and natural gas remain indispensable to production of modern materials, the powering of the modern energy grid, the health of the manufacturing sector, and the importance of oil and natural gas to America's geopolitical position.

Part II presents evidence against the exaggerated claims offered by critics of oil and natural gas. First, showing how projections of environmental catastrophe are unsupported by the data and

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[2] Scientific inquiry itself has become more politicized in recent decades. *See* Lief Rasmussen, *Increasing Politicization and Homogeneity in Scientific Funding: An Analysis of NSF Grants, 1990-2020*, CSPI Report No. 4 (Nov. 16, 2021), https://cspicenter.org/reports/increasing-politicization-and-homogeneity-in-scientific-funding-an-analysis-of-nsf-grants-1990-2020/. This is a significant problem, but one that is outside the scope of this article.

how natural gas in particular can serve a valuable role in reducing global greenhouse gas (GHG) emissions. This section also disentangles the conflation of GHGs with pollutants of other sorts and recounts how, over the last 50 years, America's water, air, and forests have become cleaner than ever in modern history. Lastly, this section examines some consequences of wind and solar production often ignored because of their low GHG production—specifically the quantum of materials required for construction, the emissions intensity of their construction, their massive land requirements, issues with waste, and human rights implications—which fail to be captured in our existing regulatory framework.

Finally, Part III proposes a positive vison for American energy policy—making several policy suggestions that would strike the right balance between ignoring and exaggerating the advantages and disadvantages of fossil fuels. The best way to make environmental policy is to set attainable emissions goals and to let the market select from the best technical solutions, rather than picking winners and losers based on oversimplifications. The article thus proposes a suite of technology neutral policies to as a positive alternative to our current prescriptive approach. First, Congress should limit greenhouse gas emissions directly and broadly. Second, other regulatory hurdles should be streamlined to speed new and clean development. Third, other non-carbon emission regulations should be streamlined to account for the changing technological, and increasingly international landscape. Fourthly, we should direct investment in the protection of our natural resources directly. This positive approach will be more—not less—effective in mitigating climate change and will simultaneously encourage reshoring of American manufacturing, enhancing American competitiveness, energy security, and national security, and revisions to our regulatory framework to capture the externalities of emerging energy sources that are ignored in our current statutory framework.

By taking a data driven and human centric approach, the United States can remain a leader on the world stage and take the lead in preserving our shared home. If we ignore the data, we can do neither.

I. THE UNDERAPPRECIATED ADVANTAGES OF FOSSIL FUELS.

A. Fossil fuels launched the high-energy age.

It is hard to overstate how much fossil fuels transformed the world during the 20th century. Fossil fuels began supplying more than half of the world's primary energy sometime during the 1890s.[3] By 1900, fossil fuels contributed about 6,000 terawatt-hour-equivalents (TWh-e) per year, about half the world's energy, with world energy consumption at about 3,900 kilowatt-hour-equivalents (kWh-e) per person per year—about the equivalent of 311 gallons of gasoline. A century later, fossil fuels had grown to produce 89,000 TWh-e per year, dominating the energy balance and raising per capita energy availability, despite massive population growth, to 17,000 kWh-e per person per year— about the equivalent of 1,356 gallons of gasoline. Of this, only about

[3] Vaclav Smil, Energy in the Twentieth Century: Resources, Conversions, Costs, Uses, and Consequences, 25 ANNUAL REV. ENERGY AND THE ENVIRONMENT 21, 22 (2000).

20% is ultimately consumed in the form of electricity. This four-fold increase in energy availability understates the change. Efficiencies and the services that could be provided per energy unit increased even more dramatically.[4] Conservative calculations suggest that by the year 2000 the world had 25 times as much useful energy at its disposal than it did in 1900.[5]

Energy growth in the 20th century was dominated by oil and natural gas.[6] Since the turn of the 21st century, global solar and wind energy consumption have also grown dramatically—from 1 and 31 terawatt-hours (TWh-e) respectively in the year 2000 to 724 and 1,430 TWh-e in 2019. But even this growth is less than 10% of the 26,000 TWh-e growth in oil and natural gas consumption during the same period.[7]

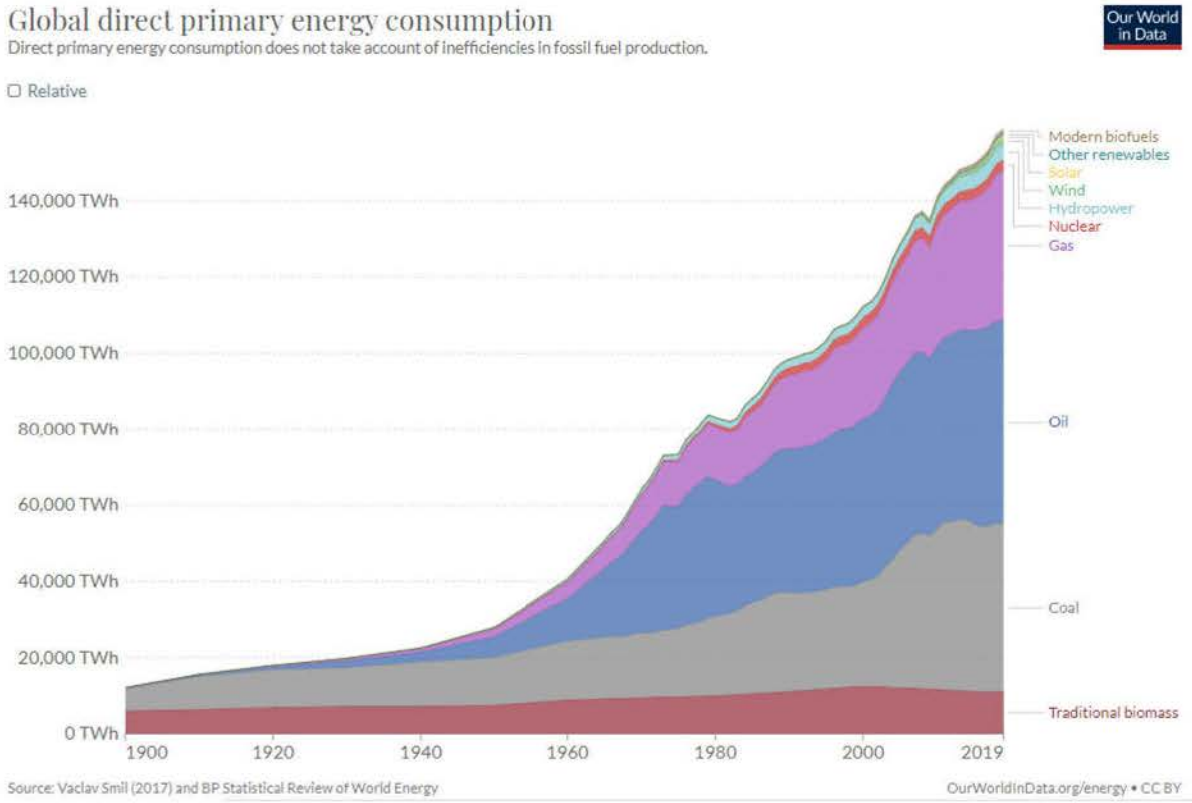

Figure 1: Global energy consumption from all sources[8]

[4] *Id.* at 23.

[5] *Id.*

[6] Global direct primary energy consumption, OUR WORLD IN DATA, https://ourworldindata.org/grapher/global-primary-energy

[7] *Id.*

[8] Global direct primary energy consumption, OUR WORLD IN DATA, https://ourworldindata.org/grapher/global-primary-energy

This power growth enabled quality of life improvements on a scale never before seen. In 1900 the rare, electrified house had a few low powered lightbulbs. By 2000 the average middle-class home had dozens of lightbulbs, multiple TVs, radios, refrigerators, freezers, electric or natural gas ovens and stove tops, air conditioning for the hot summer and reliable, push-button heat for the cold winter. The average American went from walking being his only reliable form of transportation to owning one, two, or three cars with a dozen times more power than the best horse. The two-thousand-mile trip from Independence, Missouri to Oregon City, Oregon took a mid-19th century traveler 160 days to complete. It can now be accomplished in a five-and-a-half-hour flight.

Lives are not just brighter, but longer, driven by improvements in sanitation, public health, and medical treatments. Mortality from all causes in the United States declined 54% from 1900 to 2010.[9] Deaths from accidents and infectious diseases have dropped to a fraction of their 19th century levels. The two leading causes of death in 2010—heart disease and cancer—are largely deaths of senescence. In 1900, the average American newborn could expect to live 47.3 years. As of 2010 they could expect to live to almost 79, more than 30 years of additional life.[10]

B. Fossil fuels started a materials revolution.

These personal power revolutions came on the back of their industrial counterparts, particularly in the United States. The Industrial Production Index, a measure of real output of United States manufacturing and utilities, grew by a factor of 18 from 1919 until 2000.[11] Some of this development can be attributed to the availability of reliable energy but it is as much a materials revolution as anything else. Oil and natural gas are core to the synthesis of fertilizers, plastics, and steel. Without any of these, modern life would be impossible.

Fertilizer

Synthetic nitrogen fertilizers, made with ammonia, account for most of the fertilizer used in the world. This ammonia is synthesized in the energy-intensive Haber-Bosch process, which fixes atmospheric nitrogen to the hydrogen atoms of natural gas. This fertilizer is key to modern food production. Without the fertilizer derived from the Haber-Bosch process, the best estimates are that current farmland could sustain only about half of the global population.[12]

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[9] Rebecca Tippet, *Mortality and Cause of Death, 1900 v. 2010*, Carolina Demography (June 16, 2014) https://ncdemography.org/2014/06/16/mortality-and-cause-of-death-1900-v-2010/.

[10] *Id.*

[11] Industrial Production: Total Index, Federal Reserve Economic Data

[12] World population supported by synthetic fertilizers, OUR WORLD IN DATA, https://ourworldindata.org/how-many-people-does-synthetic-fertilizer-feed/

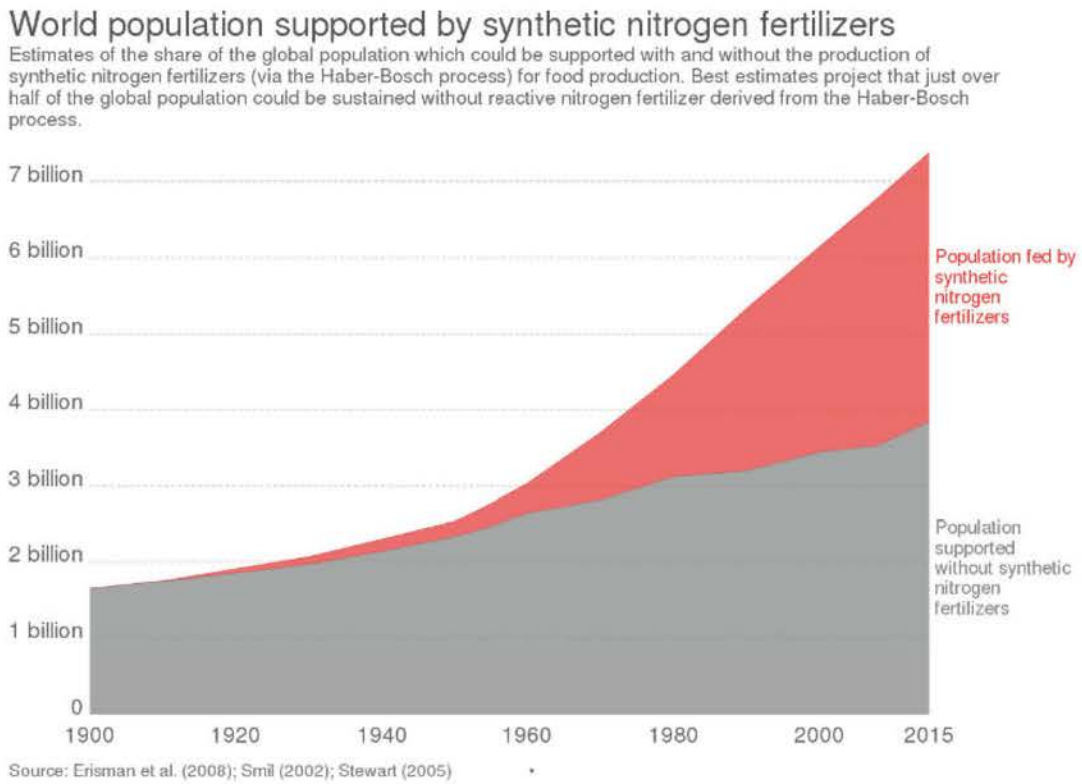

Figure 2: World population supported by synthetic fertilizer created with natural gas[13]

Along with synthetic fertilizer, fossil fuels also provided the energy for sophisticated farm machinery and automated irrigation systems. Together these innovations have tripled the per-acre yield of the world's cropland and have improved yields in the United States nearly ten-fold and helped eliminate the widespread malnutrition of the 19th century.[14]

Plastics

Modern life is unimaginable without plastics. We wake up on pillow stuffed with synthetic filling, brush our teeth with a plastic toothbrush, make our coffee in a plastic coffee maker, grab our breakfast from a plastic-lined refrigerator, put on our plastic North Face jacket, turn off the plastic light switch, open the plastic door handle to our car, and drive to an office where we work on a plastic computer and answer a plastic phone

Plastics are truly indispensable in the medical field. Disposable syringes, surgical gloves, IV bags and tubes, durable packaging for pills, protective coatings on instruments, medical waste disposal bags, stents, prosthetics, diagnostic tools, and virtually every item that might be found in a

[13] *Id.*

[14] Smil, *supra* note 3, at 35–36.

hospital, clinic, or doctor's office is made with plastics. While metal and glass alternatives exist, plastics are far less expensive and eliminate the need for costly and complicated sterilization.[15]

The primary materials used for these medical devices have been, since the advent of plastics in the 1930s and 1940s, polyethylene (PE), polypropylene (PP), and polyvinyl chloride (PVC), the first, second, and third most widely used plastics, respectively.[16] PE and PVC, are both polymers synthesized from ethylene. In the United States this ethylene is made through the steam cracking of ethane, isolated from natural gas. It can also be made through the steam cracking of naphtha, a petroleum product, though the process is more complicated, lower yield, and higher cost.[17] PP is similarly made through the refining and polymerization of propane, isolated mostly from shale gas in the United States and naphtha in the rest of the world.

Steel

Steel too owes its rise to fossil fuels. World steel production was 28 million metric tons per year in 1900 and rose to 781 million metric tons per year in 2000.[18] This steel is used to build cars, planes, ships, containers, and buildings, and provides the structural backbone of most of the world's commercial and industrial activity. Steel is used to make household goods, from chef's knives to wood stoves, and it is an integral component of solar panels, wind turbines, dams, and electric vehicles.

The main inputs in steel production are iron ore and energy.[19] Carbon monoxide and hydrogen are the reducing agents that help separate the oxygen from the iron ore. Almost all the carbon monoxide and hydrogen used in this reduction are generated from fossil fuels—largely coal but increasingly natural gas.[20]

The materials consequences of eliminating fossil fuels

Advocates calling for an end to oil and natural gas drilling and leasing have not properly accepted the outsized role of fossil fuels in materials production. Even strong proponents of decarbonization have recognized the difficulties that will accompany decarbonizing heavy industry.[21] For example, while the prevalence of single use plastics can be reduced through

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[15] https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3791860/

[16] Len Czuba, Applications of Plastics in Medical Devices and Equipment, Handbook of Polymer Applications in Medicine and Medical Devices 9 (2014).

[17] Hepeng Jia, Uncertainty clouds China's dream of making ethylene from ethane, Chemical & Engineering News (Feb. 16, 2020) https://cen.acs.org/business/petrochemicals/Uncertainty-clouds-Chinas-dream-making/98/i7.

[18] International Energy Agency, *Iron and Steel Industrial Roadmap*

[19] *Id.*

[20] *Id.*

[21] https://www.brookings.edu/research/the-challenge-of-decarbonizing-heavy-industry/

intelligent regulations,[22] the properties of plastics are nearly irreplaceable—no one wants to return to glass medical syringes. While some have suggested a transition to bioplastics—polymers derived from non-fossil fuel sources like sugarcane—but nearly all plastics still come from fossil fuels. As of 2014, bioplastics represented only 0.2% of the global polymer market, and there is some debate as to their carbon savings.[23] Analogously, while Sweden has recently boasted of the first "fossil-fuel-free" steel, it will not be commercially available until 2026 and is unlikely to be cost effective until 2040.[24] In the meantime steel production is currently responsible for 8% of the world's energy demand and is expected to increase by more than a third by 2050.[25]

Rather than eliminating fossil fuel production and letting the materials cards fall where they may, we would be better served by seeking more realistic strategies for reducing industry carbon. As noted in the introduction, and as will be expanded upon in the Part III, policies like carbon cap-and-trade coupled with intelligent trade policies could better encourage the use of lower carbon materials production.

C. Fossil fuels make our grid reliable and our electricity inexpensive

While material production has proven difficult to decarbonize, electricity has been somewhat less so. In 2020, for the first time, renewable energy—consisting of solar, wind, hydro, and biomass power—surpassed coal in United States electrical capacity.[26] United States coal-fired electricity generation peaked in 2007 and has plummeted since. This gap was made up in part by wind and solar, but largely by natural gas which has grown to provide 40% of America's electricity.[27]

This shift to natural gas for power generation is the largest single factor in America's reduction of GHG emissions. While coal emits 2.2 pounds of carbon dioxide equivalent (CO2e) per kWh, natural gas emits only 0.9 pounds per kWh.[28] By substituting natural gas for coal in much of our electricity production, the United States power sector has stopped being the largest contributor to United States GHG emissions. Overall United States GHG emissions have fallen from a peak of

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[22] *See, e.g.*, HOW TO SAVE THE PLANET, ROGER SCRUTON

[23] Andreas Künkel et al., Ullmann's Encyclopedia of Industrial Chemistry 1–29 (2016). doi:10.1002/14356007.n21_n01.pub2.

[24] Scott Carpenter, Swedish Steelmaker Uses Hydrogen Instead of Coal to Make Fossil-Free Steel, FORBES (Aug. 31, 2020) https://www.forbes.com/sites/scottcarpenter/2020/08/31/swedish-steelmaker-uses-hydrogen-instead-of-coal-to-make-fossil-free-steel/?sh=539b46ac2c8b.

[25] International Energy Agency, *Iron and Steel Industrial Roadmap*

[26] Energy Information Administration, Monthly Energy Review (July 28, 2021) https://www.eia.gov/todayinenergy/detail.php?id=48896

[27] *Id.*

[28] https://www.eia.gov/tools/faqs/faq.php?id=74&t=11

over 6 billion tons of CO2e in 2007 to just 5.1 billion in 2019—roughly equivalent to emissions in 1980.[29] United States peak GHG production is in the past.

This GHG reduction cannot be attributed to wind and solar. While wind energy is quickly growing it still makes up only about 8% of electricity generation and solar only 2%.[30] Ten percent of electricity generation from solar and wind is a far cry from 100%. To achieve an electrical grid powered by solar and wind, dramatic changes will need to occur and will only come at great impact to cost and reliability.

The unreliability of wind and solar

Much of the challenge of building a grid mostly with wind and solar has to do with their intermittency. An electrical grid must be able to handle inevitable gaps when generation sources are not running to prevent blackouts or other system failure. In a fossil fuel power grid this is accomplished through a limited redundancy that can handle scheduled and unscheduled plant downtime. But wind and solar are naturally intermittent due to weather dependency, have output patterns that do not match daily or seasonal peak demand patterns, and generally operate at a far smaller fraction of their capacity than fossil fuel sources.[31]

Proponents of intermittent sources typically scoff at those who point out that the sun doesn't always shine, and the wind doesn't always blow. And it is true, much of this day-night variability of sunlight and wind can be overcome with geographic diversity and limited storage. But the true challenge of an all-renewable grid at a national scale is not the diurnal changes, but seasonal variabilities and the possibility of occasional multiday weather events which can and do stop electricity production at solar and wind generation facilities.[32]

Multiday weather events require multiple days of storage. Even a bit of storage can be expensive. Consider California's $400 million, recently activated Moss Landing, grid-scale battery.[33] The new battery has a capacity of 400 megawatts (MW) and 1600 MWh, more than ten times larger than Tesla's South Australian battery. But operating at capacity the battery can only provide 4 hours of backup and this for only part of California's overall electricity demand. California's consistent energy demand hovers between 20,000 and 25,000 MW. This means there

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[29] https://www.eia.gov/totalenergy/data/browser/xls.php?tbl=T11.01&freq=m

[30] Energy Information Administration, Monthly Energy Review (July 28, 2021) https://www.eia.gov/todayinenergy/detail.php?id=48896

[31] This gap is captured by capacity factors, a comparison of net generation with available capacity. Compare an average capacity factor of nuclear power (92.4%) to solar (24.2%) and wind (35.3%) in the U.S. in 2020. *Capacity Factors for Utility Scale Generators Not Primarily Using Fossil Fuels*, Energy Information Administration (Jan. 26, 2022) https://www.eia.gov/electricity/monthly/epm_table_grapher.php?t=epmt_6_07_b .

[32] For example, solar photovoltaic power operated at a capacity factor of 22.2% in June 2020, but only 14.9% in December. *Id.; see* https://www.city-journal.org/california-switch-to-primarily-solar-and-wind-powered-grid-is-dead-end

[33] *Id.*

would need to be about 60 Moss Landings to provide just 4 hours of back up for the whole state.[34] Conservative estimates suggest California would need to spend at least $40 billion to make it through a power drought of several days.

Moreover, owing to the short life cycles of batteries compared conventional grid equipment like gas-fired peaking generators, the investment could balloon to well over $100 billion in the next few decades—and this is just for storage.[35] In contrast, when-needed natural gas turbine backups can be reliably operated for decades and could back up a California-scale conventional grid for only about $10 billion.[36]

The real cost of wind and solar power

As a result of intermittency, the true costs of an all wind and solar grid are far higher than their cost reflected as only a component of the grid. A recent study suggested that to reliably meet 100% of total annual electricity demand an all wind and solar grid would require several weeks' worth of energy storage or the installation of far more capacity than is routinely necessary to meet average demand.[37] Additional capacity is required because a wind and solar grid would need to provide enough energy for baseline power, for peak demand, and to charge batteries—all in all amounting to about triple a conventional grid's capacity.[38] This means that to be truly price competitive, renewable sources would need to be between 1/3 and 1/2 the per-kW costs of fossil fuels. They are not. In 2020 the low-end lifetime costs of power were $31 per megawatt-hour for utility solar, $26 for wind, and to $28 for natural gas.[39] Moreover, these costs do not account for the benefit of reliability or ability to locate such generation resources near population centers. These factors materially impact the cost of supply for consumers once utility-scale storage or transmission build-outs are added to the calculus.

All of this means that the current grid is much cheaper than the solar and wind grid of the future. We are already reaping the first fruits of this transition. Germany, a self-proclaimed poster child of decarbonization, closed 12 of its 19 nuclear power plants and is planning to shut down all 84 of their coal plants over the coming years.[40] This capacity has been replaced largely by growing

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[34] California ISO, Current and Forecasted Demand, http://www.caiso.com/TodaysOutlook/Pages/index.html

[35] https://www.city-journal.org/california-switch-to-primarily-solar-and-wind-powered-grid-is-dead-end

[36] https://www.city-journal.org/california-switch-to-primarily-solar-and-wind-powered-grid-is-dead-end

[37] Matthew R. Shaner, et al., Geophysical constraints on the reliability of solar and wind power in the United States, 4 ENERGY & ENVIRONMENTAL SCI. (2018).

[38] 26 Stephen Brick and Samuel Thernstrom, "Renewables and Decarbonization: Studies of California, Wisconsin, and Germany," Electricity Journal 29, no. 3 (April 2016): 6–12.

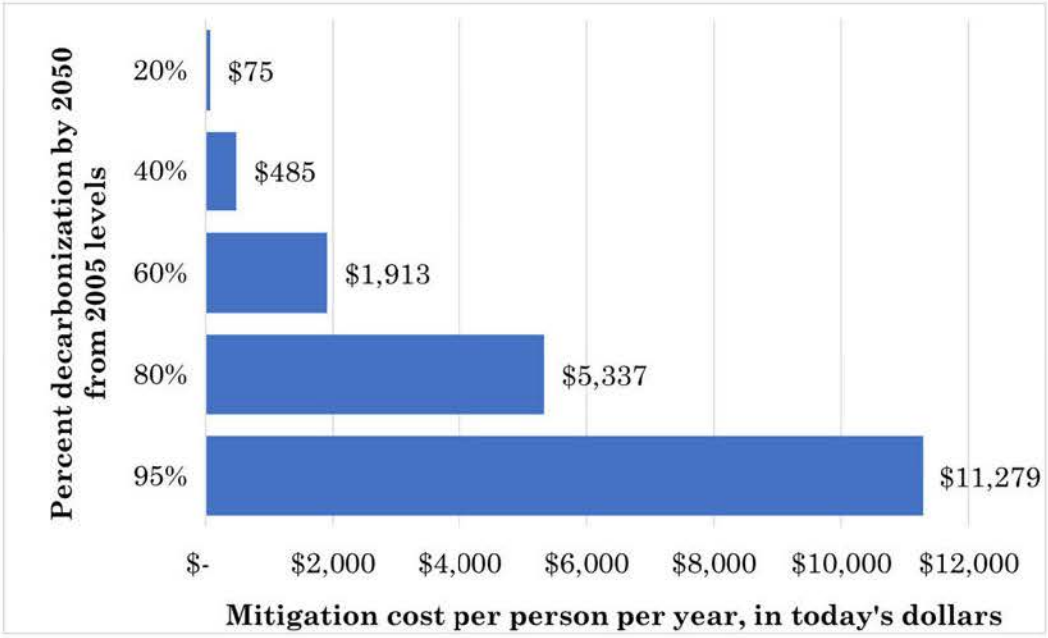
[39] Lazard's Levelized Cost of Energy Analysis, LAZARD 2 (2020) https://www.lazard.com/media/451419/lazards-levelized-cost-of-energy-version-140.pdf

[40] https://www.latimes.com/world/europe/la-fg-germany-coal-power-20190126-story.html

solar and wind generation, which makes up 1/3 of Germany's electricity production.[41] The result? German citizens spend 37 cents per kWh on electricity, nearly triple the United States cost.

When the wind in the North Sea stopped blowing this past September, a cascade of failures led to surging power costs across Europe.[42] To make up for the shortfall, utilities turned to natural gas and oil. With limited recent production, a surge in demand led to spiking prices heading into a long winter. To the east, across the Himalayas, rolling blackouts began in China and Indian where power stations scrambled for more coal. Americans are somewhat insulated from the crisis, but the pain is still acute. Estimates have United States households paying between $200 and $500 more for heating during the 2021–22 winter,[43] while 6 in 10 have less than $500 in savings.[44]

The short-term pain eliminating fossil-fuels from the grid will be acute, but the long-term pain will be devastating. A recent *Nature* study, in support of the Biden administration's net-zero by 2050 plan, investigated the cost of different levels of decarbonization. While some fractional GHG reduction is inexpensive, reaching even 95% decarbonization would cost around $11,279 per person per year in today's dollars.[45] For a family of four that amount is over $45,000 or 2/3rds of the median household income in the United States.



[41] https://www.eia.gov/international/data/country/DEU/electricity/electricity-generation

[42] https://www.wsj.com/articles/energy-prices-in-europe-hit-records-after-wind-stops-blowing-11631528258?

[43] https://www.theguardian.com/us-news/2021/oct/14/us-heating-bills-natural-gas-electric-oil-propane

[44] https://money.cnn.com/2017/01/12/pf/americans-lack-of-savings/index.html

[45] Wei Pang et al., "The Surprisingly Inexpensive Cost of State-Driven Emissions Control Strategies" 11 NATURE CLIMATE CHANGE, 738 s7 (Aug. 23, 2021) https://www.nature.com/articles/s41558-021-01128-0

Figure 3: Cost of decarbonization per person per year[46]

The electricity consequences of eliminating fossil fuels

Proponents of a fossil-fuel free grid rely on the promise of technological developments rendering solar, wind, and storage far cheaper than they are today, citing the rapidly falling prices of these technologies.[47] But past performance may not predict future results. Technology development will come but so will surging prices and supply chain issues.[48] Energy storage is the lynchpin of most intermittent grid plans, but the energy density simply is not there. The best commercially available battery technology, lithium-sulfur, has energy capacity two to three times more than the common lithium-ion batteries but still 28 times less than natural gas.

Overcoming these barriers would not require a mere engineering improvement but a scientific revolution. Engineering improvements are routine, and gains—even if diminishing gains—can be expected. This sort of engineering growth is most famously embodied by Moore's law, which observed that the number of transistors that could be squeezed into an integrated circuit doubles every two years.[49] Similar, but more modest gains, have been seen in photovoltaic efficiency. Commercially available cells had efficiencies of only around 10% in the 1960s but have grown to be more than 25% efficient today.[50] Scientific revolutions, in contrast, are difficult to predict. A classic example is commercial nuclear fusion power, which—despite billions of funding—is perpetually decades off.[51]

Rather than prescribing technological solutions, or counting on scientific unicorns, our country would be better served to set technology neutral goals and let the market develop the best solutions. For example, recent advances in carbon capture and storage have made it more feasible and cost effective. One recent example is technology employing the Allam cycle, which captures 100% of CO_2 emissions. NET Power has recently constructed a 50 MW demonstration plant in Texas and has plans to bring a 300 MW plant online in 2022.[52] The United States is also on the front lines of new nuclear fission technologies, including small modular reactors and thorium-based fuels that could pave the way for inexpensive and dependable energy, though harsh regulatory

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[46] *Id.*

[47] https://www.weforum.org/agenda/2021/10/how-cheap-can-renewable-energy-get/

[48] See, e.g., the recent 400% surge in lithium prices, https://www.thehindubusinessline.com/markets/commodities/up-400-y-o-y-lithium-prices-may-rise-further-on-supply-shortage/article37499493.ece

[49] Gordon E. Moore, *Cramming More Components onto Integrated Circuits,* Intel (Apr. 19, 1965).

[50] Mark Mills, The "New Energy Economy": An Exercise in Magical Thinking, The Manhattan Institute https://media4.manhattan-institute.org/sites/default/files/R-0319-MM.pdf

[51] https://www.nature.com/immersive/d41586-021-03401-w/index.html

[52] https://www.atlanticcouncil.org/blogs/energysource/carbon-capture-and-the-allam-cycle-the-future-of-electricity-or-a-carbon-pipeline-dream/

burdens and 20-year review cycles have slowed development to a crawl—only two United States nuclear power plants have been built since 1994.[53]

As will be elaborated in Part III, technology neutral carbon standards would allow entrepreneurs and investors to choose the promising solutions rather than being funneled to those with the best subsidies. Intelligent regulatory reform can reopen long neglected pathways for decarbonization with energy sources that can scale with reliability to meet the needs of energy consumers around world.

D. Fossil fuels enable manufacturing, which is key to a healthy labor force.

Work matters. Work matters not just because it contributes to the GDP or because it provides a living wage, but because it provides meaning and purpose to those who do it. It is meaningful both to arrogantly, self-proclaimed "knowledge workers" and to the more than half of American adults who do not have college degrees and whose contributions through a spectrum of blue-collar jobs and trades underpins the economic and societal fabric of the country. Meaningful work is key to building strong families and self-sufficient communities, which help instill in their children the values and abilities that enable them to build-up strong families and self-sufficient communities of their own.[54]

The relationship between inexpensive fossil fuels and manufacturing

In the United States, prosperity and population growth through the 20th century were driven by a growth of industrialization and reliable manufacturing jobs. That industrialization, in turn, was driven by the harnessing the supply and productive uses of oil and natural gas. From 1900 to the present day, the United States has been a world leader in oil production.[55] As of 2013, the United States exceeds all countries—including Saudi Arabia—in petroleum production and has been the world's largest producer of natural gas since 2009.[56] This recent growth has largely resulted from the "Shale Revolution" which set off a tremendous boom in United States production following 2008's great recession.[57] Today, the oil and natural gas industry accounts for about 8% of United States GDP and nearly 6% of all United States employment.[58]

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53 https://www.eia.gov/tools/faqs/faq.php?id=207&t=3#:~:text=The%20newest%20nuclear%20reactor%20to,3%20and%204%20in%20Georgia.

54 OREN CASS, THE ONCE AND FUTURE WORKER 36 (2018).

55 Oil Production, Our World in Data, https://ourworldindata.org/grapher/oil-production-by-country

56 Samantha Gross, Geopolitical implications of United States oil and gas in the global market, Brokings (May 22, 2018) https://www.brookings.edu/testimonies/geopolitical-implications-of-u-s-oil-and-gas-in-the-global-market/

57 Stephen Brown & Mine Yucel, "The Shale Gas and Tight Oil Boom: United States States' Economic Gains and Vulnerabilities," Council on Foreign Relations (October 2013).

58 https://www.thestreet.com/markets/how-much-does-oil-and-gas-drive-u-s-gdp-14981567

But inexpensive and reliable oil and natural gas did not merely increase jobs in the oil and natural gas industry, but in manufacturing more broadly. Research examining oil and natural gas booms in the United States has shown that they boost wages.[59] Despite these higher wages, overall manufacturing employment and output are also positively correlated with resource growth, as inexpensive energy facilitates higher productivity across all manufacturing and at lower costs.[60] As a result, manufacturing jobs have tracked the growth of oil and natural gas production for most of the last century—until 2001.

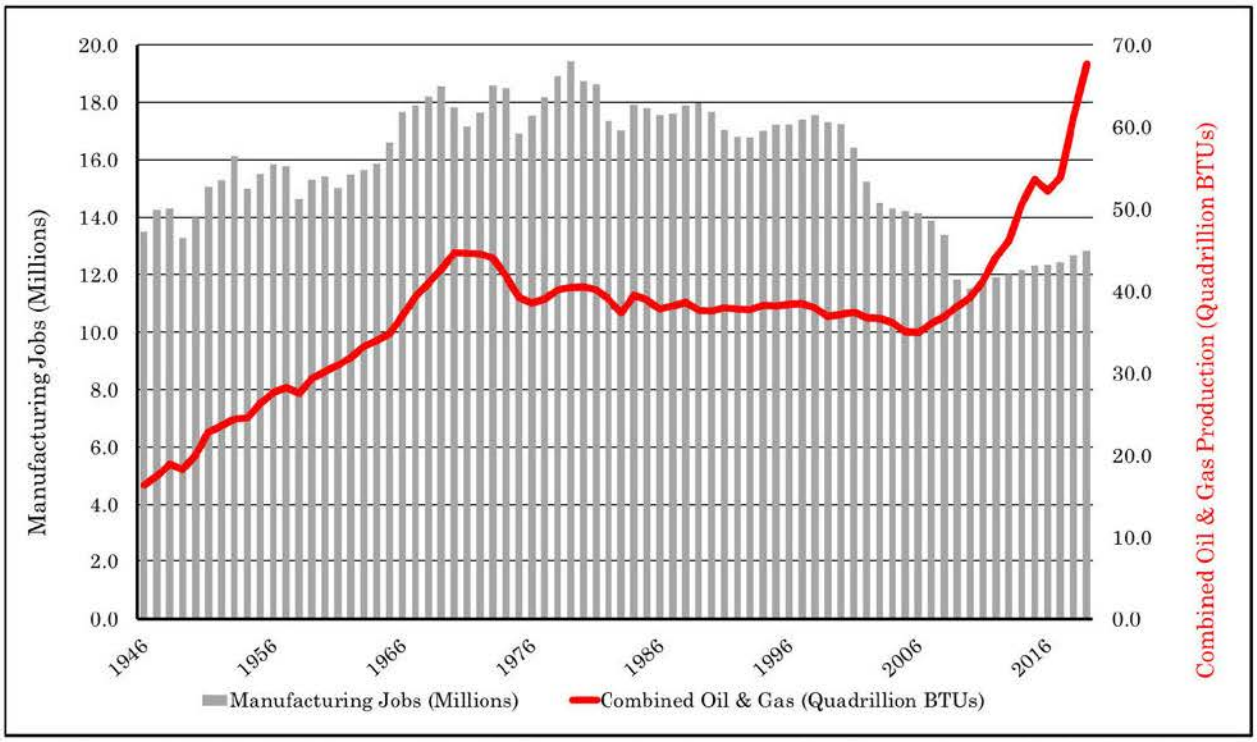

Figure 4: United States combined oil and natural gas production and manufacturing jobs

The collapse of United States manufacturing

In 2001, the entrance of China to the World Trade Organization, combined with increasingly complicated labor and environmental standards, sent domestic manufacturing jobs off a cliff. Companies, dedicated to efficiency, offshored manufacturing jobs to low-wage countries with no meaningful environmental regulations. The result were much lower prices of consumer goods and the devastation of the American workforce.

Today, tens of millions more are unemployed or under employed than were in the 1990s.[61] While some lost manufacturing jobs were replaced with other blue-collar work, it is not a one-to-

[59] Allcott, H., and D. Keniston. 2017. Dutch Diseases or Agglomeration? The Local Economic Effects of Natural Gas Resource Booms in Modern America. Review of Economic Studies

[60] *Id.*

[61] Cass, 21–24

one exchange. Manufacturing, construction, and resource extraction combine to account for 40% of high paying blue-collar jobs. When workers leave these higher paying manufacturing sector jobs for healthcare and service sector jobs their pay falls and the community stops generating wealth, eventually atrophying and dying. Today, despite combined oil and natural gas production at all-time highs, the United States has fewer manufacturing jobs than we did at the end of World War II, when the United States population was only 40% of its current size.

As a result, small communities have collapsed and people, particularly the working class, are unsatisfied and pessimistic about the future. Deaths of despair have increased, suicides have increased, and the opioid epidemic has claimed more than 500,000 lives. The problem is only getting worse—the United States recorded more than 100,000 deaths from opioids in the last year. [62] Fentanyl is now the leading cause of death in Americans between ages 18 and 45.[63]

The labor consequences of eliminating fossil fuels

It doesn't need to be this way. With its capacity for natural gas and oil production the United States could be the leading producer of fertilizer, plastic, and steel. Reshoring this raw material production and downstream manufacturing would create millions of jobs—including jobs producing wind and solar energy components.

What's more, United States plastic and steel production are inherently less polluting than their Chinese counterparts and could be subject to stronger environmental protections than they are currently. The GHG emissions from hot-dip galvanized steel in China are nearly 50% higher than the same product produced in North America;[64] United States plastics are largely made from natural gas instead of the far more wasteful and polluting naphtha processes; and United States mining is subject to far stricter environmental regulations than its Asian and African counterparts.

But increasing domestic manufacturing and heavy industry is impossible if we stop drilling for oil and natural gas. Instead, intelligent industrial policies should encourage American industries to make the best use of their resources and encourage the reshoring of manufacturing jobs.

E. Fossil fuels provide energy independence and foster human rights

The case for United States energy independence has been made before and need not be rehashed at length. But it is important to recall just how important energy superiority has been for America and her allies over the last century and how enabled this was by oil and natural gas.

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[62] https://www.wsj.com/articles/drug-overdose-deaths-fueled-by-fentanyl-hit-record-high-in-u-s-11637161200?mod=itp_wsj&ru=yahoo

[63] https://www.cdc.gov/nchs/pressroom/nchs_press_releases/2021/20211117.htm

[64] https://www.steel.org/wp-content/uploads/2020/11/Research-Summary-China-vs-NA-HDG.pdf

Energy independence is key to geopolitical influence

In World War II, United States oil powered a two-ocean fleet and supplied our allies with the fuel. Despite drastic superiority at the beginning of the fighting, Hitler's Germany ultimately lost when it over extended and failed in a push for Russian oil of the Caucuses, leaving the blitzing tanks of 1939 without enough fuel to perform basic maneuvers.[65] Japan's fuel scarcity led it to gradually succumb to a depleted United States force, falling back further and further to their home islands, eventually without enough fuel to launch their fighter planes. When American troops surrounded General Hideki Tojo's home, he shot himself just above the heart, hoping to avoid prosecution. His life hung in the balance not because the wound was so immediately fatal—it was not—but because it took over two hours to locate an ambulance with enough gasoline to drive him to the hospital.[66]

Modern American oil and natural gas dominance continue this security. The growth of shale oil and shale gas have made the United States almost energy self-sufficient. In 2020, for the first time in more than 50 years, the United States became a net-oil exporter.[67] This in turn yielded increased influence, increased security, and greater flexibility in foreign affairs.[68]

Among the major energy powers, the United States is a leader in human rights. The American energy supply chain fosters a geopolitical balance that helps spread and foster these rights around the globe. And because the United States controls so much of the oil and natural gas supply, it can take the lead in punishing bad foreign actors without military action—imposing tariffs, embargoes, asset freezes, and other sanctions all without shocking oil prices. As a result, OPEC has been greatly weakened, and major hydrocarbon producers like Iran and Venezuela have had their influence checked.

China is the biggest winner if fossil fuels are eliminated

Advocates of slashing fossil fuel production acknowledge that it will lead to a geopolitical realignment but ignore the human rights implications.[69] This realignment will not favor the United States but will aid our chief rival—China.

China dominates most of the mineral supply chains critical to solar, wind, and battery production. They control nearly two-thirds of all lithium, four-fifths of the refined cobalt market, and nearly all processed natural graphite.[70] These minerals are mined, and battery and PV cells

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[65] Daniel Yergin, THE PRIZE 320

[66] Daniel Yergin, THE PRIZE 349

[67] EIA U.S. Net Imports of Crude Oil and Petroleum Products

[68] Daniel Yergin, THE NEW MAP xv

[69] https://www.tandfonline.com/doi/full/10.1080/00963402.2016.1240476

[70] Massif Capital, *Risks and Opportunities in the Battery Supply Chain* (May 2019); https://cdn2.hubspot.net/hubfs/4518141/Risks%20and%20Opportunities%20in%20the%20Battery%20Supply%

assembled, in a China that uses slave labor and suppresses free speech. Reducing American reliance on China for these technologies will allow the United States to increase sanctions of China and Chinese officials culpable in human rights violations.

Exerting influence to condemn China's continually deteriorating human rights record will be more complicated than just exporting natural gas. The United States and China have integrated economies and are significantly interdependent. Major United States media corporations, like AT&T, Comcast, and Disney, have strong ties to China. BlackRock, headquartered in the United States and the world's largest asset manager, has pushed its clients to buy Chinese investments while vocally admonishing domestic CEOs and boards of directors for the carbon emissions of their companies. This tangling of interests allows China to apply pressure and advance their own repressive and aggressive interests. The annual report from Congress's United States-China Economic and Security Review Commission called for restricting United States investment in China and limiting investors' ability to buy United States-listed Chinese stocks.[71] Even George Soros called BlackRock's recent investments a "tragic mistake" and one that "is likely to lose money for BlackRock's clients and, more important, will damage the national security interests of the United States and other democracies."

Fossil fuel production alone does not solve this problem. Disentangling the American and Chinese economies will be the work of a generation. But the problem is only exacerbated by continuing to cede influence to China through the aggressive importation of wind, solar, and battery technologies.

II. THE OVERBLOWN DISADVANTAGES OF FOSSIL FUELS

A. Greenhouse gas emissions are not the catastrophe we have been told

The primary argument against fossil fuels is that their combustion and subsequent emission of GHGs is the main driver of global climate change and that climate change will be devastating to the world and its people over the rest of the 21st century. To this end, three things can be asserted confidently. First, increases of atmospheric carbon dioxide (CO_2), because of the molecule's radiative efficiency, has the first-order effect of increasing atmospheric temperature. Second, global surface temperature measurements show a rise around 1° C from 1850 until present day.[72] Third, long term modeling of the Earth's climate has proved shockingly difficult. Scientific confidence in the first two has led us to elide the uncertainty in our models.

20Chain.pdf ; Nicholas LePan, *The New Energy Era: The Lithium-Ion Supply Chain* (Dec. 11, 2019), https://www.visualcapitalist.com/the-new-energy-era-the-lithium-ion-supply-chain/; Northern Graphite, *About Spherical Graphite*, http://www.northerngraphite.com/_resources/media/SPG-Summary-2.pdf

[71] https://www.uscc.gov/annual-report/2021-annual-report-congress

[72] Valérie Masson-Delmotte, Climate Change 2021: Summary for Policymakers, INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE 5 (2021) https://www.ipcc.ch/report/ar6/wg1/downloads/report/IPCC_AR6_WGI_SPM_final.pdf

The challenge of climate modeling

The current rhetoric against of climate change critics rests on lumping skepticism of these three points together, as if they are all the same. Those who claim atmospheric CO_2 doesn't change Earth's surface temperatures are misinformed. Those who claim that the modeling is difficult are correct. As an article in the Bulletin of the American Meteorological Society explains, "The projection of future climate is one of the most complex problems undertaken by the scientific community. . . . With the rapid increase of complexity in Earth system models, reducing uncertainties in climate projections becomes extremely challenging."[73]

The accurate models require complexity because the Earth's climate is an incredibly complex system. Projecting global temperature changes requires modeling the mechanisms of countless physical process—processes often chaotic or stochastic and spanning different length scales. Lower-level mechanisms, like the absorption of CO_2 into seawater, are tightly coupled to higher level mechanisms, like large-scale ocean circulation. The mechanisms interact in complicated reinforcing and balancing feedback loops and often rely on scarce data or extrapolations beyond current conditions.

This uncertainty can lead to bifurcated scenarios, where two radically different courses of events could nudge temperatures up or down significantly. For example, increases in atmospheric CO_2 could increase atmospheric temperature causing global icesheets to melt, reducing albedo, increasing the absorption of solar radiation, and raising global temperatures.[74] Or the same temperature increase could cause greater water vaporization, increasing cloud coverage, and increasing albedo, which would reduce solar radiation and lower global temperatures.[75] Natural variability associated with large-scale ocean circulations could contribute to cooling in the coming decades while releases of GHGs frozen in oceans could lead to warming.[76]

Some of the largest variability comes from factors impossible to predict. Temperature "forcing" because of solar and volcanic variability are some of the largest drivers of climate models.[77] Major volcanic eruptions could have a cooling effect, as could the decrease in solar radiation after the Grand Modern Maximum, a peak in observed solar activity and radiation, that occurred in the late 20th century. This underlying, multivariate complexity is understood by scientists but is not properly conveyed by climate advocates.

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[73] Yun Qian et al., Uncertainty Quantification in Climate Modeling and Projection, 97 Bulletin of the American Meteorological Society 821 (2016) https://doi.org/10.1175/BAMS-D-15-00297.1

[74] Kristina Pistone et al., *Radiative Heating of an Ice-Free Arctic Ocean,* 46 Geophysical Research Letters 7474–7480 (2019).

[75] https://www.science.org/doi/10.1126/science.296.5568.727

[76] https://agupubs.onlinelibrary.wiley.com/doi/10.1002/2016GL067931; https://worldoceanreview.com/en/wor-1/ocean-chemistry/climate-change-and-methane-hydrates/

[77] John Fyfe et al., Significant impact of forcing uncertainty in a large ensemble of climate model simulations, 118 Proceedings of the National Academy of Sciences (2021) https://doi.org/10.1073/pnas.2016549118

The models themselves are imperfect and modeling failures have been seen in the past. Initial warming trends seemed debunked during the "global warming hiatus," when from 1998 to 2012 global surface temperatures hardly changed, only to come surging back in the last decade.[78] Even predictions of GHG production can be difficult. A recent analysis found that despite increased global fossil fuel consumption, CO_2 emissions have remained unchanged over the last decade, mainly owing to changes in land use.[79]

The climate change models, and current evidence, do not point to catastrophe

There is deep uncertainty about how the climate will change through the 21st century, but some things are clear. A 5ºC global surface temperature rise, as projected by the Intergovernmental Panel on Climate Change's (IPCC) worst case scenario, RCP8.5, is incredibly unlikely.[80] The emissions pathway to get to the worst case requires virtually no emissions reductions and an unprecedented fivefold increase in coal use by 2100.[81] While worst-case scenarios can be a useful thought exercise, they should not be the main driver of policy. Instead of 5ºC, a 2 to 3ºC temperature rise is far more likely.[82]

These smaller temperature rises will likely be far more manageable. The IPCC's sixth assessment report states that with warming of 2 to 3° C we are likely to see the most catastrophic effects of climate change, like the melting of the Greenland or West Antarctic Ice Sheets, only "over multiple millennia." This is far slower than the impending and extreme and catastrophic risks generally associated with the 5° C warming.

Fear of climate change partially presumes that the pre-industrial climate conditions were the best conditions for human thriving. But there is no reason this must be the case. It is possible the global temperatures best for human flourishing are 1 to 2ºC warmer than they were in the 18th century.[83] Climate change alarmists frequently point to rising climate related deaths, from temperatures or natural disasters, but the data does not support this conclusion.[84]

It is true that, since the 1970s, unusually hot summer days have become more common in the United States, but unusually cold winter temperatures have become less common, particularly

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[78] https://agupubs.onlinelibrary.wiley.com/doi/pdf/10.1002/2016EF000417

[79] https://www.carbonbrief.org/global-co2-emissions-have-been-flat-for-a-decade-new-data-reveals

[80] https://www.nature.com/articles/d41586-020-00177-3

[81] *Id.*

[82] *Id.*

[83] https://www.nature.com/articles/s43017-019-0001-x

[84] *See, e.g.*, Indur M. Gloklany, *Climate change is not the biggest global health threat*, 374 Lancet 973 (September 19, 2009). https://doi.org/10.1016/S0140-6736(09)61655-X (rebutting a Lancet study claiming, "climate change is the biggest global health threat of the 21st century" while presenting findings that suggest climate change is the 21st biggest health threat of the 21st century.)

very cold nights.[85] While both extreme hot and extreme cold can be fatal, extreme cold is far more deadly. A 2015 meta-study in *Lancet* found that 17 times more deaths are attributable to low temperatures than to high.[86] Recent articles trumpeted that climate change is already causing 5 million deaths a year—but the research cited finds a different result.[87] The referenced 2021 study did indeed find that 5 million deaths a year were linked to "non-optimal temperatures" of which 90% were cold-related and 10% heat-related.[88] But these are deaths associated with climate—not climate change. The authors also perform a time series analysis, examining the change in climate related deaths over 16 years, and find a net *decrease* in mortality over that period. While heat-related deaths increased somewhat this was more than offset by reductions in cold-related deaths, and the authors suggest that climate related mortality has decreased by about 166,000 deaths per year.

Climate change has not caused an observable increase in natural disasters. Strong tornadoes, those of an Enhanced Fujita level 3 or higher, have not increased since the 1950s.[89] Nor has there been any significant trend, positive or negative, in the rate of hurricanes making landfall or the energy of storms since the middle of the 19th century.[90] Further, the natural disasters that do occur cause far fewer deaths than they did a century ago because the worst killers—droughts and floods—have been mitigated by technological improvements.[91] Most deaths from natural disasters in the 21st century have resulted from earthquakes, which have nothing to do with climate change.

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[85] https://www.epa.gov/climate-indicators/weather-climate

[86] https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(14)62114-0/fulltext

[87] *See* https://www.usnews.com/news/health-news/articles/2021-07-08/climate-change-already-causes-5-million-extra-deaths-per-year, https://www.bloomberg.com/news/articles/2021-07-07/climate-change-linked-to-5-million-deaths-a-year-new-study-shows

[88] Qi Zhao et al., Global, regional, and national burden of mortality associated with non-optimal ambient temperatures from 2000 to 2019: a three-stage modelling study, 5 Lancet Planet Health (2021) https://doi.org/10.1016/S2542-5196(21)00081-4

[89] NOAA NCEI Historical Records and Trends, https://www.ncdc.noaa.gov/climate-information/extreme-events/us-tornado-climatology/trends (2017)

[90] Craig Loehle & Erica Staehling, Hurricane trend detection, 104 Natural Hazards 1345 (Aug. 11, 2020)

[91] Hannah Ritchie and Max Roser, *Natural* Disasters, OUR WORLD IN DATA (Nov. 2021), https://ourworldindata.org/natural-disasters

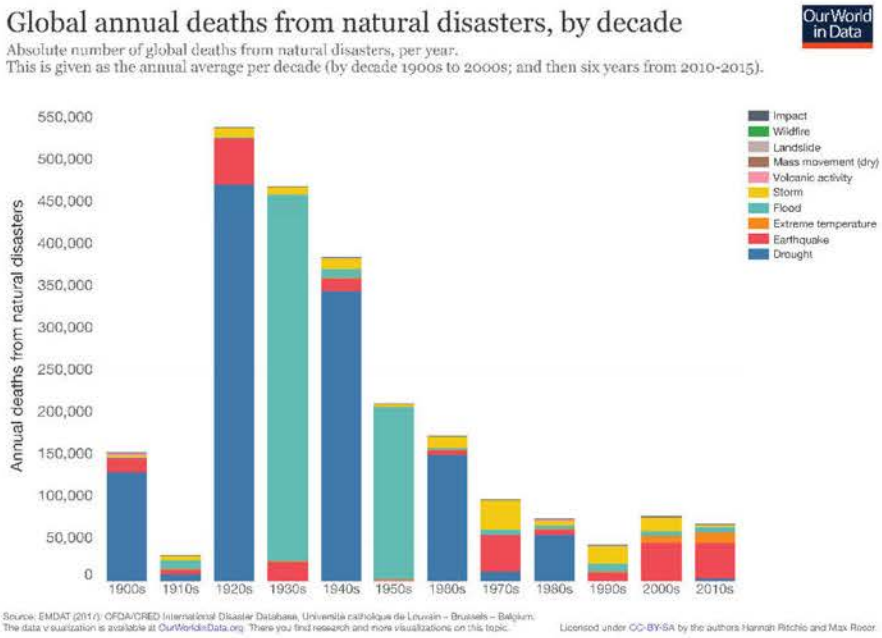

Figure 5: Global deaths from natural disasters by decade.[92]

Fossil fuels are not causing the apocalypse

None of this is to argue that efforts should not be made to reduce GHG emissions or otherwise mitigate climate change, and advocates are right to call for a lessening our impact. Rapid changes in temperature could lead to losses in biodiversity and the displacement of people across the world. But the best models agree that it will not be the apocalypse or the "world on fire"[93] it is made out to be. Worst case scenarios are outliers and should be excluded from our policy choices.

The benefits of avoiding any climate change must be weighed against the cost of it. The present plans for decarbonization will lead to dramatic reductions in the quality of life for people around the world—higher energy costs, less reliable grids in developed countries, lower energy access and continued poverty in developing countries, more expensive and infrequent transportation, more expensive and less diverse food supplies, and fewer and far more expensive consumer goods. These costs will not, and should not, be tolerated.

But some costs can be, and the worst effects could be avoided without crippling costs. Technology neutral carbon limits and market driven solutions can find the least expensive way to reduce GHG emissions. And net-zero is not the only way to deal with consequences of climate change. Research by Nobel prize winning economist William Nordhaus has shown that our current net-zero strategies, struggling to maintain global temperature rise below 1.5 ºC below, will be far

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[92] *Id.*

[93] *Postcards From a World on* Fire, NY Times, https://www.nytimes.com/interactive/2021/12/13/opinion/climate-change-effects-countries.html

more expensive will be far more than any future damages.[94] Instead, the ideal policy involves balancing current costs and future damages to so that resources may be used to deal with other important problems.[95] We can plan for how to deal with these consequences of climate change and invest in them, but alarmism and fear-driven policy making has no place.

B. America is as clean as it has ever been.

Environmental rhetoric often lumps all pollutants together. To the use of oil and natural gas is attributed not just global warming but fouled water ways, unbreathable air, and deforestation. But the United States has cleaner water, cleaner air, and more trees than it has at any point in the recent past.

Clean water

Among all environmental issues, clean water is the top concern for Americans.[96] Largely, this concern is being met. Most types of water pollution have declined since 1962.[97] The share of fishable waters has increased 12 percent in the same period. While the 1972 Clean Water Act has not met its ambitious goals—of making all United States waters fishable and swimmable by 1983 and having zero water pollution discharge by 1985—even D.C.'s Anacostia, at one time among the most polluted rivers in the nation, may be swimmable by 2025.[98]

Clean air

Air quality has also improved dramatically over the last half century. Despite large growth in population, GDP, and even miles traveled, total emissions of the six main air pollutants dropped 73% since 1980.[99] Lead pollution has been virtually eliminated and particulate matter is at all-time lows.[100] Deaths from air pollution have fallen by 40% in the United States since 1990.[101] United States cities are now among the cleanest in the world, much cleaner than Europe.[102]

One of the most stunning successes in the United States clean air program is the reduction of sulfur-dioxide emissions through the cap-and-trade program established under the 1990 Clean Air Act Amendments. Under the program, an aggregate national emissions cap, that was slowly

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[94] William D. Nordhaus, *Climate Change: The Ultimate Challenge for Economics*, Nobel Lecture in Economic Sciences (Dec. 8, 2018).

[95] *Id.*

[96] https://news.gallup.com/poll/347735/water-pollution-remains-top-environmental-concern.aspx

[97] https://www.nber.org/system/files/working_papers/w23070/w23070.pdf

[98] https://www.anacostiaws.org/what-we-do/swimmable-fishable-by-2025.html

[99] https://www.epa.gov/air-trends/air-quality-national-summary#air-quality-trends

[100] https://www.epa.gov/air-trends/air-quality-national-summary#air-quality-trends

[101] https://ourworldindata.org/outdoor-air-pollution

[102] https://www.iqair.com/us/world-air-quality-ranking

lowered over successive years, was established for all large coal plants. As a result, sulfur dioxide emissions from electric power plants decreased 36 % between 1990 and 2004 even while electricity generation from coal-fired plants increased 25% over the same period.[103] And this was achieved for a price far lower than expected. Initial EPA estimates expected the program to cost $6.1 billion, but program cost estimates in 1998 were far lower, between $1.1 and 1.7 billion.[104]

Reforestation

The trees too, are coming back. The United States and Europe each underwent rapid deforestation to create farmland and reliable energy through the harvest and combustion of wood and other biomass.[105] This deforestation stopped in the 1800s with the ability to extract and harness the energy content of coal and petroleum at scale. Unfortunately, wood and biomass are still the primary energy source for nearly three billion people today and their local ecosystems still suffer the same impacts of deforestation. Thankfully, forest cover has increased in the United States throughout the 20th cenutry, and is now at the highest level since we have been keeping detailed records.[106] Jim Sterba, suggests that this may be the greatest reforestation in history, "By the 1950s, depending on the region, nearly half to more than two-thirds of the landscape was reforested, and in the last half century, states in the Northeast and Midwest have added more than 11 million acres of forest."[107]

Reforestation remains a project with popular bipartisan support, but the return of America's forests did not happen despite fossil fuels but because of them. Thanks to the rise of fossil fuels, wood is no longer much needed as a fuel. When wood is still consumed in America, it is mainly in the form of wood or paper products, with only 15% of U.S. wood consumption going towards fuelwood.[108] Further, natural gas and oil do not require the cutting of vast acreage of forest for their extraction. Solar and wind do not share this benefit, as will be elaborated on in the next section.

Fossil fuels do not damage the environment

Advocates seeking to improve water quality, air quality, and forestation are misguided to focus their attacks on fossil fuels broadly. Pollution control technologies have developed significantly in recent years and the transition towards natural gas has accelerated the cleaning

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[103] LESSONS LEARNED FROM THREE DECADES OF EXPERIENCE WITH CAP-AND-TRADE Richard Schmalensee and Robert N. Stavins Prepared for The Review of Environmental Economics and Policy November 3, 2015

[104] https://www.forbes.com/sites/justingerdes/2012/02/13/cap-and-trade-curbed-acid-rain-7-reasons-why-it-can-do-the-same-for-climate-change/?sh=195b8b61943a

[105] https://www.businessinsider.com/northeastern-us-forest-transformation-2013-9

[106] https://ourworldindata.org/deforestation

[107] JIM STERBA, NATURE WARS 3 (2012).

[108] Sonja N. Oswalt, et al., U.S. Forest Resource Facts and Historical Trends, U.S. Department of Agriculture (Aug. 2014), https://www.fia.fs.fed.us/library/brochures/docs/2012/ForestFacts_1952-2012_English.pdf .

trends. Replacing natural gas power generation with solar and wind could lead in the opposite direction.

C. Intermittency is not the only liability of solar, wind, and batteries

Despite what proponent represent, solar and wind are no environmental panacea. Price pressures have begun to delay some solar and wind projects, while concerns over land use have slowed others. And there are other side effects largely invisible to the average consumer. Most critically, while there is little lifetime GHG emissions from the construction of solar panels and batteries, they do far more compelling damage on other fronts.

Land use concerns plague deployment

It is no secret that solar and wind require large amounts of land. Princeton University's Net Zero America report estimated that for the United States to achieve 100% solar and wind electricity generation would require 228,000 square miles of land—a little less than the size of Texas.[109] Many would prefer to keep that land for something else.

Because solar panels need unobstructed sun and turbines need unobstructed wind to produce power efficiently, they must be built in open land or atop ridges, meaning they can be seen for miles. Plans for America's largest solar farm in Nevada were scrapped because the locals didn't want it defacing the top of Mormon Mesa.[110] The town of Swanton, Vermont voted 731 to 160 in favor of rejecting a seven-turbine wind project that would have disrupted the skyline view of Rocky Ridge.[111] In fact, since 2015, at least 317 wind projects have been rejected across the United States—some in dramatic fashion.[112]

New solar and wind farms also require new high voltage transmissions lines. These can be even harder to locate as their residents' risk losing forests and agricultural land for projects that only help to transmit the energy to a faraway city. Just one recent example is the rejection of the $1 billion New England Clean Energy Connect by an overwhelming 59% of voters in Maine, hamstringing Massachusetts' net-zero plans.[113]

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[109] https://netzeroamerica.princeton.edu/?explorer=pathway&state=national&table=ref&limit=200

[110] https://www.theartnewspaper.com/2021/07/26/plans-scrapped-for-solar-project-that-would-disrupt-michael-heizers-double-negative

[111] https://www.wsj.com/articles/the-windmills-of-bernies-mind-1454880639

[112] https://www.forbes.com/sites/robertbryce/2021/09/26/heres-the-list-of-317-wind-energy-rejections-the-sierra-club-doesnt-want-you-to-see/?sh=313ed3e95bad

[113] https://www.brookings.edu/wp-content/uploads/2020/01/FP_20200113_renewables_land_use_local_opposition_gross.pdf, https://subscriber.politicopro.com/article/eenews/2021/11/12/1b-transmission-smack-down-may-upend-northeast-renewables-282991

Beyond mere aesthetic concerns, solar and wind installations present serious—and often undiscussed—risk to their local environment and biomes. As one recent enumerates, "The potential effects of the construction and the eventual decommissioning of solar energy facilities include the direct mortality of wildlife; environmental impacts of fugitive dust and dust suppressants; destruction and modification of habitat, including the impacts of roads; and off-site impacts related to construction material acquisition, processing, and transportation."[114] The construction of photovoltaic arrays require the removal of vegetation and degradation of soil, resulting in significant increases in onsite runoff and soil erosion.[115] Additionally, the installation of panel arrays and the change in albedo creates local heat islands, raising air temperatures over solar installations relative to the surrounding areas.[116]

Wind power installations are also problematic. The Department of Energy acknowledges that wind turbines could reduce, fragment or otherwise degrade wildlife habitat.[117] Spinning turbine blades can also pose imminent threats to flying wildlife, like bats and birds. While other energy generation sources, like natural gas and nuclear also pose land use issues, the chief problem with solar and wind is just how much land they use. Wind requires three times as much land as solar and a hundred times more land than natural gas or nuclear generation.[118]

Supply chain issues with wind, solar, and batteries

The 2021 global supply chain squeeze hit all parties, but solar power development was hit particularly hard. Much of the demand for solar was driven by generous government subsidies and a favorable trend in manufacturing and installation costs, but recently costs have spiked. This is in part because of a surge in steel and polysilicon prices, and in part because of massive delays in shipping.[119] One energy group estimated that of the 90 GW of new utility-scale solar projects slated for construction in 2022, 56% are at risk of not being built.[120]

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[114] Jeffrey E. Lovich & Joshua R. Ennen, Wildlife Conservation and Solar Energy Development in the Desert Southwest, United States, 61 Bioscience (Dec. 2011) https://doi.org/10.1525/bio.2011.61.12.8.

[115] Cook, P. (2011). Infrastructure, rural electrification and development. Energy Sustain. Dev. 15, 304–313. doi: 10.1016/j.esd.2011.07.008

[116] Barron-Gafford, et al., (2019). Agrivoltaics provide mutual benefits across the food–energy–water nexus in drylands. Nat. Sustain. 2, 848–855. doi: 10.1038/s41893-019-0364-5

[117] https://www.energy.gov/eere/wind/environmental-impacts-and-siting-wind-projects

[118] Johnvan Zalka & Paul Behrensa, The spatial extent of renewable and non-renewable power generation, 123 Energy Policy 86–87 (Dec. 2018) https://doi.org/10.1016/j.enpol.2018.08.023.

Volume 123, December 2018, Pages 83-91

[119] https://www.reuters.com/business/sustainable-business/global-supply-chain-squeeze-soaring-costs-threaten-solar-energy-boom-2021-06-09/

[120] https://www.cnbc.com/2021/10/26/more-than-half-of-2022s-solar-projects-threatened-by-spiking-costs-new-report-finds.html

But even worse than their steel requirements, the consequences of critical mineral extraction are likely the biggest drawback of wind, solar, and batteries. An offshore wind plant, for example, requires 16,000 kg of minerals per MW compared to less than 2,000 for natural gas power production.[121] To transition the world to wind and solar electricity would require a mammoth amount of minerals. A estimate suggests, because photovoltaic panels must be replaced every 15 years, that to power just the European Union, "essentially the entire annual global silicon production and 3 [times] the annual global silver production would be required for replacement only."[122]

Extracting and processing just one ton of rare earth elements produces 2,000 tons of toxic waste.[123] The rare earth extraction in and around China's Baotou produces 10 million tons of wastewater per year, that is pumped into nearby tailings dams and leaches into the surrounding water supply.[124]

More appalling than this is the use of child and slave labor to reach these minerals. Cobalt, a key component in lithium-ion batteries, is mainly found in the south-eastern provinces of the Democratic Republic of the Congo. Of the 255,000 miners in the Congo, at least 35,000 are children, some as young as six.[125] The children work in horrific and hazardous work conditions, digging tunnels and hauling cobalt to the surface for less than a dollar a day. Many have died. Forty-five percent of the world's solar-grade polysilicon is manufactured in Xinjiang, the Uyghur Region of China.[126] Polysilicon manufacturers in that region are all participants in so called "labor transfer" programs. Millions of Uyghurs are sent to concentration camps, sterilized, subject to "reeducation," and then used as cheap slave labor.[127] There are other sources for these minerals, but none yet available to support anything like the demand anticipated for the America's net-zero plans.

End of life waste is also a problem. The speed of wind and solar growth has far outpaced our ability to handle its waste. The International Renewable Energy Agency predicts 78 million metric tons of used photovoltaic panels by 2050.[128] Other researchers suspect this is far too low, and that economic incentives for early replacement could quadruple that number.[129] Very few panels are recycled, owing to immense cost, and most end up in landfills where their lead,

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[121] https://eandt.theiet.org/content/articles/2021/07/booming-demand-for-critical-minerals-risks-environment/

[122] https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3730155

[123] https://www.theguardian.com/sustainable-business/rare-earth-mining-china-social-environmental-costs

[124] *Id.*

[125] https://www.dol.gov/agencies/ilab/resources/reports/child-labor/congo-democratic-republic-drc

[126] https://www.shu.ac.uk/helena-kennedy-centre-international-justice/research-and-projects/all-projects/in-broad-daylight

[127] CITE

[128] https://hbr.org/2021/06/the-dark-side-of-solar-power

[129] *Id.*

cadmium, and other heavy metals contaminate surrounding soil. The problem is not unique to solar. More than 720,000 tons worth of wind turbine blades will enter landfills over the next 20 years and turbine towers will need to be replaced every 25 years at a cost of $500,000 per tower.[130] Only 5% of electric vehicle batteries are currently recycled, and more are made each year.[131]

Our regulatory framework must be adapted to capture the novel externalities of solar and wind power.

A theme, cutting across all these problems, is the inability of our current regulatory scheme to adequately capture these externalities. Most of our regulatory framework, established through statutes like the Clean Air Act and the Clean Water Act, were drafted in an era where emissions were mainly generated at the site of energy generation. And through these lenses, solar, wind, and electric vehicles perform quite well. But local emissions are not the only emissions that need to be accounted for, and the true source of pollution for these technologies has nothing to do with what comes out of their stacks or tailpipes.

Electric vehicles, for example, emit no carbon dioxide or particulate matter through their tail pipes. But this is not right lens through which to view emissions from. A "wells-to-wheel" analysis—looking of the energy consumed from mining, energy generation, and transport, and then car power delivery—would give the 2021 Chevrolet Bolt a fuel economy equivalent to 49.2 miles per gallon.[132] This good, but not nearly the 286.3 miles per gallon it is credited for in the national Corporate Average Fuel Economy (CAFÉ) standards. Electric vehicles also do not emit particulate matter through their tailpipes, having none, and are credited as such in EPA emissions regulations. But due to their higher weight—25% more than comparable internal combustion engine vehicles—their tires generate more particulate matter from rubbing against the roadway.[133] As a result, electric vehicles ultimately produce about the same amount of particulate matter as a conventional vehicle.[134] This heavier weight also leads directly to more deaths. As a *Nature* editorial explains, "The likelihood of passengers being killed in a collision with another vehicle increases by 12% for

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[130] https://www.npr.org/2019/09/10/759376113/unfurling-the-waste-problem-caused-by-wind-energy; https://www.journaljenrr.com/index.php/JENRR/article/view/30220/56710

[131] Hector Rallo, et al., *Battery 2nd Life Used as an ESS: Economic and Environmental Analysis Comparing Lead-Acid and Lithium-Ion on Different Real Scenario*, Abstract Proceedings of 2019 International Conference on Resource Sustainability (July 23, 2019).

[132] *See* 2021 Fuel Economy Datafile, https://fueleconomy.gov/feg/download.shtml (reporting 286.629 watt-hours per mile). This is the equivalent of 286.3 miles per gallon. 10 C.F.R. § 474.3(a)(3), (b)(1). This efficiency rating includes an "alternative fuel factor" which inflates the equivalent fuel efficiency of non-gasoline powered vehicles. See 65 Fed. Reg. at 36,987.

[133] Victor R.J.H.Timmers & Peter A.J.Achten, Non-exhaust PM emissions from electric vehicles, 134 Atmospheric Environment 10 (June 2016).

[134] Victor R.J.H.Timmers & Peter A.J.Achten, Non-exhaust PM emissions from electric vehicles, 134 Atmospheric Environment 10 (June 2016).

every 500-kg difference between vehicles" and most electric vehicles are between 500 and 700 kgs heavier than their non-electric counterparts.[135]

Until we regulate these outside harms there will remain incentives to use energy sources worse for people and the environment—but better at hiding it.

III. A POSITIVE VISION FOR AMERICAN ENERGY POLICY

It is important to be realistic about how we use our natural resources. But climate catastrophism serves no one and leads to irrational policy choices that will not help the environment and will cost millions of lives. Stopping the extraction of oil and natural gas would have immediate and devastating consequences for people across the country and the world, especially the most vulnerable. This is not to belie the importance of climate policy—how we care for our shared home is vital. But there are ways to protect the environment and biodiversity that do not require Malthusianism.

The United States should expand our current power and energy production, and leverage our energy resources to empower American workers, enhance national security, and reduce global pollution. There are many small steps which would make a difference—but the first is to stop picking winners and losers and encourage the market to obtain the outcomes we seek. Technology neutral standards which promote market driven solutions will always be more efficient than their preferential counterparts.

Broadly, progress should be made on four fronts. First, Congress should limit greenhouse gas emissions by setting realistic targets for carbon. Second, other regulatory hurdles should be streamlined to speed new and clean development. Third, other non-carbon emission regulations should be streamlined to account for the changing technological, and increasingly international landscape. Fourthly, we should direct investment in the protection of our natural resources directly.

A. Congress should regulate carbon directly

Prescriptive regulation or pick-a-winner subsidies are never the most efficient means of generating policy outcomes. This command-and-control regulation is currently firmly entrenched in our regulatory landscape, through technology-based standards and lop-sided incentive systems. Such standards dictate the method—and at times the specific equipment—required to comply with each regulation, eliminating any incentives to find the lower cost ways of meeting goals. Subsidies encourage only the favored son and draw investors looking to exploit the government kitty for as long as the money is on offer.

Market-based solutions are fare far better. Rather than mandate the means, are market-based solution instead sets the end and lets the end be reached at the lowest overall cost to society. A

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[135] Blake Shaffer et al., Make electric vehicles lighter to maximize climate and safety benefits, Nature (Oct. 12, 2021) https://media.nature.com/original/magazine-assets/d41586-021-02760-8/d41586-021-02760-8.pdf.

market-based instrument encourages companies to adopt cheaper and better pollution-control technologies because it always pays to clean up a bit more if a sufficiently inexpensive method can be chosen. GHG emissions are particularly well suited to a market-based solution because their effects are felt only on a global scale. Inevitably, some sources will emit more CO_2 than their counterparts, but these bumps are all smoothed out in the upper atmosphere.

Carbon taxes and cap-and-trade are the two-primary market-based options. Of the two, cap-and-trade is preferable for the same reasons that market-based solutions are preferable to command-and-control regulation. As discussed above, America's greatest environmental success has come through market mechanisms like cap-and-trade programs referred to above. Ultimately, the price of the carbon is the incentive and setting the price at the right level to achieve the outcomes desired is beyond the competency of policy makers. Cap-and-trade allows realistic goals to be met for the lowest price and has long prove to be environmentally and economically effective.[136]

But to make a carbon target effective, it must come along two parallel policies—an international carbon adjustment and an elimination of the old command-and-control regulations. Border carbon adjustments charge imports for the carbon emissions associated with their manufacture and refund exporters for their carbon costs paid. Such a policy would level the playing field between domestic and global players and avoid the current incentives to dodge the domestic carbon market. Much of America's emissions contribution stem from our reliance of international energy sources that allow us to ignore their true impact. For example, China is contributing 30% of the world's CO_2 emissions. China produced nearly 13 billion tons in 2019, as much as the United States, India, Russia, and Japan combined.[137] Two-thirds of China's electricity, and the vast majority of China's CO_2, comes from coal.[138] As a result, producing a solar panel in China creates around twice as much carbon dioxide as making one in the western world—and does it using slave labor.[139]

Our current policies ignore this effect and encourage American companies to outsource both our labor and our CO_2 production. A border carbon adjustment would remedy this. For example, lower carbon emissions from U.S. steel and plastic production would encourage reshoring while cutting global emissions and mitigating their environmental and human costs. An exporter refund would also lower the international price of American liquified natural gas, encouraging its export. If the United States exported enough natural gas to China to replace Chinese coal the world could

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[136] Richard Schmalensee & Robert N. Stavins, *supra.*

[137] https://www.bloomberg.com/graphics/2021-china-climate-change-biggest-carbon-polluters/?utm_content=climate&utm_campaign=socialflow-organic&cmpid=socialflow-twitter-climate&utm_medium=social&utm_source=twitter#power-supply-section

[138] https://www.reuters.com/business/energy/china-coal-surge-puts-supply-record-power-jump-within-reach-2021-10-22/

[139] https://www.wsj.com/articles/behind-the-rise-of-u-s-solar-power-a-mountain-of-chinese-coal-11627734770

reduce total CO_2 by nearly 5 billion tons, significantly more than the 4.6 billion tons the United States emitted in 2020.[140]

A carbon cap-and-trade should also come along with dismantling the various command-and-control regulations, which would be made redundant by an overarching carbon cap. This would mean eliminating electric vehicle incentives, gas mileage regulations, subsidies for solar and wind and many more. This simplification would reduce compliance costs and minimize the influence of the bureaucracy—a good in and of itself.

B. Simplify regulatory framework to encourage domestic energy and manufacturing.

The only way to lower greenhouse gas emissions without sacrificing the benefits of energy is through further technological development. A mindset of Malthusian scarcity is wrong and politically untenable. But many do not realize just how much the current regulatory regime hamstrings development. Rather than encouraging development, these regulations destroy domestic supply chains, driving our energy sources overseas. This is bad for American security and bad for Americans.[141]

Among the chief reasons that American companies have chosen to establish supply chains abroad are the incredibly complicated permitting process for infrastructure. Overly strict air emissions standards, set by EPA under the Clean Air Act, have severely discouraged the construction of new industry. For example, the Obama administration tightened ozone standards to a level that "some national parks could not meet, let alone cities like Atlanta, Baltimore, Cincinnati, Columbus, and Cleveland.[142] Some estimates put compliance with air-quality regulations by 2018 at nearly 20% of profits.[143]

National Environmental Policy Act (NEPA) reform is also needed. When it was enacted in 1970, NEPA checked industry that ran ragged over our air, water, and forests. But these problems have been largely resolved. But rather than decreasing in complexity, NEPAs requirements have ballooned. As Oren Kass explains, "In the 1970s, the average "Environmental Impact Statement" (EIS) mandated by NEPA for a federal highway project was 22 pages long and the process took two years to complete; by 2011 the typical highway EIS could run more than 1,000 pages and the process required more than 8 years."[144] When new energy projects are proposed—whether they be natural gas pipelines or wind farms—they must sit through nearly a decade of review and spend

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[140] https://www.eia.gov/todayinenergy/detail.php?id=48856

[141] *See* C. Boyden Gray & Michael Buschbacher, Joe Biden's Low-Energy Blunder, American Conservative (Jan. 26, 2022), https://www.theamericanconservative.com/articles/joe-bidens-low-energy-blunder/ .

[142] Oren Cass, On Regulatory Reform, American Compass (June 10, 2020) https://americancompass.org/essays/on-regulatory-reform/.

[143] *Id.*

[144] *Id.*

millions of dollars. Worse still, NEPA has been weaponized by environmental activists, who bring litigation to kill fossil fuel projects.

Further, improvements should be made to the processes by which we regulate natural gas extraction and infrastructure. New Federal Energy Regulatory Commission (FERC) interim policy statements add upstream and downstream GHG emissions to the list of criteria by which the Commission can reject a certificate, adding uncertainty and making "it *more* difficult to expand the deployment of low or no-carbon resources."[145] Meanwhile, the Pipeline and Hazardous Materials Safety Administration (PHMSA) is making it increasingly difficult to move liquid natural gas at all, chilling investment in the facilities necessary to effectively deploy these resources.[146]

Reforming the Clean Air Act, NEPA, and FERC and PHMSA regulations would expedite the development of both new oil and natural gas and encourage the development of new manufacturing infrastructure helping to reassert American security and geopolitical leverage. But a third domestic energy source, nuclear, faces far worse energy regulatory burdens.

Nuclear energy emits fewer lifetime GHG emissions than wind and solar, in a footprint a fraction of the size, and with a nearly spotless safety record. Because Chernobyl, Fukushima, and Three Mile Island are household names, it is easy to forget that there has been exactly one nuclear power related death in the United States in the last 30 years. That death resulted from a temporary crane failing and dropping a component being relocated, a danger common to all heavy industry and not unique to nuclear power.[147] Yet the United States has built only one nuclear plant since 1996, owing largely to soaring regulatory costs and decades long permitting reviews.[148]

But change is coming. After almost three decades passing without the construction of a large commercial reactor, two new reactors are nearing completion at the Vogtle Electric Generating Plant in Georgia. And new technology, such as the Small Modular Reactors designed by NuScale Power, promise to improve the economics of fission plant construction. But more can be done to accelerate the construction. New nuclear plants, require decades of paperwork and billions in investment to clear through the red tape. Curtailing review timelines and setting less restrictive safety targets would speed plant construction and ultimately save lives, as more dangerous power sources are displaced by a safer nuclear power.[149] Nuclear power is uniquely situated as a near-zero carbon domestic energy source and should not be needlessly sidelined by regulatory burdens.

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[145] https://www.ferc.gov/news-events/news/items-c-1-and-c-2-commissioner-christies-dissent-certificate-policy-and-interim

[146] *See, e.g. https://www.progressiverailroading.com/resources/editorial/2023/PHMSAComment-FINAL.pdf*

[147] https://allthingsnuclear.org/dlochbaum/fatal-accident-at-arkansas-one/

[148] https://doi.org/10.1016/j.joule.2020.10.001

[149] On the many misconceptions surrounding the safety of nuclear power, see GWYNETH CRAVENS, POWER TO SAVE THE WORLD: THE TRUTH ABOUT NUCLEAR POWER (2007).

Improving life for the American worker would involve many policy changes: replacing minimum wages with wage subsidies, directly supporting families, and reforming the public education and university systems.[150] But because of the strong interrelation between electricity, oil, natural gas, and manufacturing production, reform of these permitting processes would pay immediate dividends.

C. Modernize other non-carbon emissions regulations to account for the changing technical landscape

At the same time, our current regulations ignore many of the worst impacts of solar, wind, and batteries. As detailed above, pollution from the mining of critical minerals and the construction of solar arrays almost always happens elsewhere. Ignoring this pollution provides a de facto subsidy for these technologies, where wind and solar are allowed to benefit from relaxed international pollution regulations and labor regulations compared to those pushed on domestic sources. The importation of materials, or components built with materials, that violate U.S. regulations should be banned or assessed an "environmental tariff" to balance the equation. The importation of materials that were mined or built with child or slave labor must be outright banned.

Improved regulations should require lifecycle analysis to account for this changing technological landscape. This would include batteries, solar panels, and wind turbines as well as fossil fuels. Such analysis may reveal previously unaccounted for human and environmental risks, and we are better served by having them in the daylight. If, as the data seems to suggest, the pollution from critical mineral extraction is worse than we presently acknowledge than we should take the appropriate actions to mitigate. And if that means relocating mining to the United States where it can provide American jobs and encourage energy resilience, all the better. Invest in our natural resources and our energy directly.

D. Invest in our natural resources—and new technology to preserve them—directly

Finally, and most briefly, we should invest in our natural resources directly. As great naturalist Theodore Roosevelt explained, "There can be nothing in the world more beautiful than the Yosemite, the groves of the giant sequoias and redwoods, the Canyon of the Colorado, the Canyon of the Yellowstone, the Three Tetons; and our people should see to it that they are preserved for their children and their children's children forever, with their majestic beauty all unmarred."[151] But our natural parks are chronically underfunded. The U.S. National Park system has a $12 billion maintenance backlog but an annual budget of only $2.5 billion.[152] How to fund our parks is a puzzle for policy makers, but not to fund them seems unthinkable.

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[150] *See, e.g.*, American compass, Kass, *supra*

[151] https://www.nps.gov/thro/learn/historyculture/theodore-roosevelt-quotes.htm

[152] https://news.harvard.edu/gazette/story/2019/09/report-looks-into-u-s-national-parks-budgeting-woes/

One possibility is to smooth the pathway to the leasing of public lands for energy projects. When governed by responsible regulations, these need not be destructive, and the funds can be turned to stewardship.

Additionally, we should fund the development of new carbon capture and nuclear development. If energy output is to be maintained while carbon continues to be reduced, some combination of these technologies will need to be part of the process. More than 100 new carbon capture facilities were announced in 2021, but the speed of development is not nearly fast enough to keep pace with sequestration targets.[153] On the atomic side of the equation, France has proven nuclear power can be done safely and the U.S. Navy has safely run reactors for more than 50 years without any reactor accident or any release of radioactivity that hurt human health.[154] New development is well worth investing in.

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Policies that look only through the myopic lens of only reducing United States CO_2 emissions accomplish nothing but virtue signaling, and they can cause a great deal of harm. America has the will and the power to address our problems. Are we going to use it?

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[153] https://www.iea.org/fuels-and-technologies/carbon-capture-utilisation-and-storage

[154] https://www.world-nuclear.org/information-library/country-profiles/countries-a-f/france.aspx#:~:text=In%20February%202022%20France%20announced,active%20in%20developing%20nuclear%20technology.; https://www.mofa.go.jp/region/n-america/us/security/fact0604.pdf

Attachment 5:
C. Boyden Gray, *American Energy, Chinese Ambition, and Climate Realism*, American Affairs (Nov. 21, 2021).

AMERICAN Affairs
November 20, 2021

American Energy, Chinese Ambition, and Climate Realism

by C. Boyden Gray

World leaders recently gathered in Glasgow for "COP26," the latest UN climate change conference. At the top of the agenda was the need for carbon mitigation actions to achieve the Paris Accord's goals and to reach net-zero emissions by mid-century. In anticipation of the conference, the European Commission released the "European Green Deal," a package of measures that aims to make the European Union "carbon-neutral" by 2050. The policies the Commission describes as "transformational" steps toward a "green industrial revolution" include mandating more wind and solar and banning new gasoline and diesel cars by 2035.[1] The European Union's goal is clear: "this set of proposals aims to set an agenda to work with the rest of the world towards a green transition that addresses existential threats and creates new opportunities for all."[2] Less diplomatically, the goal is to goad the Biden administration into European-style "Green New Deal" policies to transition the U.S. economy away from fossil fuels and toward electric cars and renewables. Consistent with that expectation, President Biden has announced an intent to cut emissions in half by 2030 (compared to 2005 levels)—a quixotic goal that would require cuts equivalent to eliminating all carbon emissions from the U.S. electricity and industrial sectors in just nine years.

President Biden should stop his ears to the siren song of climate utopianism. Levelheaded climate diplomacy must instead recognize two inconvenient truths about U.S. interests.

First, policies that restrict the domestic supply of oil and gas and mandate renewable and electric car deployment will reduce U.S. geopolitical power. The United States is the world's largest producer of oil and gas. It is a net loser from unilateral restrictions on domestic hydrocarbons, while Russia, Saudi Arabia, and Iran have the most to gain, as a decline in U.S. supply increases their power to set cartel prices. China, on the other hand, is the largest net importer of oil and gas, but the dominant producer of "green" substitutes like solar panels, battery cells, and critical minerals. "Greening" the U.S. economy at the scale envisioned by the Biden administration would damage U.S. growth while jeopardizing U.S. national security and even global stability. It would empower antagonistic regimes like Russia, Saudi Arabia, and Iran, while reducing U.S. leverage with China.

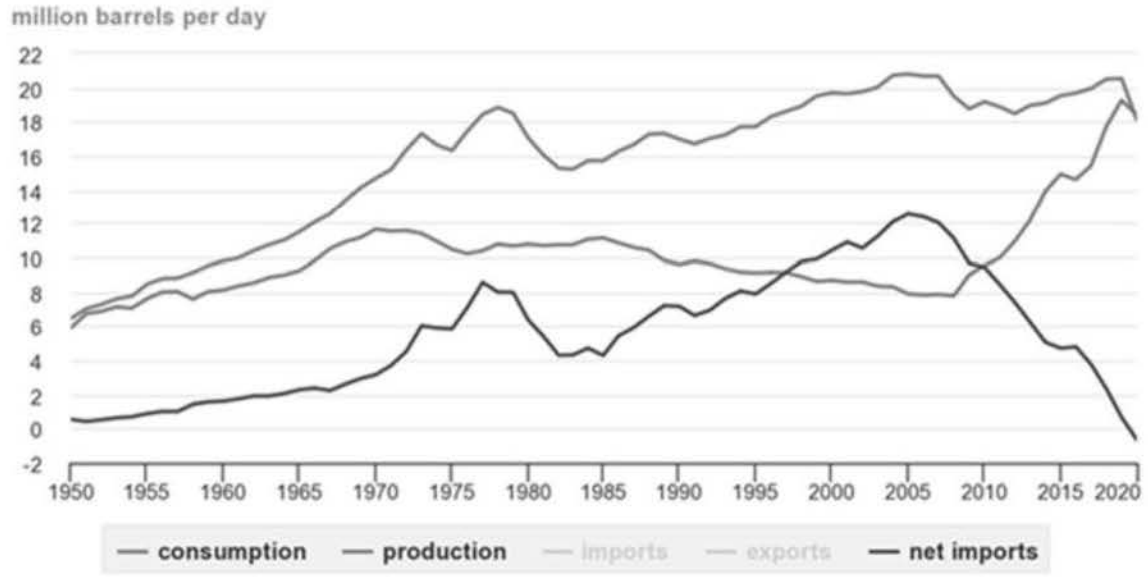
Second, these policies would not effectively curb global emissions. They would simply subsidize continued emissions in other countries. Domestic "Green New Deals" will impose enormous costs on U.S. citizens far above the projected costs of the avoided climate damages. Cass Sunstein, President Obama's regulatory czar, puts the implication this way: "The United States and China are the largest emitters, and on prominent projections, they also stand to lose relatively less from climate change. In terms of their own domestic self-interest, these projections greatly weaken the argument for stringent controls."[3] Climate idealists, who argue that the United States must nevertheless lead, ignore the free rider problem this policy approach creates. If the United States agrees to bear a disproportionate share of the cost of mitigating climate damages, this will reduce the need of foreign countries to curb their own emissions. Put bluntly, disproportionate U.S. mitigation policies compared to the rest of the world are a form of foreign aid that enlarges China and India's "carbon budgets." China and India understand this reality, which is why they have no immediate plans to even *begin* reducing carbon emissions and likely why they even failed to update their Paris commitments.[4] U.S. climate diplomacy must recognize the perverse incentives created by this kind of foreign aid.

America Dominates Global Oil and Gas Supply Chains While China Dominates "Green" Energy Substitutes

U.S. climate diplomacy must be anchored in hard facts about global energy. Those facts show that unilateral domestic supply and demand cuts in oil and gas are not in the interest of the United States.

Oil. The United States is the largest producer of oil, responsible for nearly a fifth of the world's oil production.[5] Thanks to the hydraulic fracturing revolution, the United States is a net exporter of oil.

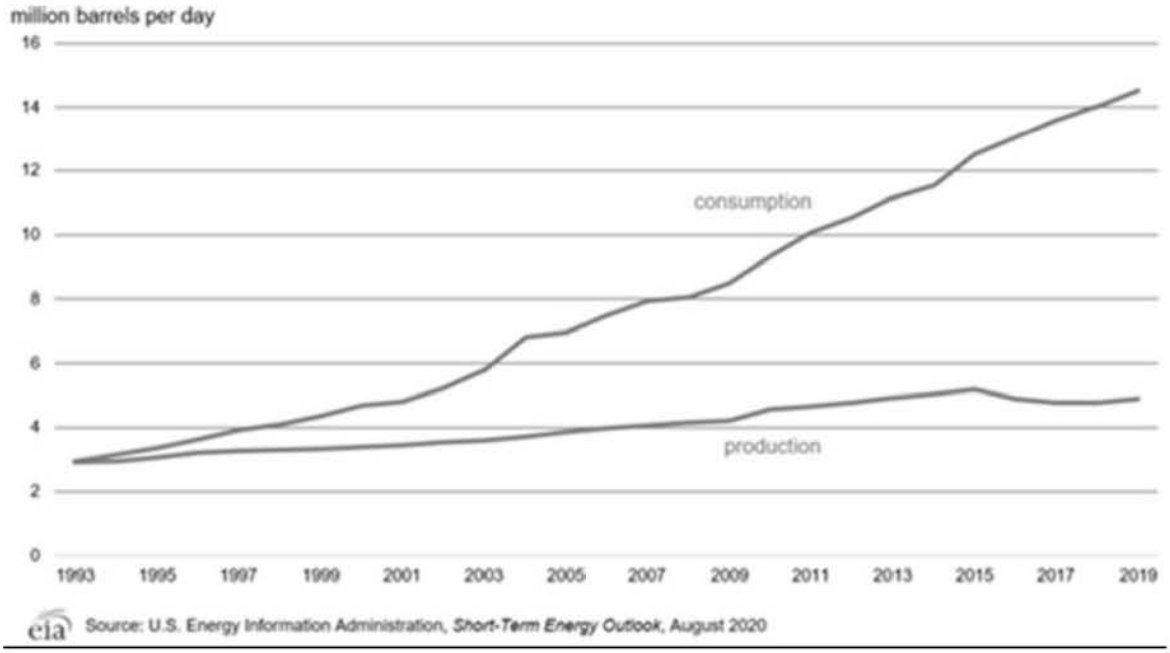
FIGURE 1. U.S. PETROLEUM CONSUMPTION, PRODUCTION, AND NET IMPORTS, 1950–2020



eia Source: U.S. Energy Information Administration, *Monthly Energy Review*, Table 3.1, March 2021, preliminary data for 2020

China, on the other hand, is the world's largest net importer of oil. China has few oil reserves, and its dwindling domestic supplies come from legacy fields that require expensive enhanced-recovery methods. China's demand for oil is also rapidly increasing. This explains China's long-term bet on powering transportation with electricity: China can use its abundant coal reserves, hydropower, and growing nuclear capabilities to power battery-electric cars, vans, and trucks. The European Union, for its part, produces nearly no oil and meets its domestic oil needs through imports.[6]

FIGURE 2. CHINA'S PETROLEUM PRODUCTION AND CONSUMPTION, 1993–2019



Natural gas. The United States, Russia, and Iran dominate natural gas production. The United States is the leading producer of natural gas, producing nearly a quarter of the world's supply. Russia produces 17 percent, and Iran only 7 percent.[7] The United States is the second-largest exporter of natural gas after Russia, and liquified natural gas (LNG) exports are growing rapidly as liquefaction facilities are approved, notwithstanding permitting delays.

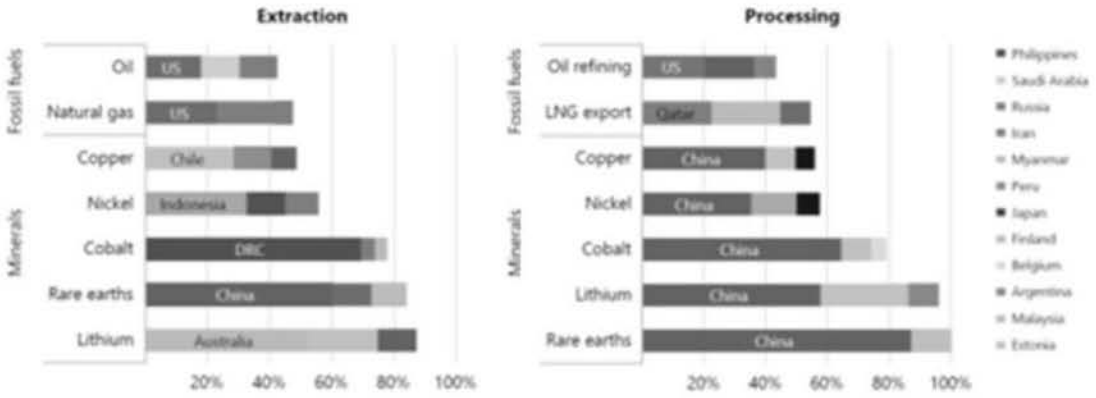
China is the world's largest net importer of natural gas, and net imports are growing fast as China seeks ways to mitigate the ambient air quality problems caused by its reliance on coal as a source of energy for cooking, heating, and electricity.[8] China's coal addiction prematurely kills roughly four hundred thousand Chinese each year, half of the military casualties of the entire U.S. Civil War. With an aging population, increasing urbanization, and the expanding use of coal, this number will likely increase in the coming years.[9]

The European Union, likewise, meets nearly all of its domestic natural gas needs through imports.[10] Its natural gas dependency is increasing as existing gas fields are depleted and fracking bans and red tape limit any shale gas exploration. The European Union's largest gas trading partner is Russia's Gazprom, and Russia's

share of EU imports is growing.[11] The Biden administration recently agreed to remove U.S. sanctions preventing the completion of a new, controversial Russian pipeline (Nordstream 2), a second Gazprom pipeline delivering natural gas directly to Germany, before issuing a few timid sanctions in August. Nordstream 2 will allow Gazprom to avoid the gas "transit" fees it pays Poland and Ukraine and increase Russia's ability to cut gas supplies to Ukraine or other eastern European countries without disrupting supplies for its German customers. In exchange, Ukraine will get $50 million in "green" technology investments from the U.S. and Germany.[12]

Critical minerals. Critical minerals are raw materials needed to transition energy economies to renewable electricity and battery-powered transportation systems. An electric car requires six times the mineral inputs of a conventional car, and an offshore wind plant requires thirteen times more mineral resources than a similarly sized gas-fired power plant. Critical minerals include lithium, rare earths, copper, nickel, silicon, manganese, cobalt, zinc, chromium, and graphite.[13] Lithium, nickel, graphite, cobalt, and manganese are needed to build lithium-ion batteries.

FIGURE 3. SHARE OF TOP THREE PRODUCING COUNTRIES IN PRODUCTION OF SELECTED MINDERALS AND FOSSIL FUELS, 2019



Source: International Energy Agency, "The Role of Critical Minerals in Clean Energy Transitions," May 2021.

China dominates these critical mineral supply chains. China controls nearly two-thirds of all lithium, four-fifths of the refined cobalt market, and nearly all processed natural graphite.[14] In stark contrast to its oil and gas dominance, the

United States has nearly no control of critical mineral supply chains and produces less than a tenth of the world's battery cells, while China is the world's leading producer. China controls much of the extraction of these materials and has 90 percent of the world's rare earth element processing capacity,[15] cornering the market for the core minerals of electric car batteries, and dominating battery and renewable supply chains.

The scope of China's dominance has only been expanded by the fall of Kabul to the Taliban in August of this year. Afghanistan, "the Saudi Arabia of lithium" according to the Department of Defense, possesses mineral wealth valued at $1 trillion or more.[16] China has already laid the groundwork to exploit these minerals—investing in Afghan infrastructure through its Belt and Road Initiative and hosting the Taliban in diplomatic talks—prompting the Taliban to refer to China as its "most important partner."[17]

A European-Style Green Energy Transformation Is Not in the Geopolitical Interests of the United States

These energy facts do not lie. The United States, China, and the European Union face a vastly different geopolitical and economic calculus when it comes to climate diplomacy and mitigation policies.

China's "climate" policies, limited as they are, can be explained as promoting their own domestic industrial growth and energy independence. China recognizes oil and gas dependence as a key strategic weakness. Much of China's oil and LNG imports are shipped from the Middle East through the Strait of Malacca, a key choke point that could be exploited by rivals.[18] Should China threaten an invasion of Taiwan, for example, the U.S. Navy could block much of its energy supply. China's response to this strategic weakness is pushing the world to rely on energy sources where China is ahead, such as electric cars and solar panels, while shoring up its energy security through oil and gas import agreements with Central Asia and Russia. China has also bolstered its natural gas supply by signing a $400 billion agreement with Russia on a gas pipeline—the Power of Siberia—finalized in 2019.[19] A second pipeline, Power of Siberia 2, is being planned. China's turn to renewables and nuclear energy will further boost Beijing's energy independence.

European climate policies serve their geopolitical interest in diversifying their sources of energy, given their lack of any control over oil and gas supply chains. Even so, from a purely cost-benefit standpoint, their abatement policies are difficult to justify. Look no further than Germany, whose shift to renewables over the past two decades has resulted in an enormous wealth transfer to China.[20] And this wealth transfer has hardly been efficient at reducing carbon emissions—renewables capacity has grown to 40 percent, but German energy prices have doubled, and solar panels operate only about a tenth of the time in cloudy Germany. German emissions have not fallen any faster than emissions in the United States, where the costs of electricity have declined significantly as a result of inexpensive and abundant low-carbon natural gas.[21]

In contrast to Europe and China, "Green New Deals" in the United States profoundly conflict with national interests. In the United States, hydrocarbons are the goose that lays the golden eggs. The U.S. oil and gas industry supports twelve million jobs, contributes 8 percent of U.S. GDP, and reduces the U.S. trade deficit by over $300 billion.[22] Low natural gas prices increase U.S. growth and industrial competitiveness, while improving air quality and reducing domestic carbon emissions.[23]

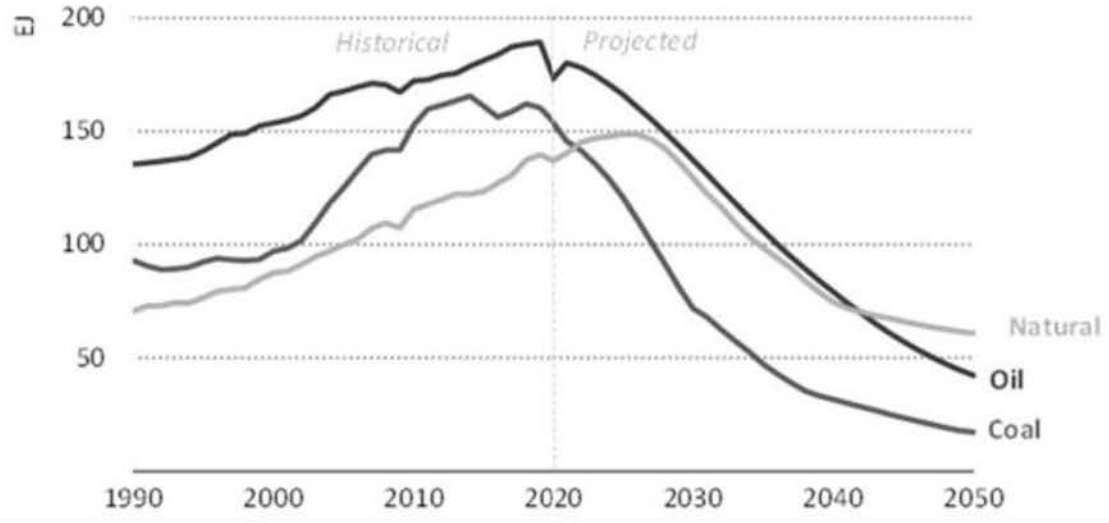
In addition, domestic oil and gas abundance has increased America's ability to shape and punish foreign behavior short of military action. OPEC has been greatly weakened. The United States has been able to impose unprecedented sanctions on major hydrocarbon producers like Iran, Venezuela, and Russia, when they have acted badly, cutting their oil and gas exports and access to foreign investment, without triggering major oil and gas price shocks. Reduced hydrocarbon prices and exports have also reduced the need for extensive U.S. military involvement in the Middle East. Moreover, a natural gas surplus allows the United States to ship LNG to Eastern Europe, deepening U.S. economic ties there and checking Russia's economic leverage.

Quite simply, the Biden administration's target of net-zero by mid-century requires killing this golden goose. Already, Americans are approaching a cold and expensive winter made worse by Biden's policies. And the worst is yet to come. Consider the

International Energy Agency's (IEA) roadmap to net-zero, a "study of how to transition to a net zero energy system by 2050."[24] The IEA roadmap envisions banning all new oil and gas development immediately and cutting global oil consumption in half by 2040 as the world's population grows by two billion people. By 2050, in the IEA's roadmap, "[g]as demand declines by 55% to 1,750 billion cubic meters and oil declines by 75% to 24 million barrels per day (mb/d), from around 90 mb/d in 2020."[25] "The drop in oil and gas demand, and the consequent fall in international prices for oil and gas, cause net income in producer economies to drop to historic lows."[26] The United States sees a disproportionate fall in oil and gas production and income as depressed prices make U.S. "tight" oil and gas uncompetitive with Saudi oil.

Apart from harming the U.S. economy, this energy shift would have severe geopolitical implications. OPEC nations like Saudi Arabia produce oil at a much lower marginal cost than the United States, and IEA projects that by mid-century OPEC would account for half of the oil supply, a return to global oil energy insecurity.[27]

FIGURE 4. COAL, OIL, AND NATURAL GAS PRODUCTION IN THE NET ZERO BY 2050 PLAN



Source: International Energy Agency, "Net Zero by 2050."

The story would be similar for natural gas output restrictions. U.S. natural gas is a useful counterweight to Russian influence. U.S. gas exports weaken Russia's

economic power over the European Union, as the availability of U.S. LNG limits Russia's ability to shut down gas supplies to create severe price shocks and shortages.[28] Reducing U.S. natural gas output jeopardizes countries like Poland and Lithuania and expands Russia's economic influence. It would increase the market power of Middle Eastern suppliers of natural gas—most prominently an ambitious Iran. It would also erode the ability of the United States to credibly use economic sanctions to embargo and sanction regimes that threaten its strategic interests.

By contrast, critical mineral demand would vastly expand to build electric cars and renewables, exposing the United States to a serious threat of economic embargoes from China that could affect U.S. power and transportation sectors.

But IEA's "net-zero" estimates are too optimistic. IEA's roadmap assumes perfect global collaboration in coordinating trade and regulation policies and sharing "clean energy" R&D. (U.S. firms own most "clean energy" patents, so this envisions a vast voluntary transfer of intellectual property to the rest of the world.[29]) In an alternative scenario of imperfect global cooperation, global net-zero is not reached until 2090 even while adopting the same mitigation policies.

And IEA's "alternative" still unrealistically assumes that countries as unreliable as Russia, Iran, Venezuela, India, and China adopt climate policies in near lockstep with North America and Europe. IEA assumes that all advanced economies eliminate coal-fired generation by 2030 and that all emerging economies do so by 2040.[30] That assumption lacks any basis in reality. India plans to have coal provide most of its energy until 2047, and coal is politically entrenched there.[31] Russia has zero interest in achieving zero emissions. China built three times as many coal-generation plants as the rest of the world combined—in 2020.[32] China's promises of net-zero emissions by 2060, with plans for increasing emissions until 2030, should be regarded with skepticism. China, India, and other developing nations expect that reductions in North America and Europe will pave the way for them to emit vast amounts of carbon well into the future at foreign expense. Before requiring its citizens to accept dramatic reductions in their own standard of living, the United States must solve this free rider problem.

Furthermore, all of this presumes that the abatement required to meet the Biden administration's goal even makes sense *globally*. It does not. The Biden administration's net-zero goal, trying to avoid a 1.5-degree Celsius warming by 2100, is not based on any rigorous cost-benefit analysis. In his Nobel Prize lecture, climate economist William Nordhaus explains that based on his Dynamic Integrated Climate-Economy ("DICE") model, holding average temperatures under 1.5 degrees Celsius by 2100 would likely cost the world about ten times as much as the avoided climate damages, a cost-benefit ratio of 10 to 1, equivalent to over $45 trillion in net costs. The "optimal" scenario according to DICE would be to target an increase of 3.5 degrees Celsius by 2100.[33] And that optimal target again assumes optimal carbon pricing policies and global agreement—no free riders. With free riders and an ineffective hodgepodge of abatement policies (our current situation), even a 3.5-degree Celsius increase would be far too ambitious.

A Geopolitically Responsible Climate Policy

If the excesses of the Biden administration are not in the best interests of the United States, then what would responsible U.S. climate diplomacy and policy leadership look like?

First, the United States must reject the infeasible "net-zero by 2050" goal. The United States should set realistic targets and expectations based on rigorous cost-benefit analysis. Pursuing reasonable goals with bipartisan approval, instead of making unenforceable promises, would be a first step to serious and responsible leadership.

Second, U.S. climate policy must recognize the global nature of energy markets and the free rider problem. Global energy supply meets demand. Oil can be transported at low cost in tankers and redirected all over the world. Low transportation costs and spot pricing mean that oil is a global commodity subject to near-perfect price arbitrage. This means that if any country cuts oil production, oil demand will simply find a substitute source of supply at higher prices. The story for natural gas is more complex, but natural gas markets are trending global with LNG growth.[34]

Energy globalization means that cuts in the U.S. supply of oil and gas will shift energy production elsewhere. Jason Bordoff, the cofounding dean of the Columbia Climate School and a former climate and energy adviser to President Barack Obama, wrote in *Foreign Policy* in June, "Unless both supply and demand change in tandem, merely curbing the oil majors' output will either shift production to less accountable producers or have potentially severe consequences on economic and national security interests while doing little to combat the climate crisis."[35] In a similar vein, the Brookings Institution has emphasized that "cutting back domestic oil and gas production without an equally ambitious focus on demand will just increase U.S. imports, rather than reduce consumption. The United States could lose the economic advantages of its oil and gas production without a commensurate reduction in [greenhouse gas] emissions."[36]

An extreme example of a counterproductive policy shock to U.S. supply is the hydraulic fracturing ban advocated by Senator Bernie Sanders and Representative Alexandria Ocasio-Cortez.[37] Hydraulic fracturing accounts for three-quarters of all natural gas and two-thirds of all oil produced in the United States, and a ban would entirely destroy this supply.[38] It would thus result in "7.7 million fewer jobs, $1.1 trillion less in gross domestic product (GDP), and $950 billion less in labor income" by 2025.[39] A ban would also increase domestic air pollution and power sector carbon dioxide emissions, as increased coal generation would be needed to make up for a decline in natural gas to backup intermittent renewables.[40] To avoid a complete economic collapse, roughly three-quarters of U.S. natural gas demand and two-thirds of all U.S. oil demand would need to be replaced with foreign imports overnight, offshoring U.S. hydrocarbon production abroad while doing little or nothing to reduce global carbon emissions. A fracking ban would in short be the equivalent of adopting an infinitely high carbon tax for U.S. tight oil and gas, with no equivalent carbon tax for any foreign oil and gas. Nothing could please Russia, Iran, Saudi Arabia, and China more.

President Biden is unlikely to ban hydraulic fracturing, as that would be political suicide. But a "death-by-a-thousand-cuts" approach—like freezing oil and gas leases on federal lands or lengthening the time of environmental permitting reviews for infrastructure projects (e.g., LNG export facilities) will also harm U.S. interests.

Already, natural gas pipeline restrictions in the Northeast make it difficult for abundant U.S. natural gas from Pennsylvania to reach New England, which has imported Russian LNG even as Russia is under Ukraine-related economic sanctions. Instead of ceding energy production to other powers, the United States could commit to being a net exporter of energy and controlling the air pollution that results. U.S. natural gas exports, with roughly half of the carbon intensity of coal and low methane emissions, could reduce the carbon intensity of foreign economies. But to do this, the United States would need to be promoting natural gas exports by building LNG capabilities, not hampering LNG with red tape.

The lesson is this: to the extent the United States pursues emissions abatement, it will have to deal with global market realities as well as the free rider problem. If not, America will be paying to transfer hydrocarbon production abroad and license greater pollution in India and China. But dealing with these *foreign* problems requires a combination of actual international treaties—requiring approval by two-thirds of the Senate—and border adjustments on imports and exports, which may need congressional approval. An executive "pen-and-phone" climate agenda without Congress will hurt the United States and may do nothing at all to curb global carbon emissions.

Third, the United States must be a leader in technological innovation, not red tape. In particular, the United States should invest resources in underfunded alternatives to renewables and batteries that pose less long-term risks to U.S. geopolitical and economic interests: hydrogen fuel cells and biofuels for mobility and industry,[41] small nuclear reactors for power,[42] and carbon capture and storage.[43] The current near-exclusive focus on renewables and battery mobility is a recipe for failure and increased dependence on China. Leaving future energy supply chains reliant on a China that is willing to lap the world in coal plant production,[44] to create black, sulfurous, toxic lakes,[45] to use slave labor,[46] and to partner with the Taliban[47] is not just bad geopolitics, it is morally obtuse. Only by taking responsibility for energy can the United States be a climate leader.

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