

Feasibility Analysis and the Climate Crisis

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Agencies prepare feasibility analysis when proposing standards limiting greenhouse gas emissions and explicitly base their standard-setting decisions on what is feasible. They do this because the relevant statutes demand maximization of feasible emission reductions. Cost-benefit analysis (CBA) provides a supplement to the statutorily required analysis.

This Article argues that the President should limit CBA's role in light of the urgency of the climate crisis, primarily to minimize delay and clear potential obstacles to effective climate policy. Specifically, the President should repeal the executive orders requiring CBA. While agencies would still have to prepare CBA for very expensive rules under the Unfunded Mandates Act, repeal of those orders would allow agencies to use CBA to inform Congress rather than influence agency standard setting.

This Article explains what feasibility analysis is and argues that the need to do all we are capable of doing to avoid, or at least ameliorate, the climate crisis justifies allowing feasibility analysis to displace CBA. Indeed, responsible governments respond to crises by doing all that is feasible to avoid or at least ameliorate them, not by asking whether every action needed to address a crisis generates quantified benefits exceeding the cost.

It suggests, however, that the executive branch reorient feasibility analysis to focus more on consumer welfare than on preserving existing firms in light of the need to transform the economy to deal with the climate crisis. The feasibility requirement demands that the goods and services firms provide remain available to consumers, albeit sometimes in altered form, but need not be interpreted to protect existing businesses.

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Introduction

More than a decade ago, an exchange on the environmental law professor listserv suggested a consensus view that administrative law mechanisms were too slow and uncertain to permit adequately rapid progress on addressing climate disruption.¹ Even the Obama administration, which supported action on climate disruption, took seven years to produce a standard regulating greenhouse gas emissions from existing electric utilities, then the leading emitters of greenhouse gases.² Now, a full-blown climate crisis has triggered devastating wildfires and exceedingly violent weather events.³ Because every year in which greenhouse gas emissions exceed zero adds to the long-lived atmospheric concentrations of greenhouse gases driving accelerating warming, we need rapid and effective progress.⁴

In light of the urgent need to drastically reduce greenhouse gas emissions and the partisan division on environmental issues in Congress, “building back better” must include an effort to streamline the rulemaking process to enable aggressive use of existing statutory authority to greatly reduce greenhouse gas emissions in a comprehensive fashion in a short period of time.⁵ The most obvious unnecessary obstacle to effective use of rulemaking that the President

1. I use the term “climate disruption” in lieu of more common terms like “climate change” and “global warming” because disruption better captures why scientists are concerned. See DAVID DRIESEN, ROBERT ADLER & KIRSTEN ENGEL, ENVIRONMENTAL LAW: A CONCEPTUAL AND PRAGMATIC APPROACH (2d ed. 2011). The term “climate change” tells us nothing about the nature of the change or whether it is good or bad. The term “global warming” focuses on a central finding of climate science, that greenhouse gases are increasing the earth’s mean surface temperature. But it suggests something gradual and benign, even pleasant. “Climate disruption” or “climate crisis” better capture the consequences of the warming.

2. *Am. Lung Ass’n v. EPA*, 985 F.3d 914, 929 (D.C. Cir. 2021) (finding that power plants are “far and away” the largest stationary source of greenhouse gas emissions); Carbon Pollution Emission Guidelines for Existing Stationary Sources: Electric Utility Generating Units, 80 Fed. Reg. 64,661 (Oct. 23, 2015); Darren Samuelsohn & Jonathan Allen, *Obama W.H. Slow-Walks New Rules*, POLITICO (July 7, 2012, 04:35 AM), <https://www.politico.com/story/2012/07/obama-administration-slow-walks-new-rules-078419> [<https://perma.cc/2QEE-KMEF>] (suggesting that OIRA prevented EPA from proposing emission standards for existing utilities prior to the 2012 election). The Obama administration moved more rapidly to regulate vehicles, because the car industry, in an unusual move perhaps motivated by the need to get federal aid to avoid bankruptcy, agreed to stringent limitations. See generally Jody Freeman, *The Obama Administration’s National Auto Policy: Lessons from the “Car Deal,”* 35 HARV. ENV’T L. REV. 343, 344-45, 365 (2011) (explaining that the car standards were negotiated and announced in May of 2009 and mentioning the “financial bailout of Chrysler and General Motors”).

3. See L. Zhang, W. Lau, W. Tao & Z. Li, *Large Wildfires in the Western United States Exacerbated by Tropospheric Drying Linked to Multi-Decadal Trend in the Expansion of the Hadley Circulation*, 47 GEOPHYSICAL RESEARCH LETTERS 1 (2020) (noting that “the increase in wildfires in the western United States” has been linked to “enhanced warming” and that the situation “will likely worsen quickly” if “actions to combat climate change are not taken soon”); *Climate Change Indicators: Weather and Climate*, EPA (May 12, 2021), <http://www.epa.gov/climate-indicators/weather-climate> [<https://perma.cc/EJ8X-ZB7B>] (noting the association between climate disruption and more intense and more frequent “extreme weather events,” the increasing strength of cyclones, and the growing prevalence of extreme single day rainstorms).

4. See *Royal Dutch Shell PLC*, Case Number C/09/571932 2.3.1 (Hague District Court May 26, 2021) (finding that carbon dioxide lingers in the atmosphere “for hundreds of years, or even longer”).

5. See Jonathan H. Adler, *The Legal and Administrative Risks of Climate Regulation*, 51 ENV’T L. REP. 10485, 10486, 10489-91 (2021) (discussing obstacles to the Biden administration’s use of regulation to address climate disruption).

has power to remove stems from the executive orders mandating cost-benefit analysis (CBA) of significant agency rules.⁶ With a stroke of a pen, President Biden can withdraw these executive orders or insist that they not apply to measures addressing the climate crisis, thereby ending the use of CBA in rules costing less than \$164 million a year. The Unfunded Mandates Act would still require that EPA *prepare* a CBA for rules costing \$164 million or more, but would not require that EPA *consider* the CBA's results even in writing these unusually expensive rules.⁷ Eliminating or greatly limiting the use of CBA in climate regulation would greatly aid the effort to rapidly and seriously address the climate crisis.

Eliminating the consideration of CBA in rulemakings addressing climate disruption raises a question: what should take CBA's place? This Article provides an answer to that question: feasibility analysis.⁸ Feasibility analysis compares the cost of greenhouse gas abatement to the economic capacity of the regulated industry sector to deliver needed services after paying that cost, rather than to the dollar value of the environmental benefits of abatement.⁹ Feasibility analysis already plays a much larger role in climate standard-setting than many scholars realize, because it provides the information needed to comply with common statutory requirements to maximize feasible emission reductions. Limiting the use of CBA would simply strip an extraneous layer of analysis away from most rulemaking and end a process that slows progress and often weakens needed standards.

This Article begins by discussing CBA. By way of background, it briefly explains that many of CBA's weaknesses become especially acute in the climate disruption context. It then shows that CBA proves much more complicated and time consuming than feasibility analysis.

The second Part develops the feasibility analysis concept and suggests a way of adapting it to the climate crisis. It first explains what feasibility analysis is, its role in the administrative state, and the normative advantages that stem

6. Cf. Thomas O. McGarity, *Some Thoughts on Deossifying the Rulemaking Process*, 41 DUKE L.J. 1385, 1396-1436 (1992) (discussing the causes of "ossification" of the rulemaking process, mostly listing problems beyond the control of the executive branch, such as intrusive judicial review).

7. See David M. Driesen, *Is Cost-Benefit Analysis Neutral?*, 77 COLO. L. REV. 335, 375 (2006) (showing that economically significant rules constitute a small subset of the rules OIRA reviews).

8. I have comprehensively reviewed the arguments for and against the "feasibility principle," which depends on feasibility analysis, in David M. Driesen, *Distributing the Costs of Environmental, Health, and Safety Protection: The Feasibility Principle, Cost-Benefit Analysis, and Regulatory Reform*, 32 B.C. ENV'T AFF. L. REV. 1 (2005) [hereinafter Driesen, *Feasibility Principle*]. For further discussion of the feasibility principle and feasibility analysis see David M. Driesen, *Two Cheers for Feasible Regulation: A Response to Masur and Posner*, 35 HARV. ENV'T L. REV. 313 (2011) [hereinafter Driesen, *Two Cheers*]; and Jonathan Masur & Eric Posner, *Against Feasibility Analysis*, 77 U. CHI. L. REV. 657 (2010).

9. See Driesen, *Feasibility Principle*, *supra* note 8, at 12 (noting that feasibility analysis compares costs to "net earnings . . . and the value of corporate assets"); see, e.g., *Nat'l Renderers Ass'n v. EPA*, 541 F.2d 1281, 1288-89 (8th Cir. 1976) (remanding a standard to EPA because it failed to consider cost's impact on the economic viability of new facilities); *Portland Cement Ass'n v. EPA*, 513 F.2d 506, 508 (D.C. Cir. 1975) (approving EPA's position that it may not adopt a standard costing more than the industry could bear and survive).

from reliance on feasibility rather than CBA. It then discusses how administrative agencies regulating greenhouse gas emissions can adapt feasibility analysis to the climate crisis by focusing the analysis more on consumer impacts than upon the welfare of incumbent firms.

The third Part examines the question of whether existing law allows administrative agencies addressing climate disruption to substitute feasibility analysis for CBA. It concludes that existing law permits an executive order ending the *consideration* of CBA in rulemaking addressing greenhouse emissions. The most clearly relevant substantive statutes require feasibility analysis, but do not require CBA. Accordingly, the President may eliminate even the *preparation* of CBA in the vast majority of rulemakings. The Unfunded Mandates Act likely requires preparation of CBA for rules costing \$164 million or more, but it does not require government agencies to adopt a cost-benefit test or even make CBA a factor in choosing the appropriate degree of stringency for greenhouse gas emissions standards. Accordingly, an executive order can eliminate CBA entirely in many rulemaking proceedings addressing greenhouse gas emissions and substantially limit its capacity to impair rulemaking proceedings leading to adoption of the most expensive rules.

I. CBA

This Section explains why CBA proves more complex and time consuming than feasibility analysis. It begins by explaining what CBA is. It then briefly explains why experts of all persuasions find that CBA proves especially problematic in the context of global climate disruption, primarily because of the difficulty in reliably quantifying and monetizing the benefits of abatement. It then shows that feasibility analysis proves much simpler than CBA.

A. What is CBA?

CBA aims to quantify both the costs and benefits of proposed rules in dollar terms.¹⁰ Manufacturing cleaner vehicles, installing wind or solar energy projects,

10. See FRANK ACKERMAN & LISA HEINZERLING, PRICELESS: ON KNOWING THE PRICE OF EVERYTHING AND THE VALUE OF NOTHING 9 (2004) (defining CBA as a formal analysis); Matthew Adler, *Incommensurability and Cost-Benefit Analysis*, 146 U. PA. L. REV. 1371, 1378-79 (1998) (defining CBA as requiring full quantification of costs and benefits in a common metric, such as dollars); Driesen, *supra* note 7, at 339; Robert W. Hahn & Cass R. Sunstein, *A New Executive Order for Improving Federal Regulation? Deeper and Wider Cost-Benefit Analysis*, 150 U. PA. L. REV. 1489, 1498 (2002) (describing CBA as requiring “a full accounting of the consequences of an action, in both quantitative and qualitative terms”). Academics do not always define CBA in precisely this way, but it captures the prevailing policy aims of the executive branch as well as the definition many academics adopt when they are being careful. See Robert W. Hahn & Paul C. Tetlock, *Has Economic Analysis Improved Regulatory Decisions?*, 22 J. ECON. PERSPS. 67, 72 (2008) (using OIRA guidance as establishing criteria for a good CBA, which emphasizes quantification and monetization of costs and benefits); Stuart Shapiro & John F. Morrall III, *The Triumph of Regulatory Politics: Benefit-Cost Analysis and Political Salience*, 6 REG. & GOVERNANCE 189, 197 (2012) (same). Amy Sinden, however, has defined CBA as a spectrum of techniques encompassing not just efforts to quantify as many costs and benefits as possible in monetary terms, but

and improving energy efficiency, for example, all generate costs. CBA evaluates the costs of technological changes needed to comply with a proposed rule to estimate its costs.¹¹ An estimate of the cost of compliance with a proposed rule also figures in feasibility analysis, as we will see.

The quantification of a proposed rule's benefits in dollar terms, however, constitutes CBA's distinctive feature and is the source of much of the criticism of the technique.¹² To quantify the benefits of a rule, a regulator must engage in quantitative risk assessment and then monetize the estimated benefits.¹³ Quantitative risk assessment requires the agency to estimate, for example, the number of trees wildfires will consume, buildings more intense tornadoes and hurricanes will devastate, lives spreading infectious diseases will end, and species that will perish from the face of the earth as the planet heats up because of climate disruption.¹⁴ The regulator conducting CBA must quantify the expected magnitude of these and all other significant consequences that a given proposal to reduce emissions could prevent. The regulator must then assign a dollar value to each of the predicted consequences. A CBA then compares the costs to the benefits of various proposed regulatory options.

B. CBA's Difficulties in the Context of Climate Disruption

One cannot completely summarize, let alone analyze, the debate on CBA in a brief article, but some basic background on agreed-upon problems in the literature will help set the stage for understanding the advantages of feasibility analysis. In particular, quantifying and monetizing environmental benefits proves difficult. Both critics and supporters of CBA recognize that this problem proves especially acute in the climate disruption context.¹⁵

also qualitative consideration of the "pros and cons" of an action with no quantitative analysis at all. See Amy Sinden, *Formality and Informality in Cost-Benefit Analysis*, 2015 UTAH L. REV. 93, 95-96. Importantly, Sinden does not treat feasibility analysis as a form of CBA. *Id.* at 129 (suggesting that a congressional choice of feasibility analysis constitutes a rejection of CBA).

11. See, e.g., U.S. ENV'T PROT. AGENCY, REGULATORY IMPACT ANALYSIS FOR THE CLEAN POWER PLAN FINAL RULE ES-4 (2015) [hereinafter Clean Power RIA] (explaining that the compliance scenario used to estimate costs includes "shifting generation to less CO₂-intensive generation[] and increased deployment of renewable energy").

12. See, e.g., Lisa Heinzerling, *Quality Control: A Response to Professor Sunstein*, 102 CALIF. L. REV. 1457, 1458 (2014) (explaining that quantifying benefits poses a greater challenge than quantifying costs); Amy Sinden, *The Problem of Unquantified Benefits*, 49 ENV'T L. 73, 75 (2019) (characterizing the point that drawing meaningful conclusions from CBA is problematic in light of the impossibility of completely quantifying benefits as "hardly a new insight").

13. Sinden, *supra* note 12, at 84.

14. See generally *id.* at 84-86 (providing a brief synopsis of the technical steps involved in quantitative risk assessment).

15. See, e.g., Jonathan S. Masur & Eric Posner, *Climate Regulation and the Limits of Cost-Benefit Analysis*, 99 CALIF. L. REV. 1557, 1563 (2011) (questioning the value of CBA in the climate context partly because of tremendous uncertainty about how much harm to human beings will occur).

1. Quantitative Risk Assessment

Many known consequences of climate disruption do not lend themselves to quantitative risk assessment because we cannot estimate their magnitudes reliably. Some of the most obvious climate disruption effects—such as increased wildfires and more violent hurricanes—arise unpredictably and episodically and therefore prove extraordinarily difficult to quantify.¹⁶

A basic climate science problem plagues the enterprise of quantitative prediction in the arena of global climate disruption across the board—something economists call the “fat-tail problem.” We do not know the rate of future warming.¹⁷ In modeling the future trajectory of global temperatures under climate disruption, economists typically assume a gradual linear increase in warming over time based on what they apparently think of as mid-range assumptions.¹⁸ But scientists fear the possibility of abrupt rapid nonlinear warming, which would prove far more devastating than the more modest and predictable warming that is assumed in the models used to inform CBA.¹⁹ We do not know how likely these worst-case scenarios are.²⁰ The fat-tail problem renders estimates of the harms caused by climate disruption very uncertain. Since the benefits of greenhouse-gas reductions mirror the harms from continuing atmospheric warming, the fat-tail problem renders benefits estimates extremely unreliable. For that reason, some economists who generally support CBA do not endorse its use in the climate context.²¹

2. Monetization

In addition, many consequences of climate disruption resist credible monetization. For example, scientific reports have long emphasized biodiversity

16. PETER HOWARD & DEREK SYLVAN, EXPERT ELICITATION AND THE SOCIAL COST OF GREENHOUSE GASES 24 (2021) (listing wildfires as impacts left out of economists’ integrated assessment models); cf. Matthew Cappucci, *Climate Change Boosted Hurricane Sandy’s Damage by \$8 Billion Study Finds*, WASH. POST (May 19, 2021, 2:11 PM), <https://www.washingtonpost.com/weather/2021/05/19/hurricane-sandy-climate-change-damages> [<https://perma.cc/3CX8-SXVV>] (discussing the results of retrospective studies of global warming’s impact on the severity of storms that we have seen in the last two decades).

17. See Frank Ackerman & Elizabeth A. Stanton, *Climate Risks and the Social Cost of Carbon*, 6 ECON.: THE OPEN-ASSESSMENT E-JOURNAL 1, 2 (2012) (discussing the wide variety of benefits estimates implied by uncertainties in climate sensitivity).

18. See generally David M. Driesen, *Cost-Benefit Analysis and the Precautionary Principle: Can They be Reconciled?*, 2013 MICH. ST. L. REV. 771, 802 (“CBA practitioners see themselves as choosing middle of the road assumptions.”).

19. See Martin L. Weitzman, *On Modeling and Interpreting the Economics of Catastrophic Climate Change*, 91 REV. ECON. & STAT. 1, 10 (2009).

20. DOUGLAS A. KY SAR, REGULATING FROM NOWHERE: ENVIRONMENTAL LAW AND THE SEARCH FOR OBJECTIVITY 94 (2010) (describing various catastrophic consequences typically regarded as fat tail problems and finding “the likelihood of their occurrence . . . difficult, if not impossible, to estimate”); RICHARD POSNER, CATASTROPHE, RISK, AND RESPONSE 52-53 (2004) (noting that worst-case climate outcomes present problems of Knightian uncertainty, not probabilistic risk).

21. See Weitzman, *supra* note 19; Martin Weitzman, *A Review of The Stern Review of the Economics of Climate Change*, 45 J. ECON. LITERATURE 703 (2007) (questioning the value of CBA in light of uncertainties and potentially extreme worst-case consequences).

losses stemming from global climate disruption.²² Valuing a species for its commercial value alone, which EPA sometimes does, leaves aesthetic losses and the potential consequences of species loss for ecosystems out of the equation.²³ Even when economists can assign a dollar amount to a consequence of climate disruption, that dollar value depends a lot upon controversial assumptions about discount rates applied to future benefits.²⁴

3. Unquantified Benefits

Because of problems like these many important consequences remain unquantified in CBA of measures reducing greenhouse gas emissions, as both critics and supporters of CBA readily concede.²⁵ Accordingly the stated value of benefits from standards addressing climate disruption likely vastly underestimates the full benefits.²⁶

22. See, e.g., Jody Freeman & Andrew Guzman, *Climate Change and U.S. Interests*, 109 COLUM. L. REV. 1531, 1560 (1990) (showing that most models leave out valuation of biodiversity losses from climate disruption and that the valuations that do exist are deeply problematic); Amy Sinden, *The Economics of Endangered Species: Why Less is More in the Economic Analysis of Critical Habitat Designations*, 28 HARV. ENV'T L. REV. 129, 180-83 (2004) (providing examples of cases where monetization of benefits proved impossible); cf. Richard L. Revesz, *Quantifying Regulatory Benefits*, 102 CALIF. L. REV. 1423, 1442-44 (2014) (explaining that data limitations have made it very hard to quantify the value of the services ecosystems provide to human beings but suggesting that the state of the art is advancing).

23. See, e.g., Brief of Economists Frank Ackerman, Nathan Sivers Boyce, Peter Dorman, Eban Goodstein, Richard B. Howarth, Peter B. Meyer, Julie A. Nelson, Richard B. Norgaard, Thomas Michael Power, Kristen Sheeran, Benjamin K. Sovacool & Lyuba Zarsky at 33-35, *Entergy Corp. v. Riverkeepers, Inc.*, 556 U.S. 208 (2009) (Nos. 07-588, 07-589 & 07-597 (consolidated)) (explaining that EPA's CBA of the regulation of cooling water intake for electric utilities only monetized the value of saved commercial fish species, thereby leaving out 98.2% of the fish and all the broader ecological impact).

24. See DISCOUNTING AND INTERGENERATIONAL EQUITY (Paul R. Portney & John P. Weyant eds., 1999) (discussing economists' unease with discounting because of its ethical ramifications and the dramatic impact of discounting on estimates of costs and benefits hundreds of years hence); Daniel H. Cole, *The Stern Review and its Critics: Implications for the Theory and Practice of Cost-Benefit Analysis*, 48 NAT. RES. J. 53, 81-82 (2008) (explaining that policy judgment inevitably informs discount rate selection); Christian Gollier & Martin L. Weitzman, *How Should the Distant Future be Discounted When Discount Rates Are Uncertain?*, 107 ECON. LETTERS 350, 350 (2010) (noting that small differences in discount rates can have an enormous influence on climate disruption's cost); Lisa Heinzerling, *Discounting Life*, 108 YALE L. J. 1911, 1911-15 (1999) (questioning the notion that future lives have less value than current ones); Douglas R. Kysar, *Climate Change, Cultural Transformation, and Comprehensive Rationality*, 31 B.C. ENV'T AFF. L. REV. 555, 578-81 (2004) (questioning the moral basis for intergenerational discounting); Richard L. Revesz, *Environmental Regulation, Cost-Benefit Analysis, and the Discounting of Human Lives*, 99 COLUM. L. REV. 941, 947 (1999).

25. See, e.g., Peter Howard & Michael Livermore, *Sociopolitical Feedbacks and Climate Change*, 43 HARV. ENV'T L. REV. 120, 137-40 (2019) (discussing the difficulty of quantifying infrastructure collapse, political strain on healthcare systems, and exacerbation of wars and other conflicts, all predicted by climate models); Jonathan S. Masur & Eric A. Posner, *Unquantified Benefits and the Problem of Regulation Under Uncertainty*, 102 CORNELL L. REV. 87, 92 (2016). See generally INTERAGENCY WORKING GRP. ON SOC. COSTS OF GREENHOUSE GASES, TECHNICAL SUPPORT DOCUMENT: SOCIAL COST OF CARBON, METHANE AND NITROUS OXIDE INTERIM ESTIMATES UNDER EXECUTIVE ORDER 13990, at 4 (2021) (noting that economic models exclude important climate impacts mentioned in the literature).

26. See FRANK ACKERMAN & ELIZABETH STANTON, *THE SOCIAL COST OF CARBON: A REPORT FOR THE ECONOMICS FOR EQUITY AND THE ENVIRONMENTAL NETWORK* 8 (2010); INTERAGENCY WORKING GRP., *supra* note 25, at 31 (noting that interim government estimates of carbon's social costs

4. CBA's Limited Value in Guiding Regulation

Proponents of CBA often claim that CBA helps the agency determine which level of regulation maximizes net benefits—i.e., matches costs and benefits at the margin.²⁷ Since most of the benefits of climate regulations resist quantification, and the rest are highly uncertain, CBA simply cannot do that for rules that address climate disruption.²⁸ Nor can it always determine if the costs of a given measure outweigh the benefits. If CBA tells us that the costs of a given measure outweigh the quantified benefits, that does not prove that the costs outweigh the full benefits, since many important benefits remained unquantified.²⁹ Also, the potential range of benefits from climate regulation is too wide for honest CBA to provide much guidance for specific decisions about regulatory options, partly because of the fat tail problem.³⁰

C. CBA's Relative Complexity

Largely because of the difficulty of quantifying benefits, CBA offers the most complicated form of analysis ever used in environmental rulemaking.³¹ Like a health-based standard, where the agency must protect public health (often regardless of cost), it relies on risk assessment. In the context of CBA of measures reducing climate disruption, risk assessment must be quantitative and account for both ecological and health risks. CBA then requires an effort at monetization not required for any other approach. Like feasibility analysis, CBA requires quantifying costs, as we shall see. CBA combines the difficulties of the analysis undergirding health-based standard setting with those of the cost estimation and technology assessment undergirding feasibility-based standard setting and adds a raft of complications associated with monetization.³²

The analysis that follows, however, will contribute something underappreciated to the case for casting it aside whenever possible. CBA does

“underestimate the damages from greenhouse gas emissions” because of “modeling limitations”); *see, e.g.*, DRIESEN, ADLER, & ENGEL, *supra* note 1, at 261 (discussing limitations in the benefit estimates used to justify President Obama’s vehicle emission standards); Clean Power RIA, *supra* note 11, at ES12-14 (discussing limitations in the benefits estimates for the Clean Power Plan); *cf.* HOWARD & SYLVAN, *supra* note 16, at 4 (noting that even “the IPCC has tended to underestimate the rate of climate change”).

27. *See* 1 HANDBOOK OF ENVIRONMENTAL ECONOMICS: ENVIRONMENTAL DEGRADATION AND INSTITUTIONAL RESPONSES 253-54 (Karl-Goran Maler & Jeffrey R. Vincent eds., 2003) (defining the “social optimum” regulation or tax as one that equates marginal abatement costs to marginal damages). Legal academics take varying and sometimes inconsistent views about how CBA should influence decision-making. *See* Driesen, *supra* note 7, at 385-94 (reviewing and critiquing various views about how exactly CBA’s results should influence decision-making).

28. *See* Sinden, *supra* note 12, at 124 (discussing “the inability to meaningfully calculate net benefits where significant benefits are unquantified”).

29. Driesen, *supra* note 7, at 401.

30. *See generally* Cass R. Sunstein, *The Arithmetic of Arsenic*, 90 GEO. L. J. 2255, 2257 (2002) (recognizing that an “exceedingly wide” benefits range does little to “discipline judgment”).

31. *See* David M. Driesen, *Getting Our Priorities Straight: One Strand of the Regulatory Reform Debate*, 31 ENV’T L. REP. 10003, 10019 n.204 (2001).

32. *See* Cass R. Sunstein, *Is Cost-Benefit Analysis for Everyone?* 53 ADMIN. L. REV. 299, 311 (2001) (suggesting that feasibility analysis “might be preferred” because it eases “the agency’s task”).

not provide useful information for implementing agencies' statutory mandates, which typically require them to maximize feasible emission reductions. As a result, agencies seeking to establish standards limiting greenhouse gas emissions currently use feasibility analysis to inform their decisions. Requiring resource intensive CBA adds complexity to the urgent process of addressing the climate crisis without making it easier to craft strict standards that meet legal requirements.

II. Feasibility Analysis

This Part focuses on developing an understanding of feasibility analysis and how that understanding strengthens the case that it provides a worthwhile substitute for CBA. The first Section focuses on explaining feasibility analysis and putting it in the context of existing administrative law. It also explains why feasibility analysis aims at the right questions and tends to produce more meaningful action than CBA. The second Section elaborates a proposal to use feasibility analysis more effectively to address the climate crisis, by emphasizing impacts on consumers rather than impacts on regulated firms.

A. Feasibility Analysis and its Place in Administrative Law

1. What is Feasibility Analysis?

Feasibility analysis involves figuring out what regulated entities can feasibly do to reduce emissions. It analyzes what is technically and economically feasible.

To figure out what is technically feasible, a government agency must first identify the technologies that can lower greenhouse gas emissions in a relevant sector. For example, when the Obama administration created standards lowering greenhouse gas emissions from passenger vehicles, it discussed various techniques for reducing vehicular greenhouse gas emissions.³³ These included increased production of electric and hybrid vehicles.³⁴ This technical feasibility analysis can focus on known existing technologies or it can focus on evaluating the promise of technologies that have not been commercialized or perhaps not even developed.³⁵ A focus on new technology suggests a technology-forcing philosophy, where regulators accept the idea that standards can catalyze

33. See 2017 and Later Model Year Light-Duty Vehicle Greenhouse Gas Emissions and Corporate Average Fuel Economy Standards, 77 Fed. Reg. 62,624, 62,702-06 (Oct. 15, 2012) [hereinafter CAFE Standards].

34. See *id.* at 62,705.

35. See Driesen, *Feasibility Principle*, *supra* note 8, at 14 (noting that the courts have often interpreted the feasibility principle as technology forcing).

technological advancements, while assuming some government responsibility for evaluating such improvements' feasibility.³⁶

The second step involves estimating the costs of making various technological improvements that can reduce greenhouse gas emissions. For existing technologies, market information often provides a basis for estimating those costs.³⁷ For rules relying on technology forcing, the agency must use engineering expertise to estimate future costs.

These steps are also necessary when the agency conducts CBA. CBA of any proposed standard requires analysis of technical and economic feasibility.³⁸ One cannot estimate the cost of greenhouse gas abatement in a regulated sector without an understanding of technological options and their costs.

The difference between CBA and feasibility analysis involves what the regulator compares those costs to. In feasibility analysis, the regulator usually compares the costs of abatement to the capabilities of firms to absorb those costs.³⁹ Government agencies sometimes employ a bankruptcy model to perform this sort of analysis.⁴⁰ If the technologies that would have to be employed by the industry to meet a strict standard generate very high costs relative to the regulated firms' values, the strict standard may prompt plant closures or even bankruptcies.⁴¹ I have suggested in a previous article that an agency acting under an instruction to maximize feasible emission reductions might regard measures leading to widespread plant shutdowns as infeasible.⁴² On the other hand, the legislative histories of statutes that require this sort of analysis suggest that bankrupting some marginal firms does not make a standard infeasible.⁴³ Thus,

36. See, e.g., *Nat. Res. Def. Council v. EPA*, 655 F.2d 318, 333 (D.C. Cir. 1981) (requiring EPA to "identify major steps necessary to develop new technology and give plausible reasons" to think the industry can solve the remaining problems); *International Harvester v. Ruckelshaus*, 478 F.2d 615, 629 (D.C. Cir. 1973).

37. See, e.g., Driesen, *supra* note 7, at 339-40; Thomas O. McGarity & Ruth Ruttenberg, *Counting the Cost of Health, Safety, and Environmental Regulation*, 80 TEX. L. REV. 1997, 2009 (2002).

38. See Driesen, *Feasibility Principle*, *supra* note 8, at 49-50.

39. See *United Steel Workers of Am. v. Marshall*, 647 F.2d 1189, 1265 (4th Cir. 1985) (holding that a court must examine costs in "relationship to the health and profitability of an industry"); *Nat'l Renderers Ass'n v. EPA*, 541 F.2d 1281, 1289 (8th Cir. 1976) (holding that EPA erred in failing to compare costs to income to measure economic viability); see, e.g., *Alaska Dep't of Env't Conservation v. EPA*, 540 U.S. 461-501 (2004) (applying this approach to Best Available Technology standards under the Clean Air Act).

40. See, e.g., *Nat'l Wildlife Fed'n v. EPA*, 286 F.3d 554, 565 (D.C. Cir. 2002) (discussing EPA's use of the Altman bankruptcy model). See generally EDWARD A. ALTMAN & EDITH HOTCHKISS, *CORPORATE FINANCIAL DISTRESS AND BANKRUPTCY* 234-35 (2006) (discussing financial institutions' use of models to predict repayment risks).

41. See, e.g., *Nat'l Wildlife Fed'n*, 286 F.3d at 574 (noting that EPA predicted plant closures when net earnings fell below the salvage value of a regulated mill); *Am. Iron & Steel Inst. v. OSHA*, 577 F.2d 825, 836-37 (3d Cir. 1978) (affirming the feasibility of a regulation imposing total costs of around \$240 million, because industry was profitable with producers earning more than \$857 million a year).

42. See Driesen, *Feasibility Principle*, *supra* note 8, at 9 (suggesting that the "feasibility principle" found in many environmental statutes authorizes EPA to avoid widespread plant closures).

43. See *EPA v. Nat'l Crushed Stone Ass'n*, 449 U.S. 64, 79 (1980).

feasibility analysis evaluates both the technological and the economic feasibility of a proposed rule.⁴⁴

An example of feasibility analysis comes from the Obama-era rulemaking effort that produced standards requiring vehicles over time to meet an emission limit consistent with an average fuel economy of 54.5 miles per gallon.⁴⁵ This rule (along with similar California standards) set the stage for the increasing production of electric and hybrid vehicles we have experienced in recent years. In the course of justifying that standard, the National Highway Traffic Safety Administration (NHTSA) reiterated its long-held position that for a standard to be feasible it must be economically feasible (or as NHTSA put it, “practicable”).⁴⁶ In determining economic feasibility, however, NHTSA does not focus on preserving each firm’s business, but rather the industry as a whole.⁴⁷ As NHTSA explained, the legislative history contemplates losing laggard firms if necessary to achieve important societal benefits.⁴⁸

In the rulemaking establishing the 54.5 mpg equivalent standards, NHTSA and EPA declined to adopt the even stricter standards environmental groups advocated because “various manufacturers” lacked the “financial and engineering” resources necessary to comply with stricter standards.⁴⁹ Thus, the agencies rejected technically feasible stricter standards because they did not consider such standards economically feasible for the industry. They compared the cost of the standards to the economic and technical capacity of the regulated industry. Doing so did not derail promulgation of extremely ambitious emissions standards.

2. The Place of Feasibility Analysis and CBA in the Administrative State

Feasibility analysis has long been part of relevant agencies’ interpretation of their statutory mandates and hence analytical responsibilities. These agencies employ feasibility analysis because the statutes authorizing regulation of greenhouse gas emissions effectively require it.

For example, the Energy Policy and Conservation Act of 1975 (EPCA) focuses on what is feasible. This statute governs Corporate Average Fuel Economy (CAFE) standards, which drive federal regulation of vehicles’ greenhouse gas emissions. The relevant provision of the EPCA requires a fuel economy standard reflecting “the maximum *feasible* average fuel economy level that . . . the manufacturers can achieve.”⁵⁰

44. See *id.* at 75 (describing a “best available technology” requirement as requiring employment of the “best measures economically and technologically feasible”).

45. See CAFE Standards, *supra* note 33, at 62,627.

46. See *id.* at 62,668.

47. See *id.*

48. See *id.*

49. See *id.* at 63,040-43.

50. *Ctr. for Biological Diversity v. Nat’l Highway Traffic Safety Admin.*, 538 F.3d 1172, 1182 (9th Cir. 2008) (citing 49 U.S.C. § 32902(a) (2007)) (emphasis added). The Obama-era vehicle standards

Section 111 of the Clean Air Act furnishes another important example, for it provides the basis for the effort to regulate carbon dioxide emissions from electric utilities—a very important source of greenhouse gas emissions in the United States—and the oil and gas industry’s emissions of methane, a very potent greenhouse gas.⁵¹ Section 111 requires “standards of performance” for existing and new sources of greenhouse gases, defined as standards reflecting “the degree of emission level *achievable* through the application of the best system of emission reduction . . . which has been adequately demonstrated.”⁵² It demands that EPA take “the cost of achieving such reduction” into account.⁵³ It therefore requires EPA to determine what level of reduction is feasible, i.e., what is “achievable.”

Nearly every provision of law that provides the government with authority to regulate greenhouse emissions requires the responsible government agency to mandate what is feasible. Often these provisions require government agencies to maximize feasible emission reductions. The governing statutes signal this maximization of feasible environmental protection by use of superlatives, such as requirements for standards based on the “best” technology (as in section 111) or for the “maximum” level of stringency (as in EPCA).⁵⁴

Accordingly, an agency directed to maximize feasible reductions must engage in a feasibility analysis. It simply cannot know what is feasible and what is not without such an analysis. Accordingly, CBA never functions as a stand-alone. It acts as a supplement to the agency’s feasibility analysis, adding a layer of extra analysis.

CBA became part of agency practice not because of fidelity to statutory requirements, but because of a Reagan administration executive order demanding that government agencies use it “to the extent permitted by law.”⁵⁵ President Reagan’s order expressly embraced deregulatory aims, proclaiming a goal of “reduc[ing] the burdens of existing and future regulations.”⁵⁶ Agencies generally reduce regulatory burdens by making safeguards laxer, thereby

also relied on section 202(a) of the Clean Air Act, which also requires consideration of technological feasibility and cost. Freeman, *supra* note 2, at 353.

51. See Oil and Natural Gas Sector: Emission Standards for New, Reconstructed, and Modified Sources, 81 Fed. Reg. 35,824, 35,829, 35,841 (June 3, 2016).

52. 42 U.S.C. § 7411(a)(1), (c), (f) (2018) (emphasis added).

53. 42 U.S.C. § 7411(a)(1) (2018).

54. See EPA v. Nat’l Crushed Stone Ass’n, 449 U.S. 64, 74 (1980) (describing the requirement to employ the “best available technology” as committing “the maximum resources economically possible to the” pollution elimination goal); Alaska Dep’t of Env’t. Conservation v. EPA, 540 U.S. 461, 489-90 (2004) (describing requirements for “best available control technology” as requiring “the technology that can best reduce pollution within practical constraints”).

55. Exec. Order No. 12,291, 3 C.F.R. 127, § 2 (1982).

56. *Id.* (preamble); Driesen, *supra* note 7, at 345 (explaining that Reagan’s executive order sought to minimize health and safety protections by explicitly avowing a purpose of reducing “the burdens of existing and future regulations”) (quoting Exec. Order 12,291); Alan B. Morrison, *OMB Interference with Agency Rulemaking: The Wrong Way to Write a Regulation*, 99 HARV. L. REV. 1059, 1062 (1986) (characterizing Reagan’s executive order as part of a program to make sure that regulation is only promulgated, if at all, as a last resort).

reducing environmental benefits.⁵⁷ To enforce his CBA order, President Reagan tasked the Office of Management and Budget (OMB) with the job of reviewing agency rules.⁵⁸ Presidents Clinton and Obama issued their own executive orders further entrenching CBA and OMB review, which is now carried out by the Office of Information and Regulatory Affairs (OIRA) within OMB.⁵⁹ The Clinton and Obama orders, however, abandoned the express deregulatory goals of the Reagan order, and instead focused primarily on the maximization of net benefits, or ensuring that benefits justify costs.

Under this structure, agencies must carry out both feasibility analysis, to comply with statutory mandates, and CBA, to comply with the executive orders. Thus, the executive orders create extra analytical tasks for the agencies beyond what is needed to efficiently comply with governing statutes.

The review process created to enforce the CBA requirement adds to the formidable burdens that generally have “ossified” administrative processes.⁶⁰ These burdens include the need to respond to all significant comments on proposed rules, which often prove voluminous in rulemakings addressing the climate crisis.⁶¹ Judicial review under the arbitrary and capricious standard sometimes focuses on the adequacy of these responses, and agencies cannot easily predict what issues raised in comments might lead a court to overturn a rule and force the agency back to the drawing board.⁶² So, the agencies provide long detailed preambles justifying adopted rules in Federal Register notices supplemented by even longer response to comments documents, even though the Administrative Procedure Act requires only a short and concise statement of a rule’s basis and purpose.⁶³ CBA executive orders add to these burdens by requiring submission of draft rules to OIRA. OIRA frequently questions EPA’s analysis and proposals and often delays the rulemaking process in both Democratic and Republican administrations.⁶⁴

When government agencies explicitly rely on CBA to help justify their standards, they increase the likelihood of suffering time consuming setbacks in the federal courts. The best example of how relying on CBA often leads to reversals in court in the environmental area comes from the *Corrosion Proof Fittings* case, in which the Fifth Circuit reversed EPA’s decision to phase out asbestos, one of the most well understood and lethal health threats EPA has ever

57. Driesen, *supra* note 7, at 385 (noting that changes that reduce the costs of regulations generally reduce their benefits).

58. See Exec. Order No. 12,291, *supra* note 55, §§ 1(a)-(c), 3.

59. See Exec. Order No. 13,563, 3 C.F.R. 215 (2012); Exec. Order No. 12,866, 3 C.F.R. 638 (1994); Rachel Bayefsky, *Dignity as a Value in Agency Cost-Benefit Analysis*, 123 YALE L.J. 1732, 1746 (2014).

60. McGarity, *supra* note 6, at 1385-86.

61. Exec. Order No. 13,563 § 1(b); Exec. Order 12,866 § 1(a).

62. McGarity, *supra* note 6, at 1400-01 (discussing how the need to respond to lengthy comments attacking nearly every aspect of a rule to avoid prospects of reversal leads to more process).

63. See *id.* at 1387-88.

64. Samuelsohn & Allen, *supra* note 2 (explaining that under President Obama, OIRA review caused delays averaging 67 days after the 2010 election and that Obama’s administration produced fewer rulemakings in his first term than George W. Bush and Bill Clinton in their first terms).

sought to regulate.⁶⁵ The main provision of the Toxic Substances Control Act (TSCA) governing the asbestos rulemaking required EPA to impose the “least burdensome requirement” needed to “adequately” protect against “unreasonable risk.”⁶⁶ Tom McGarity has argued that this language, in context, is reasonably read to require a ban of a substance if no other measure would adequately protect the public from a risk that is serious, as the risk imposed by asbestos clearly was.⁶⁷ EPA, however, conducted a CBA and did not offer a particularly clear interpretation of what the statute required.⁶⁸ The Fifth Circuit reversed, holding that EPA must conduct a CBA not only with respect to the phase-out of asbestos, but also with respect to “each regulatory option” available to EPA.⁶⁹ The court also found arbitrary certain methodological choices EPA made in conducting the CBA.⁷⁰ EPA never again regulated a toxic substance under TSCA’s standard setting provision, apparently finding the demands overwhelming.⁷¹ Congress eventually stepped in and overruled this decision.⁷²

While courts sometimes reverse decisions based on feasibility analysis as well, the overwhelming complexity of CBA plus the need to resolve so many intractable uncertainties may require the agency to make arbitrary decisions, making reversal far more likely when CBA is openly relied on.⁷³ Thus, in

65. *Corrosion Proof Fittings v. EPA*, 947 F.2d 1201 (5th Cir. 1991).

66. 15 U.S.C. § 2605 (2018).

67. Thomas O. McGarity, *The Courts and the Ossification of Rulemaking: A Response to Professor Seidenfeld*, 75 TEX. L. REV. 525, 546-47 (1997); see also Richard J. Pierce Jr., *Rulemaking Ossification Is Real: A Response to Testing the Ossification Hypothesis*, 80 GEO. WASH. L. REV. 1493 (2012).

68. See Asbestos; Manufacture, Importation, Processing, and Distribution in Commerce Prohibitions, 54 Fed. Reg. 29,460 (July 12, 1989).

69. *Corrosion Proof Fittings*, 947 F.2d at 1217 (stating that EPA must consider “the costs and benefits of regulation under each option” available to it under the statute).

70. *Id.* at 1218-19 (discussing various methodological objections to EPA’s CBA).

71. Sinden, *supra* note 10, at 142 (saying that after ten years spent preparing a CBA to support its asbestos ban and being rebuffed by the court, “EPA gave up entirely” on regulating asbestos or any other “significant regulatory action under TSCA”).

72. See Amy Sinden, *The Shaky Legal and Policy Foundations of Cost-Benefit Analysis in Environmental Law*, LPE PROJECT (Oct. 19, 2021), <https://www.lpeproject.org/blog/the-shaky-legal-and-policy-foundations-of-cost-benefit-orthodoxy-in-environmental-law> [https://perma.cc/974P-WSEC] (noting that the one time a court imposed a cost-benefit requirement on EPA, Congress expressly overruled it, citing the *Corrosion Proof Fittings* decision).

73. A good example of the necessity of an arbitrary decision comes from the treatment of the length of time over which to calculate benefits, which figured in *Corrosion Proof Fittings*. The court reversed EPA for only counting lives saved over a thirteen-year period, leaving the benefits beyond that unquantified. *Corrosion Proof Fittings*, 947 F.2d at 1218. The court found the thirteen-year period “arbitrarily short.” *Id.* at 1219. The court noted that in general the agency has discretion to choose the period over which to count benefits. *Id.* The need to choose a period would seem to require some sort of arbitrary cut-off, since otherwise the benefits would be infinite as they would accrue until the end of time. The court found the cut-off arbitrary because it left a large amount of benefits unquantified. *Id.* But that problem would exist as long as the period selected is not infinite. Discount rates similarly pose very difficult problems that may require arbitrary decisions. *Cf. id.* at 1218 (arbitrarily rejecting EPA’s decisions to discount costs but not benefits). Caroline Cecot, however, has argued that the courts defer to agencies’ assumptions in quantitative risk assessments in the CBA context just as they do in evaluating risk assessments in other contexts. Caroline Cecot & W. Kip Viscusi, *Judicial Review of Agency Benefit-Cost Analysis*, 22 GEO. MASON L. REV. 575, 598-601 (2015). Feasibility analysis, however, does not require quantitative risk assessment.

addition to adding analytical requirements, demand for CBA creates an administrative structure that, to put it mildly, is not geared to quick action in a crisis.

3. The Normative Case for Feasibility Analysis

Sensible societies do not typically respond to a crisis by asking if measures needed to combat it generate sufficient benefits to justify the costs.⁷⁴ When a crisis occurs, we typically ask what we can feasibly do to make the crisis abate or at least ameliorate it.⁷⁵ The response to COVID-19 illustrates this. Responsible government officials did not seek to monetize the benefits of mask wearing or social distancing by pretending to know how many lives these measures would save and how many illnesses these measures would enable us to avoid. Nor did they seek to monetize the value of the lives saved and the avoided suffering associated with these measures. They did not compare the monetized benefits from mask wearing and social distancing to the costs. Instead, they asked what we can feasibly do to minimize the spread of COVID-19. We generally approach winning a war in much the same way. The question is not whether this or that battle tactic produces benefits exceeding cost.⁷⁶ The question is what can we feasibly do to win.

We should approach the climate crisis in much the same way.⁷⁷ The relevant question is no longer (if it ever was) whether a needed measure is worth the cost. The key question is: what can we feasibly do to avoid, or at least substantially ameliorate, a devastating crisis? Feasibility analysis enables the agencies that are tasked with confronting this crisis to systematically answer this question, and to act accordingly.

In addition to focusing on the right normative question, feasibility analysis does a better job than CBA of addressing the concerns about cost distribution that should guide our choices about how best to move toward zero carbon goals. Unlike CBA, feasibility analysis takes into account the distribution of costs in a way that separates meaningful costs from less meaningful costs.⁷⁸ I have argued

74. See, e.g., DAVID M. DRIESEN, *THE ECONOMIC DYNAMICS OF LAW* 5 (2012) (explaining that policymakers did not employ CBA in deciding how to respond to the 2008 financial crisis).

75. Cf. *id.* at 200 (explaining that in the national security area sensible policy focuses on analyzing the “efficacy” of proposed measures, not CBA).

76. Cf. ACKERMAN & HEINZERLING, *supra* note 10, at 218-19 (noting that we do not conduct CBA of military expenditures).

77. See generally Daniel Rosenbloom, Jochen Markard, Frank W. Geels & Lea Fuenfschilling, *Why Carbon Pricing Is Not Sufficient to Mitigate Climate Change—and How Sustainability Transition Policy Can Help*, 117 *PROC. NAT’L ACAD. SCI.* 8664, 8665 (2020) (“[E]fficiency considerations must . . . be tempered by an immediate need to realize carbon neutrality through whatever means actually work.”).

78. While some analysts argue that CBA can take distribution into account, their ways of doing that do not distinguish between meaningful and meaningless costs. See, e.g., Jack Lienke, Iliana Paul, Max Sarinsky, Burcin Unel & Ana Varela Varela, *Making Regulations Fair: How Cost-Benefit Analysis Can Promote Equity and Advance Environmental Justice*, INST. FOR POL’Y INTEGRITY i-ii (2021), https://policyintegrity.org/files/publications/Making_Regulations_Fair_Report_vF_%281%29.pdf [<https://perma.cc/W6W8-VDRV>] (recommending the analysis of whether “economic or demographic groups” disproportionately bear regulation’s costs in CBA).

in previous articles that cost distribution matters more than the magnitude of costs. To take a stylized hypothetical example, spreading a cost of \$300 million among the U.S. population imposes a burden of less than \$1 upon each person and is unlikely to cause significant hardship. On the other hand, concentrating a lesser cost on small marginal facilities might cause those facilities to shut down, producing serious disruption in the lives of workers. Feasibility analysis addresses this concern by focusing on whether a given policy is feasible for each industry sector, rather than on whether society-wide costs are less than society-wide benefits. Even if the net benefits of a policy outweigh the net costs of a policy according to CBA, a regulator could determine that the policy is infeasible if those costs are concentrated on a particular set of firms or individuals. Feasibility analysis thus enables regulators to evaluate whether a given policy will concentrate costs in ways that could pose exceptional hardship.

In the climate context, distribution concerns loom especially large. Climate disruption concentrates costs in ways that are very likely to impose severe harms on particular groups of individuals, such as the old people who perish in heat waves, the victims of infectious diseases who die, and the people who lose their homes or lives to wildfires and intensified hurricanes. Limiting mitigation because total costs of a particular measure outweigh total benefits makes no sense when the costs can be distributed widely and the benefits devastate the lives of climate disruption's victims.

Feasibility analysis, in the context of the law surrounding it, is very unlikely to lead to spending lavish amounts of money on trivial problems. In order to regulate greenhouse gases, EPA had to first determine whether greenhouse gases endanger health and the environment. In light of the rich scientific literature establishing the danger of continued climate disruption, EPA, once forced by a Supreme Court ruling to consider the endangerment issue, had little difficulty in concluding that greenhouse gases endanger public health and the environment. The dangers documented in the scientific literature supporting this conclusion show that climate disruption is not a trivial problem.

Finally, under existing law CBA adds a layer of analysis in some tension with statutory standards. As such, its consideration creates legal risks for agencies to the extent that they get drawn away from maximizing feasible reductions. Some CBA proponents argue that feasibility analysis does not work well because plants should shut down if the benefits are great enough, and that CBA permits that result. They do not explain, however, where agencies would get statutory authority to impose infeasible regulations. After all, as we have seen, the statutes governing greenhouse gas regulation only authorize feasible regulation. A directive to maximize feasible reductions does not authorize the agency to mandate stricter standards than prove feasible. So, if an agency concludes that a CBA suggests that an agency can maximize net benefits by establishing a stricter standard than proves feasible, the agency must reject that suggestion. In other words, if the CBA suggests that the climate crisis will have such a severe impact that we should all get out of our cars and walk, NHTSA still cannot shut down the auto industry through a standard that is infeasible. This

issue came up in the CAFE rulemaking under President Obama. Largely because of the fuel cost savings associated with owning very efficient vehicles and the extreme amounts of environmental damage associated with vehicle emissions, the level of emission reductions that would maximize net benefits according to the CBA accompanying this rule proved even more stringent than the level that EPA and NHTSA adopted.⁷⁹ But one might ask whether adopting a more stringent level would help, if, to take an extreme hypothetical, none of the vehicle manufacturers could comply.⁸⁰ And even if the manufacturers could produce new vehicles maximizing net benefits, if they proved so expensive that consumers could not afford them, then too, the modeled net benefits might not be realized. Instead, consumers might hold on to dirty old vehicles or simply lack transportation.

These sorts of considerations may help explain why no agency has ever adopted a stricter standard than it deemed feasible based on CBA. But CBA's supporters advance no argument suggesting that agencies have the inclination or statutory authority to establish infeasible regulations because they maximize net benefits.

As the CAFE example illustrates, a directive to maximize feasible reductions does not authorize the agency to mandate stricter standards than prove feasible. So, if an agency concludes that a CBA suggests that an agency can maximize net benefits by establishing a stricter standard than proves feasible, the agency must reject that suggestion.

Conversely, if OIRA or some other agency reads the CBA as suggesting that the agency should adopt laxer standards than it could feasibly mandate, the agency should ignore that suggestion as well. The statutes require maximizing feasible reductions, not reducing costs that appear to exceed benefits. Thus, CBA helps fulfill the policy desires of past presidents but does not help agencies efficiently reach legally appropriate decisions commensurate, to the extent the law allows, with the magnitude of the crisis.

Accordingly, under existing law CBA adds a layer of analysis in some tension with statutory standards. As such, its consideration creates legal risks for agencies to the extent that they get drawn away from maximizing feasible reductions.

B. Adapting Feasibility Analysis to the Climate Crisis

This Section discusses a proposal to shift the emphasis in feasibility analysis away from incumbent firms, and towards consumer welfare. It begins by explaining and justifying this shift. It then discusses how to carry it out. The Section closes with a legal justification for this proposal.

79. See CAFE Standards, *supra* note 33, at 63,037-38; DRIESEN, ADLER & ENGEL, *supra* note 1, at 260 (explaining that the CBA underlying this rule showed that the fuel cost savings alone outweighed the cost of limiting greenhouse gas emissions).

80. See generally Adler, *supra* note 5, at 10486 (“[A] good policy that cannot be implemented . . . is not so good after all.”).

1. On the Need to Focus More on Consumer Impacts

Climate disruption may require some adjustment in how government agencies use cost estimates to evaluate feasibility, shifting the focus from the survival of existing firms to the delivery of the services that firms provide or could provide. The science suggests that adequately addressing global climate disruption requires a phase-out of fossil fuels. The international law on the subject, accordingly, makes the elimination of fossil fuels a goal of the global climate disruption regime. Furthermore, the United States has signed up to follow that international law, despite congressional opposition and increasing polarization. Back in 1992, the United States ratified the United Nations Framework Convention on Climate Change, which embraces a goal of avoiding dangerous climate disruption.⁸¹ Furthermore, President Biden has signed on to the Paris Agreement, which implements the goal of avoiding dangerous climate disruption by aiming to keep the global temperature increase well below two degrees Celsius.⁸² Achievement or approximation of that objective probably requires a phaseout of fossil fuels over time.⁸³ A phaseout of fossil fuels might require the demise of firms that continue to make or rely on fossil fuels or at least that they devote their resources to newer and cleaner forms of energy production. The need to phase out fossil fuels is in some tension with a conception of feasibility analysis that protects incumbent firms. But one can define feasibility in broader terms than the survival of incumbent firms not willing or able to change their business models without depriving the term “feasibility” of meaning. The relevant question would be whether the costs of a given standard would make it impossible for consumers to enjoy the general services current firms provide. If so, the standard might be deemed infeasible. This interpretation of the meaning of a feasibility mandate retains credibility because it still imposes a limit on the stringency of regulations. Put another way, the requirement of maximum feasible emission reductions under this interpretation would still preclude some stringent standards as infeasible.

To make the consumer-focused approach a little more concrete, think about the regulation of vehicle emissions. Under a feasibility understanding protecting incumbent firms, if a strict emission standard helps Tesla grow, and its market share puts existing auto firms out of business, that standard could be deemed infeasible. Under the consumer-welfare based approach, though, the standard

81. Report of the Intergovernmental Negotiating Committee for a Framework Convention on Climate Change on the Work of the Second Part of its Fifth Session, U.N. Doc. A/AC.237/18 (Part II)/Add.1 (1992), § 2.

82. U.N. Framework Convention on Climate Change Conf. of the Parties, Twenty-First Session, Adoption of the Paris Agreement, FCCC/CP/2015/L.9/Rev.1, art. 2(1) (Dec. 12, 2015).

83. See IPCC, SPECIAL REPORT: GLOBAL WARMING OF 1.5°C: SUMMARY FOR POLICYMAKERS 12 (2018) (estimating that limiting warming to 1.5 degrees Celsius requires net zero emissions by 2050 and limiting warming to two degrees Celsius requires net zero emissions by 2070); Royal Dutch Shell PLC, Case No. C/09/571932 2019/379, 2.3.5.2, 4.5.34 (Hague District Court May 26, 2021) (citing the IPCC conclusion and general consensus that limiting global warming to 1.5 degrees Celsius requires a net reduction in global carbon dioxide emissions of 100 percent by 2050).

should still be considered feasible.⁸⁴ But if the standard were to make the cost of transportation so expensive that many people would lose vital transportation services, it should be deemed infeasible.

A shift in emphasis to consumer welfare might prove especially important in regulating electric utilities. Coal-fired power plants have shut down in recent years, primarily thanks to a decline in the cost of renewable energy and natural gas.⁸⁵ Strict standards for electric utilities might accelerate the closure of coal-fired and even natural gas power plants.⁸⁶ EPA's Clean Power Plan, another rule adopted during the Obama administration, moved in the direction of a focus on the delivery of electricity services instead of the preservation of old infrastructure by basing its standards, in part, on the capacity of the industry as a whole to shift from coal to gas and renewables.⁸⁷ Under a consumer-centered approach to the regulation of power plants, though, EPA would have to evaluate whether its safeguards would impede the delivery of electricity to consumers. The question would be whether the shifts from fossil fuel generation to renewable energy and perhaps nuclear power would still permit continued use of electricity by those who depend upon it.

2. How to Consider Impacts on Consumers

Agencies currently analyze economic impacts on consumers as part of their feasibility analysis, but they usually give such impacts little weight in practice.⁸⁸ In the past, giving consumer impacts little weight made sense, because feasibility analysis has usually predicted that the costs of environmental regulations produce only minor price increases.⁸⁹

If agencies are going to consider the strict safeguards that we need to address the climate crisis, then agencies will have to seriously look at whether these safeguards deprive consumers of important services.⁹⁰ So, the analysis of strict standards for vehicle emissions, for example, will need to focus on whether those standards make driving infeasible for significant numbers of consumers. This would include an analysis of technical feasibility. For example, if EPA and NHTSA were to project a substantial increase in electric vehicles, they might

84. *Cf.* *Bluewater Network v. EPA*, 370 F.3d 1, 1, 21 (D.C. Cir. 2004) (remanding a rule because EPA arbitrarily weakened its rule only because thirty percent of new snowmobiles could not meet its standards).

85. *More U.S. Coal-Fired Power Plants are Decommissioning as Retirements Continue*, U.S. ENERGY INFO. ADMIN. (July 26, 2019), <https://www.eia.gov/todayinenergy/detail.php?id=40212> [<https://perma.cc/C76K-DN72>].

86. *Cf.* *Am. Lung Ass'n v. EPA*, 985 F.3d 914, 966 (D.C. Cir. 2021) (noting that any added cost can cause generation shifting).

87. *Id.* at 936.

88. *See* *Ctr. for Biological Diversity v. Nat'l Highway Traffic Safety Admin.*, 538 F.3d 1172, 1196 (9th Cir. 2008) (explaining that NHTSA's economic practicability analysis focuses on "adverse economic consequences" such as the "unreasonable elimination of consumer choice").

89. *See* Driesen, *Feasibility Principle*, *supra* note 8, at 71 (noting that minor price changes are the most likely result of regulations not constrained by the feasibility principle).

90. *See* *Portland Cement Ass'n v. Ruckelshaus*, 486 F.2d 375, 388 (D.C. Cir. 1973) (declaring that on remand EPA should consider whether its regulation "unduly precludes supply of cement").

evaluate whether it is reasonable to expect the charging infrastructure to become robust enough to accommodate the increased use of electric vehicles anticipated. They could also evaluate whether the increased costs to consumers would make vehicles unaffordable. Such an analysis should examine lending markets to see if loans that take into account fuel and repair cost savings over the lifetime of an electric vehicle are available or would be made available. Similarly, EPA, in establishing safeguards for power plants, would have to, as it does now, look at grid reliability issues—a technical feasibility analysis.⁹¹ But this analysis might prove more challenging as standards become stricter. EPA would also have to look at whether increases in electricity rates would occur and persist and if so, whether these increases would make electricity unaffordable for significant numbers of consumers.

3. Legal Justification

The term “feasibility” proves malleable enough to permit a shift from emphasizing avoiding plant shutdowns to emphasizing avoiding making basic services unavailable to consumers. The courts have repeatedly stated that agencies have broad discretion in deciding how to balance the many factors that the governing statutes make relevant to feasibility analysis (such as cost and technical feasibility).⁹² These statutes, and certainly agency practice, support carrying out an analysis of impacts on both firms and consumers.⁹³ But the agencies could explicitly say that they interpret statutory mandates requiring maximum feasible emission limits as authorizing a focus on what firms, including new entrants, can accomplish without making enjoyment of the services and products firms provide impossible.⁹⁴

To justify stronger moves toward zero emission sources, government agencies probably need to take a position on what feasibility means, beyond vaguely endorsing broad balancing. They should explain that they define feasibility primarily in terms of impact on consumer welfare, rather than in terms of the interests of incumbents and justify that conclusion. And they should

91. See *American Lung Ass’n v. EPA*, 985 F.3d 914, 937 (D.C. Cir. 2021) (noting that EPA found its Clean Power Plan compatible with providing “reliable . . . electricity at all times.”)

92. See, e.g., *CAFE Standards*, *supra* note 33, at 62,670 (citing NHTSA’s “broad discretion” in balancing the above factors); *Husqvarna AB v. EPA*, 254 F.3d 195, 200 (D.C. Cir. 2011) (affirming EPA’s broad discretion to balance competing factors in establishing feasible standards for nonroad engines); *Ctr. for Auto Safety v. NHTSA*, 793 F.2d 1322, 1341 (D.C. Cir. 1986) (describing the guidelines governing CAFE standards as “broad”); *Ctr. for Biodiversity v. NHTSA*, 538 F.3d 1172, 1195 (9th Cir. 2008) (stating that “EPCA . . . gives NHTSA discretion to decide how to balance” four listed statutory factors).

93. See, e.g., *CAFE Standards*, *supra* note 33, at 62,7515 (estimating CAFE standards’ impact on “the net costs of owning a new vehicle”); *Standards of Performance for Greenhouse Gas Emissions from New, Modified, and Reconstructed Stationary Sources: Electric Generating Units*, 80 Fed. Reg. 64,510, 64,562 (Oct. 23, 2015) (to be codified at 40 C.F.R. pt. 60, 70, 71, 98) (estimating the increased cost per kilowatt hour of electricity of various technological options).

94. See, e.g., *Effluent Limitations for the Industrial Laundries Point Source Category, Withdrawal of Proposed Rule*, 64 Fed. Reg. 45,072, 45,079 (Aug. 18, 1999) (to be codified at C.F.R. pt. 441) (noting that EPA performs a “‘barrier-to-entry’ analysis to determine whether . . . compliance costs” prevent a new source from entering a market).

explain that they interpret the feasibility constraint as not permitting solutions that make the services that firms provide largely unavailable.

Otherwise, the courts might not accept a rule that is predicted to cause significant numbers of plant closures as reasonable.⁹⁵ While neither the courts nor the agencies have sharply defined what feasibility means, a fairly natural reaction from a judge would be to consider a standard that many facilities or manufacturers could not meet to be infeasible.⁹⁶ Indeed, in the context of routine environmental regulation not addressing a crisis requiring industrial restructuring and not imposing much cost on consumers, I have suggested that the requirement of maximizing feasible emission reductions should embody a presumption against widespread plant shutdowns.⁹⁷ If the agencies explain, however, that they consider a standard feasible if the industry as a whole (including new entrants) can deliver essential services to consumers at prices they can afford, courts are more likely to defer to that interpretation as a reasonable interpretation of a somewhat vague statutory term than they would be if the agencies did not explain how the statute limits their authority. The abundant caselaw giving the agencies discretion in deciding how to balance factors in deciding how to respond to feasibility analysis supports that result.

III. Law on Feasibility Analysis as a Replacement for CBA

Because of the Reagan, Clinton, and Obama executive orders and the Unfunded Mandates Act, CBA is well entrenched in regulatory practice. If President Biden (or some future president) wishes to withdraw the executive orders requiring it or make the orders inapplicable to safeguards addressing the climate crisis, he or she will have to consider whether the judges, many of whom evince some sympathy toward CBA, will accept CBA's sidelining.

This Part explains why the courts almost surely would accept a clean rejection of CBA by administrative agencies administering feasibility-based standard setting provisions after the withdrawal of executive orders requiring it in cases not covered by the Unfunded Mandates Act—rules predicted to generate

95. Cf. *ALF-CIO v. OSHA*, 965 F.2d 962, 981 (11th Cir. 1992) (rejecting the conclusion that specific controls are available because of a lack of information about how specific industries will comply with standards); *Tanners' Council of Am., Inc. v. Train*, 540 F.2d 1188, 1193-94 (4th Cir. 1976) (rejecting a regulation of tannery effluent); *Hooker Chems. & Plastics Corp. v. Train*, 537 F.2d 620, 634-37 (2d Cir. 1976) (rejecting a standard based on technology for which costs were not calculated in the record).

96. This reaction may explain the Supreme Court's decision to review *American Lung Ass'n v. EPA*, 985 F.3d 914 (2021), *cert. granted sub nom.* *West Virginia v. EPA*, 142 S. Ct. 420 (2021) (mem.). See Petition for Writ of Certiorari at i, *Westmoreland Mining Holding LLC v. EPA*, 142 S. Ct. 418 (2021) (mem.) (characterizing the case, which is part of the consolidated *West Virginia v. EPA* case to which the Supreme Court granted certiorari, as raising the issue of whether limits exist on EPA's authority to shift the industry away from fossil fuel generation).

97. See Driesen, *Feasibility Principle*, *supra* note 8, at 19, 42 (describing the feasibility principle as a presumption against widespread plant closure and arguing that it describes a "central thrust" of technology-based standard setting provisions).

costs of less than \$164 million a year.⁹⁸ It also explains that withdrawal or limiting the executive orders could make CBA less central even in rules covered by the Unfunded Mandates Act.

The explanation of why the courts will accept elimination of CBA from rules not covered by the Unfunded Mandates Act begins with a review of some relevant statutory provisions, showing that they do not require CBA. It then examines the case law, showing that the Supreme Court has never interpreted a feasibility-based provision to require CBA, and that the courts have deferred to EPA's views on whether CBA is required under statutory provisions far more amenable to a pro-CBA interpretation than the provisions authorizing regulation of greenhouse gases.

The discussion of the Unfunded Mandates Act shows that the executive branch may use CBA of the rules it covers as a means of providing information to Congress and the public, rather than as an important input to specific decisions that agencies make about the stringency of climate safeguards. A withdrawal of the executive orders requiring CBA, especially combined with a new executive order signaling a sidelining of CBA, could bring that about.

A. Statutes Demanding Feasibility Analysis, but not CBA

None of the statutory provisions relevant to regulating greenhouse gas emissions require CBA. Take section 111 of the Clean Air Act. It requires performance standards that reflect “the degree of emission limitation achievable through the application of the best system of emission reduction which . . . has been adequately demonstrated.”⁹⁹ The term “best” here may reasonably be interpreted, and often has been interpreted, to mean the system that achieves the greatest amount of emission reductions, not the optimal amount of emission reductions.¹⁰⁰ This provision does require EPA to consider the cost of reductions in deciding what is “achievable.”¹⁰¹ It does not, however, require EPA to consider the air quality benefits of these performance standards, a necessary component of CBA.¹⁰² Instead, it requires EPA to consider “nonair quality health

98. *CBO's Activities under the Unfunded Mandates Act*, CONG. BUDGET OFF., <https://www.cbo.gov/publication/51335> [<https://perma.cc/F5PW-WW6J>]. The Unfunded Mandates Act establishes a \$100 million threshold for rules regulating the private sector (as opposed to other governments), subject to an inflation adjustment. *Id.* That inflation adjustment made the threshold \$164 million in 2019. *Id.* The inflation adjustment provision will raise the threshold in future years, and recently inflation has increased. Gowen, *Is Inflation Increasing*, LIETAER (Feb. 24, 2022), <https://www.lietaer.com/2022/02/is-inflation-increasing> [<https://perma.cc/A4PL-K2X5>].

99. 42 U.S.C. § 7411(a)(1) (2018).

100. *See, e.g.*, *Sierra Club v. Costle*, 657 F.2d 298, 325 (D.C. Cir. 1981) (citing the parties' agreement that new source performance standards must “reduce emissions as much as practicable”); *cf.* *Nat'l Asphalt Pavement Ass'n v. Train*, 539 F.2d 775, 785-86 (D.C. Cir. 1975) (characterizing new source performance standards as technology forcing without “becoming exorbitantly costly”); *Essex Chem. Corp. v. Ruckelshaus*, 486 F.2d 427 (D.C. Cir. 1973).

101. 42 U.S.C. § 7411(a) (2018).

102. *See* *Portland Cement Ass'n v. Ruckelshaus*, 486 F.2d 375, 387 (D.C. Cir. 1973) (explaining that new source performance standards do not require a CBA because of the difficulty and perhaps impossibility of calculating the benefits of a particular standard to ambient air quality).

and environmental impact[s].”¹⁰³ It also requires consideration of energy impacts. The requirement to adopt the “best” achievable standards can be understood to not require CBA, as the statute nowhere directs EPA to consider air quality impacts, let alone their value in dollar terms.¹⁰⁴

Similarly, the provisions governing CAFE standards, which in effect limit vehicle emissions, require the “maximum average fuel economy level that . . . the manufacturers can achieve.”¹⁰⁵ This statutory standard does not explicitly require the consideration of costs or benefits. NHTSA, however, has long considered cost germane to efforts to determine what is achievable. By contrast, the consideration of benefits could be considered irrelevant to what is achievable. Considering benefits shifts the focus from maximum achievable stringency toward a cost-benefit balance nowhere mentioned in the statute.

Nevertheless, the Ninth Circuit has held that NHTSA may consider CBA in implementing this mandate in *Center for Biological Diversity v. National Highway Traffic Safety Administration*.¹⁰⁶ The *Center for Biological Diversity* court, however, did not say that NHTSA must use CBA. Instead, it held that “the statute is silent” about whether CBA may be used and therefore deferred to NHTSA’s decision to use it.¹⁰⁷ The Court held that when CBA is used the agency must consider climate disruption, and remanded the case to EPA for consideration of climate impacts.¹⁰⁸

B. The Case Law Does Not Demand CBA

The case law clearly authorizes administrative agencies acting under feasibility requirements to eschew CBA. The Supreme Court has never required CBA of an environmental standard under a feasibility-based standard setting provision and the lower courts have rejected a CBA requirement even under statutory language far more amenable to it than the provisions authorizing climate regulation.

The Supreme Court squarely rejected a CBA requirement in the context of a statutory requirement to maximize feasible reductions in *American Textile Manufacturers Institute v. Donovan*.¹⁰⁹ In that case, the Court confronted a standard-setting provision requiring maximization of the protection of occupational health within a feasibility constraint.¹¹⁰ The Court rejected an industry argument that the Occupational Safety and Health Administration

103. 42 U.S.C. § 7411(a) (2018).

104. *Portland Cement*, 486 F.2d at 387 (rejecting a CBA requirement).

105. 49 U.S.C. § 32902 (2018).

106. 538 F.3d 1172, 1197, 1200 (9th Cir. 2008).

107. *Id.* at 1197 (quoting Average Fuel Economy Standards for Light Trucks; Model Years 2008-2011, 70 Fed. Reg. 51,435 (proposed Aug. 30, 2005) (to be codified at 49 C.F.R. pt. 523, 533, 537)).

108. *See id.* at 1198 (stating that NHTSA “cannot put a thumb on the scale by undervaluing the benefits . . . of more stringent standards” by failing to analyze “the benefit of carbon emissions reduction in either quantitative or qualitative form”).

109. 452 U.S. 490 (1981).

110. *See id.* at 508 (citing 29 U.S.C. § 655(b)(5) (2018)).

(OSHA) must show a reasonable relationship between costs and benefits to justify its standards maximizing feasible protection of workers from health impairment.¹¹¹ The Court held that setting standards in accordance with CBA would produce weaker standards than the feasibility standard required. It explained that the CBA proponents' argument, if adopted by the Court, would "effectively write" the mandate to maximize feasible health protection "out of the Act."¹¹² Thus, the Court recognized that an agency implementing a mandate to maximize feasible protection need not use CBA.

The Supreme Court also recognized that a feasibility constraint does not require (and indeed precludes) generalized balancing in one of the leading cases in administrative law, *Citizens to Preserve Overton Park v. Volpe*.¹¹³ *Overton Park* addressed a statute requiring the Department of Transportation to avoid putting a highway through public parks unless "there is no feasible and prudent alternative."¹¹⁴ The Court read the feasibility requirement as precluding the agency from engaging in "wide ranging balancing" when deciding whether to approve a highway going through Memphis's Overton Park.¹¹⁵

Some commentators have suggested, however, that the modern Court's decisions require use of CBA, save under statutory provisions precluding cost considerations altogether.¹¹⁶ That view overreads recent Supreme Court cases.¹¹⁷

In *Entergy Corp. v. Riverkeeper*, the Court allowed, but did not require, EPA to consider CBA in implementing a feasibility-based statutory provision.¹¹⁸ That case reviewed a ruling by then Judge Sonia Sotomayor that the Clean Water Act's requirement for standards based on the "best technology available" for limiting cooling water intake for electric utilities precluded use of CBA to weaken the standards.¹¹⁹ The *Entergy* Court read *Donovan* narrowly as saying that OSHA was not required to employ CBA.¹²⁰ But it did not overrule *Donovan*.

111. *See id.* at 506-09.

112. *Id.* at 513.

113. 401 U.S. 402 (1971).

114. *Id.* at 411.

115. *Id.*

116. *See, e.g.,* Natasha Brunstein & Richard L. Revesz, *The Trump Administration's Weaponization of the Major Questions Doctrine*, REGUL. REV. (May 10, 2021), <https://www.theregreview.org/2021/05/10/brunstein-revesz-trump-administrations-weaponization-major-questions-doctrine> [<https://perma.cc/AE4N-JGPL>] (arguing, incorrectly, that a rule doing "more harm than good" as measured by CBA is arbitrary and capricious under *Michigan v. EPA*, 576 U.S. 743 (2015)); Cass R. Sunstein, *Thanks, Justice Scalia, for the Cost-Benefit State*, BLOOMBERG VIEW (July 7, 2015), <https://www.bloomberg.com/opinion/articles/2015-07-07/thanks-justice-scalia-for-the-cost-benefit-state> [<https://perma.cc/G3XF-M83Q>]; *cf.* Cass R. Sunstein, *Cost-Benefit Analysis and Arbitrariness Review*, 41 HARV. ENV'T L. REV. 1 (2017).

117. *See* Amy Sinden, *A "Cost-Benefit State"? Reports of Its Birth Have Been Greatly Exaggerated*, 46 ENV'T L. REP. 10933 (2016).

118. *Entergy v. Riverkeeper, Inc.*, 556 U.S. 208, 219-20 (2009) (holding that the statute "does not unambiguously preclude" CBA).

119. *Riverkeeper, Inc. v. EPA*, 475 F.3d 83, 99 (2d Cir. 2007).

120. *Cf. CPC Int'l, Inc. v. Train*, 540 F.2d 1329, 1341 (8th Cir. 1976) (holding that CBA is not required for technology-based decisions under the Clean Water Act); *Ctr. for Biological Diversity v. NHTSA*, 538 F.3d 1172, 1197 (9th Cir. 2008) (holding that the Energy Policy and Conservation Act

It held that EPA may at least consider costs in a way that takes their relationship to benefits into account.¹²¹ It took pains, however, to indicate that it was not necessarily even allowing (let alone mandating) formal quantitative CBA or deciding anything outside the context of the rather narrow provision before it.¹²² *Entergy* remains the only Supreme Court case upholding an agency's decision to use CBA to weaken a feasibility standard, although the Court avoided even suggesting an affirmative statutory requirement to employ quantitative CBA.

The other Supreme Court cases CBA enthusiasts often cite to bolster arguments that the Supreme Court favors CBA have little bearing on its use in the context of feasibility standards and do not, at any rate, endorse formal quantitative CBA. In *Environmental Protection Agency v. EME Homer City Generator*, the Court upheld EPA's decision to consider costs in implementing a requirement to prohibit emissions from upwind states that "contribute significantly" to violations of air quality standards in downwind states.¹²³ Justice Scalia dissented, arguing that the statute precluded EPA consideration of cost, and therefore of CBA.¹²⁴ But EPA had relied on a cost-effectiveness analysis, which evaluates cost per unit of pollution reduction without considering environmental impacts, not a comparison between quantified benefits and costs in this rulemaking, and the Court did not require, or have occasion to even approve of, CBA.¹²⁵

Michigan v. EPA, the only Supreme Court cost-consideration case to reverse an agency decision, took place outside of the standard setting process.¹²⁶ This case dealt with a regulatory trigger for a feasibility-based rulemaking.¹²⁷ The Clean Air Act requires EPA to regulate hazardous air emissions from power plants if "necessary and appropriate."¹²⁸ The *Michigan* Court held that EPA must consider costs in deciding whether such standard setting is "necessary and appropriate."¹²⁹ The Court noted the difference between a regulatory trigger and the feasibility-based standard setting that follows finding standards for power plant hazardous air pollutants necessary and appropriate.¹³⁰ Even with respect to the regulatory trigger, the *Michigan* Court explicitly did not require a formal

(EPCA) "neither requires nor prohibits setting standards at the level at which benefits are maximized," but that NHTSA must serve EPCA's purpose of encouraging energy conservation).

121. See *Riverkeeper*, 556 U.S. at 224 (holding that EPA may reasonably use CBA to "avoid extreme disparities between costs and benefits").

122. See *id.* at 223 (stating that arguments "may be available" to preclude rigorous CBA).

123. *EPA v. EME Homer City Generation, L.P.*, 572 U.S. 489, 514, 518-20 (2014).

124. *Id.* at 528-30 (Scalia, J., dissenting) (accusing the majority of licensing EPA to "consider compliance costs" without textual justification and "bring[ing] in" CBA "to fill a gap" in statutory language "that does not . . . exist").

125. See *id.* at 500.

126. 576 U.S. 743 (2015).

127. See generally SIDNEY A. SHAPIRO & ROBERT L. GLICKSMAN, *RISK REGULATION AT RISK: RESTORING A PRAGMATIC APPROACH* 31-35 (2003) (distinguishing triggers from criteria for establishing levels of standards).

128. See *Michigan*, 576 U.S. at 747.

129. *Id.* at 760.

130. See *id.* at 756 (distinguishing the question before the Court of "whether to regulate" from the decision about "how much to regulate").

CBA.¹³¹ *Michigan v. EPA* surprised many observers because in two prior cases the Supreme Court had held that EPA must omit consideration of cost altogether if the relevant statutory provision does not mention it.¹³² The pervasiveness of explicit mentions of cost in the leading environmental statutes does support an inference that Congress does not intend to mandate its consideration where it fails to mention it. But *Michigan v. EPA* was a decision about whether to consider cost at all, not about how to consider it.

If the President orders the agencies to stop using or considering CBA in their rulemaking and the agencies reject industry demands for CBA as not germane to their statutory obligations, the executive branch can reduce whatever danger might exist of unjustified judicial creation of CBA mandates. EPA has repeatedly warded off attempts to force it to conduct CBA under statutory language far more amenable to a pro-CBA position than the directives to maximize feasible reductions, which govern efforts to regulate greenhouse gas emissions. Specifically, the Clean Water Act's "best practicable control technology" (BPCT) provision explicitly requires EPA to consider the compliance costs "in relation to the effluent reduction benefits."¹³³ EPA, however, has consistently resisted the conclusion that this language requires CBA. Relying on legislative history rejecting quantification of water quality benefits in dollar terms, EPA conducts marginal cost effectiveness analysis.¹³⁴ The courts have repeatedly upheld EPA's rejection of CBA even though Congress intended to allow these standards to be less stringent than Clean Water Act's Best Available Technology standards, which basically require maximizing feasible reductions.¹³⁵ By contrast, a number of lower court cases show that courts may read a CBA mandate into statutes that do not require it when the agency has used it and failed to oppose it clearly.¹³⁶

131. See *id.* at 759 ("We . . . do not hold that the law unambiguously required the Agency . . . to conduct a formal cost-benefit analysis.").

132. See *Whitman v. American Trucking Ass'ns*, 531 U.S. 457, 467 (2001); *Union Elec. Co. v. EPA*, 427 U.S. 246, 271 n.5 (1976).

133. See *Ass'n of Pac. Fisheries v. EPA*, 615 F.2d 794, 805 (9th Cir. 1980).

134. See generally Richard B. Stewart, *A New Generation of Environmental Regulation?*, 29 CAP. U. L. REV. 21, 41 (2001) (contrasting cost effectiveness analysis with CBA); Robert W. Hahn, Jason K. Burnett, Yee-Ho I. Chan & Elizabeth A. Mader, *Assessing Regulatory Impact Analysis: The Failure of Agencies to Comply with Executive Order 12,866*, 23 HARV. J.L. & PUB. POL'Y 859, 872-74 (2000) (noting that cost effectiveness analysis does not involve monetization of benefits).

135. See *Pac. Fisheries*, 615 F.2d at 805 (accepting EPA's contention that the benefits being weighed are not water quality improvements, but rather the amount of effluent reduction); *Am. Petroleum Inst. v. EPA*, 540 F.2d 1023, 1037 (10th Cir. 1976); *E.I. duPont de Nemours & Co. v. Train*, 541 F.2d 1018, 1030 (4th Cir. 1976); *Rybachek v. EPA*, 904 F.2d 1276, 1290-91 (9th Cir. 1990).

136. See, e.g., *Corrosion Proof Fittings v. EPA*, 947 F.2d 1201, 1217 (5th Cir. 1991); John C. Coates, *Cost-Benefit Analysis of Financial Regulation: Case Studies and Implications*, 124 YALE L.J. 882, 912-20 (2015) (reviewing cases in which the D.C. Circuit has demanded increasingly formal CBA of financial regulation when the agency did not clearly reject CBA).

C. The Unfunded Mandates Act

The Unfunded Mandates Act, however, requires CBA for rules costing \$164 million or more “unless prohibited by law.”¹³⁷ Except under statutory provisions that prohibit CBA, the President cannot rid the regulatory process of CBA through executive order for these very expensive rules. Complete liberation from CBA for these rules probably requires legislation, which will not pass absent a shift in congressional attitude. Still, withdrawing the CBA executive orders (or exempting climate regulation from their reach) would allow, and could require, agencies to make CBA less central in rules covered by the Unfunded Mandates Act in ways that would facilitate efforts to rapidly address the climate crisis.

First of all, the withdrawal of the executive orders would end pressure on the agencies to distort their interpretation of the statutory feasibility criteria to implement cost-benefit tests. The governing executive orders, unlike the Unfunded Mandates Act, tend to push agencies away from truly maximizing feasible reductions. Executive Order 12,866, for example, pushes agencies to only promulgate regulations “upon a . . . determination that the benefits . . . justify its costs.”¹³⁸ The existence not just of analytical requirements in the executive orders but also criteria different from those found in feasibility-based statutes tends to push agencies into not only conducting CBA but giving its results weight, even when CBA is too incomplete to provide good answers to the question of whether costs justify benefits. Withdrawal of the executive orders would end the pressure on agencies to substitute cost-benefit criteria for statutory criteria. Indeed, agencies would not have to consider CBA at all in choosing among regulatory options if the executive orders were rescinded or made inapplicable to climate-related safeguards.

The Unfunded Mandates Act obligates agencies to publish CBA and to discuss it in Federal Register notices finalizing very expensive rules but does not require consideration of the CBA in choosing among regulatory alternatives even for the rules it covers.¹³⁹ Agencies could simply report the CBA’s results in the Federal Register Notice and leave it at that. This makes sense, given the function of administrative agencies and Congress. Publication of a CBA informs Congress, which does have the responsibility to consider all of the advantages and disadvantages of regulating greenhouse gas emissions in deciding whether

137. 2 U.S.C. § 1532(a) (2018); CBO, *supra* note 98. Most rules reviewed under the executive orders have cost less than \$100 million. Executive Order 12,866 defined a “significant regulatory action” triggering a CBA to include not only rules costing \$100 million or more (without the inflation adjustment in the Unfunded Mandates Act), but also those with a material adverse effect on “the economy, a sector of the economy, productivity, competition, jobs, the environment, public health or safety, or State, local, or tribal governments or communities.” Exec. Order No. 12,866, § 3(f)(1), 3 C.F.R. 638 (1994). It also applies to rules that interfere with another agency’s actions or plans. *Id.* § 3(f)(2). Finally, the executive order applies to rules that “raise novel legal or policy issues.” *Id.* § 3(f)(4). These criteria together are so capacious that in practice OIRA can review any rule in which it takes an interest.

138. Exec. Order No. 12,866, § 1(b)(6), 3 C.F.R. 68 (1994).

139. See 2 U.S.C. § 1532(b), (c) (2018).

to legislate changes.¹⁴⁰ Government agencies, however, are usually not authorized to freely consider and weigh equally all the advantages and disadvantages of their actions.¹⁴¹ The reason for that is basic: government agencies have a legal obligation to implement policies chosen by Congress, not by their leaders or the President.¹⁴² And Congress has, at least in the provisions likely to govern future efforts to reduce greenhouse gas emissions, mandated maximum feasible reduction, not general balancing. Legal considerations already often induce EPA not to rely on CBA to justify its most expensive rules, which include the Clean Power Plan (as estimated prior to promulgation) and the CAFE standards, even with the executive orders in place.¹⁴³ In rescinding the executive orders, President Biden could forbid the agencies from considering CBA, directing them instead to focus squarely and exclusively on statutory criteria, except under statutes that expressly require consideration of CBA, such as the statute governing Army Corps of Engineers flood control projects.¹⁴⁴

Using CBA exclusively to inform Congress and the public (rather than to guide agency standard making) would provide an opportunity for more scientifically honest CBA for the rules costing \$164 million or more. If one takes all of the scientific uncertainty about the magnitude and timing of climate changes into account along with other uncertainties in CBA, CBA does not yield point estimates for costs or benefits, but rather ranges.¹⁴⁵ The range of plausible estimates for the benefits of greenhouse gas reductions especially is very wide indeed.¹⁴⁶ But CBA's role in influencing agency decisions can cause the executive branch to try to obscure this uncertainty. Because the Obama administration expected CBA to influence discrete agency regulatory decisions, it artificially narrowed the range of its estimates of the social cost of carbon by arbitrarily excluding credible studies from the analysis undergirding the estimates—studies that found a much higher social cost than the studies the

140. See Arthur Fraas & Richard D. Morgenstern, *Economic Analysis of Regulation*, in II PUBLIC ECONOMICS IN THE UNITED STATES: HOW THE FEDERAL GOVERNMENT ANALYZES AND INFLUENCES THE ECONOMY 596 (Steven Payson ed., 2014) (noting that regulatory impact analysis serves to inform Congress and the general public); David M. Driesen, *The Societal Cost of Environmental Regulation: Beyond Administrative Cost-Benefit Analysis*, 24 *ECOLOGICAL L.Q.* 545, 610-12 (1997).

141. Driesen, *supra* note 140 at 608-09.

142. See *id.* at 609.

143. See CAFE Standards, *supra* note 33, at 63,040 (explicitly rejecting the maximizing of net benefits because doing so would not be feasible); Carbon Pollution Emission Guidelines for Existing Stationary Sources: Electric Utility Generating Units, 80 Fed. Reg. 64,661, 64,679, 64,730 (Oct. 15, 2015) (predicting compliance costs of \$1 billion to \$8 billion and establishing achievable levels based on the capabilities of relevant technologies).

144. *Am. Textile Mfrs. Inst., Inc. v. Donovan*, 452 U.S. 490, 510 (1981) (citing the Flood Control Act of 1936 as indicating Congress's intent that the agency engage in CBA).

145. See *supra* Section I.B.4; Cass R. Sunstein, *The Limits of Quantification*, 102 *CALIF. L. REV.* 1369, 1381-82 (2014) (discussing the wide benefits ranges in government estimates of carbon's social cost and noting that even these estimates do not "represent the last word" on benefits estimation). See generally Sunstein, *supra* note 30, at 2257 (2002) (finding that the "benefits" range sometimes proves so "exceedingly wide" that it does little to "discipline judgment").

146. See *Ctr. for Biological Diversity v. NHTSA*, 538 F.3d 1172, 1201 (9th Cir. 2008) (noting that a National Academy of Sciences committee has "acknowledged the wide range of values" for carbon reductions "in the literature").

administration relied upon.¹⁴⁷ With CBA not influencing regulatory outcomes, estimates of the benefits of greenhouse gas emission reductions could better reflect the full range of uncertainty in the underlying science and economics.¹⁴⁸

The withdrawal of the executive orders also could streamline the administrative process by ending or changing the nature of OIRA review. The Unfunded Mandates Act does not require OIRA review of CBA or agency rules. So, a withdrawal of the executive orders (or a climate exemption) without more would end OIRA review. Strong critics of OIRA review might welcome that.¹⁴⁹ Others might advocate giving OIRA some other role, such as helping with interagency coordination.¹⁵⁰ A President seeking to limit CBA's capacity to gum up rulemaking could explicitly forbid OIRA from reviewing rules.¹⁵¹

Getting OIRA out of the business of reviewing agency rules and the CBA accompanying them would end a significant source of delay in agency rulemaking and of pressure to weaken safeguards addressing the climate crisis. I have documented OIRA's record in this regard elsewhere, and the literature does

147. See ACKERMAN & STANTON, *supra* note 26, at 9 (discussing the Obama administration's neglect of results from the well-known Stern Review (NICHOLAS STERN, *THE ECONOMICS OF CLIMATE CHANGE: THE STERN REVIEW* (2006))).

148. See Driesen, *supra* note 18, at 823 (explaining that scientifically valid estimates of costs and benefits reflect "the full range of scientifically reasonable cases").

149. See, e.g., THOMAS O. MCGARITY, *REINVENTING RATIONALITY: THE ROLE OF REGULATORY ANALYSIS IN THE FEDERAL BUREAUCRACY* 275-80 (1991) (providing examples of OIRA insistence on methodological changes to reduce benefits estimates); Driesen, *supra* note 18, at 802 (discussing an OIRA effort to second guess the National Academy of Sciences' risk assessment guidelines and OIRA's reputation for second guessing science); Driesen, *supra* note 7, at 369 (discussing a case in which OIRA questioned the safety of catalytic converters even though the regulated motorcycle companies found its safety concerns ill-founded); Lisa Schultz Bressman & Michael P. Vandenbergh, *Inside the Administrative State: A Critical Look at the Practice of Presidential Control*, 105 MICH. L. REV. 47, 70 (2006) (finding that OIRA uses "CBA to impose its own normative preference for deregulation").

150. See, e.g., CASS SUNSTEIN, *SIMPLER: THE FUTURE OF GOVERNMENT* 1 (2013) (suggesting that OIRA review simplifies regulation); Rena Steinzor, *The Case for Abolishing Centralized White House Review*, 1 MICH. J. ENV'T & ADMIN. L. 209, 277 (2012) (arguing that OIRA should deal with cross-cutting issues, rather than review individual rules).

151. OIRA, without reviewing individual rules, could still produce guidelines for agencies' CBA under the Unfunded Mandates Act. Guidance from OIRA can enhance the consistency of CBA across government agencies and produce efficiencies. Because President Obama kept President Clinton's executive order on CBA in place, his administration expected all government agencies to conduct CBA of actions addressing greenhouse gas emissions. In that context, the Obama administration decided to calculate the "social cost of carbon"—the dollar value of a ton of reductions in carbon dioxide. See Masur & Posner, *supra* note 25, at 1561 (explaining that OMB convened an "Interagency Working Group" (IWG) to develop an estimate of carbon's social cost). Otherwise, each government agency addressing climate policy would have to face the thorny methodological issues in valuing climate benefits every time there was a rulemaking. The social cost of carbon, however, is out of date and in need of revision. Even if abolishing CBA in most rulemakings and ending OIRA's regulatory review role were to make CBA less important, it would remain desirable to have the \$164 million rules' benefits estimates match the best scientific and economic thinking. That thought has led the Biden administration to do what the Obama administration did—devote a lot of high-level officials' time to an elaborate interagency process to estimate the social cost of carbon. See Daniel A. Farber, *Coping with Uncertainty: Cost-Benefit Analysis, The Precautionary Principle, and Climate Change*, 90 WASH. L. REV. 1659, 1709 (2015) (noting that the IWG included OMB, the Council of Economic Advisors, EPA, USDA, Commerce, Energy, Transportation, and Treasury Department representatives); Exec. Order No. 13,990 § 5, 86 Fed. Reg. 7037, 7040 (Jan. 25, 2021) (reinstating the IWG).

not contest the claim that OIRA review delays promulgation of rules.¹⁵² While one can debate the extent of OIRA's interference and the precise nature of its effects, eliminating a layer of review will almost surely make it easier to quickly enact stringent safeguards addressing the climate crisis.

While the Unfunded Mandates Act may prevent wholly eliminating CBA from the process of crafting rules costing \$164 million or more, withdrawal of the executive orders on CBA could make it less central to regulatory decision-making and reduce CBA's capacity to slow and weaken efforts to address the climate crisis. CBA, however, would continue to play a role in informing Congress and the public about the likely consequences of ongoing efforts to address the climate crisis.

Conclusion

Agencies seeking to produce standards demanding greenhouse gas emission reductions should continue the well-established practice of feasibility analysis, which all of the prior rules reducing greenhouse gas emissions have relied on. And they should consider adapting feasibility analysis to the needs of the climate crisis by putting more emphasis on continuation of delivery of needed services to the general public and less on the survival of incumbent firms. The Biden Administration (or a future administration) should withdraw the executive orders requiring CBA or exempt the rules addressing the climate crisis from its strictures.

152. See Driesen, *supra* note 56, at 352-53 (discussing how agencies weaken rules to placate OIRA); Steinzor, *supra* note 150 at 214 (“[C]entralized White House regulatory review is a primary cause of regulatory failure.”).