

The Clean Power Plan Autopsy: Lessons the Affordable Clean Energy Rule Can Learn from Its Deceased Predecessor

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Introduction

Much of the debate about emission reduction in the United States centers on power generation. While power generation only accounts for roughly one-third of U.S. carbon-dioxide (CO₂) emissions,¹ it was still the largest category of emissions as of 2017.² Regulating electricity production has thus attracted a great deal of attention, particularly in the wake of the Environmental Protection Agency's (EPA) much-discussed "Endangerment Finding" in 2009.³ The EPA concluded, after an extensive scientific study, that greenhouse gases (GHG) are dangerous to current and future generations and must therefore be regulated.

Since then, two major attempts at regulating emissions from power generation have been made. Both were regulatory schemes crafted by the EPA under the statutory authority of the Clean Air Act. The first was the Clean Power Plan (CPP), developed by the EPA during the Obama Administration. The CPP set national limits on carbon emissions from power plants.⁴ The regulations were broad, overarching standards meant to regulate sector-wide rather than at the level of individual power plants.⁵ This approach gave a lot of discretion for how states would meet the standards, but the idea was that such an approach would result in increased adoption of natural gas and renewable power generation over higher-emission coal power

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1. *How Much of U.S. Carbon Dioxide Emissions Are Associated with Energy Generation?*, U.S. ENERGY INFO. ADMIN. (May 15, 2019), <https://www.eia.gov/tools/faqs/faq.php?id=77&t=11> [<https://perma.cc/C2PE-9VRY>].

2. *Sources of Greenhouse Gas Emissions*, U.S. ENVTL. PROTECTION AGENCY (Sept. 13, 2019), <https://www.epa.gov/ghgemissions/sources-greenhouse-gas-emissions> [<https://perma.cc/LM2W-89FX>].

3. The EPA released the Endangerment Finding report following the Supreme Court's determination in *Massachusetts v. EPA* that GHGs are pollutants within the meaning of the Clean Air Act and the EPA can therefore regulate them if they are deemed harmful to human health. 549 U.S. 497, 532 (2007).

4. *What Is the Clean Power Plan, and How Can Trump Repeal It?*, N.Y. TIMES (Oct. 10, 2017), <https://www.nytimes.com/2017/10/10/climate/epa-clean-power-plan.html?module=inline> [<https://perma.cc/HG43-YTYA>]. The national standards are actually described as per-state limits. *Id.*

5. *Id.*

generation.⁶ The final goal of the CPP was to reduce GHG emissions to 32% below 2005 levels by 2030.⁷

Despite significant investment in the CPP, the Trump Administration announced plans to repeal and replace the CPP with the Affordable Clean Energy Rule (ACE) in 2017. ACE was recently finalized in July 2019.⁸ It still aims to decrease emissions, but does so by regulating power production at the plant level instead of statewide or nationwide.⁹ Specifically, it removes the mandated emissions cap and focuses on plant-specific strategies, such as implementation of Heat Rate Improvements (HRIs) technology at individual power plants in order to increase efficiency and lower emissions.¹⁰ As neither plan has a significant track record of operation, this Note will attempt to predictively evaluate each approach and its respective regulatory justifications while accounting as best as possible for the unimplemented or unrealized parts of each.

The basic assumption of this Note is that anthropogenic climate change as a result of the release of GHG is a real and harmful threat to our planet and its inhabitants. I address this up front because most, but not all, parties seem to think the issue of climate change, including GHG emissions, requires thoughtful policy. This Note will therefore evaluate the CPP and ACE on their respective abilities to implement the necessary measures to combat climate change while preserving affordable electricity and equitably distributing the costs of transitioning away from fossil fuels. This evaluation will rely on a mostly economic framework. The reason for this is twofold. First, economic analysis is a powerful tool for assessing any regulatory scheme, and the framework here has been tailored to best consider all relevant costs and benefits. Second, this Note was written with an eye toward persuading those who largely consider the bottom line and who have little time for strict environmental concerns or distributive justice (despite their

6. *Id.* The CPP faced significant court challenges related to its authority to implement such broad standards under § 111(d) of the Clean Air Act. This Note disregards discussion of these issues, as they are moot following the Trump Administration's planned repeal of the CPP. The legal challenge in *West Virginia v. EPA* was dismissed in September 2019. *West Virginia v. EPA*, CLIMATE CHANGE CASE CHART (2018), <http://climatecasechart.com/case/west-virginia-v-epa/> [<https://perma.cc/4CNR-HK3X>].

7. *What Is the Clean Power Plan, and How Can Trump Repeal It?*, *supra* note 4.

8. *EPA Finalizes Affordable Clean Energy Rule*, U.S. ENVTL. PROTECTION AGENCY (June 19, 2019), <https://www.epa.gov/newsreleases/epa-finalizes-affordable-clean-energy-rule-ensuring-reliable-diversified-energy> [<https://perma.cc/XYB4-23T2>].

9. U.S. ENVTL. PROT. AGENCY, FACT SHEET: THE AFFORDABLE CLEAN ENERGY RULE (ACE) (2019), https://www.epa.gov/sites/production/files/2019-06/documents/bser_and_eg_fact_sheet_6.18.19_final.pdf [<https://perma.cc/2HXE-AALH>] [hereinafter FINAL ACE FACT SHEET]; U.S. ENVTL. PROT. AGENCY, FACT SHEET: PROPOSED AFFORDABLE CLEAN ENERGY RULE (2018), https://www.epa.gov/sites/production/files/2018-08/documents/ace_overview_0.pdf [<https://perma.cc/89Y9-8ZH3>] [hereinafter PROPOSED ACE FACT SHEET].

10. FINAL ACE FACT SHEET, *supra* note 9.

inherent merit). Some may find a primarily economic approach distasteful, but such an approach is designed to win the day via pragmatism while preserving the underlying environmental and societal benefits.

This Note will primarily focus on two areas: (1) each regulatory scheme's use of dynamic federalism; and (2) a comparison of the role of cost-benefit analysis in each regulation. Analyzed as a whole, the CPP did a commendable job in its short life playing off dynamic federalism for superior regulatory results and in quantifying its costs and benefits. As discussed herein, the ACE rule can and should learn from its predecessor. While there are inherent limitations to cost-benefit analyses, the CPP does a good job of encapsulating the necessary considerations and avoiding playing too heavily to certain interest groups. ACE, on the other hand, falls short in quantifying benefits and in justifying the distribution of its benefits.

I. Dynamic Federalism and Efficacy

Environmental problems, by nature, require cooperation and collective action in order to be solved. The regulation of greenhouse gases, in particular, requires an emphasis on cooperation and collective action because GHGs are a global pollutant unconfined by geography. Federal and state environmental regulations each have their strengths and weaknesses and should be employed together for best results.

Federal regulations provide a mechanism for resolving collective-action problems caused by pollution spillover (a form of externality).¹¹ Because pollution spillovers across state borders interfere with incentive systems by creating these externalities, federal regulations can step in to fix this market failure.¹² The potential drawback of top-down federal regulations is the distance from the details of local problems.

State-crafted regulations, on the other hand, often provide better evaluations of local pollution impacts, costs, and energy requirements.¹³ The combination of these factors might provide for more-flexible regulatory solutions. Furthermore, some argue that state-crafted regulations can spark competition to develop innovative policy as a result of their closer proximity to the democratic process.¹⁴ These benefits are offset by the risk of a patchwork system that would prevent states from reaching across state

11. Gabriel Pacyniak, *Making the Most of Cooperative Federalism: What the Clean Power Plan Has Already Achieved*, 29 GEO. ENVTL. L. REV. 301, 315 (2017).

12. Ann E. Carlson, *Iterative Federalism and Climate Change*, 103 NW. U. L. REV. 1097, 1102 (2009).

13. Pacyniak, *supra* note 11, at 314.

14. *Id.* (citing Robert A. Schapiro, *Toward a Theory of Interactive Federalism*, 91 IOWA L. REV. 243, 270–72 (2005)).

borders to find cost-effective means of meeting electricity generation needs in line with emission guidelines.¹⁵

As a federal regulatory body, the EPA must craft programs that balance federal authority and state participation in order to be successful. Together, the increased flow of information between states and the federal government can hopefully address the market failures in pollution regulation and lead to a higher level of utility overall. This Part will examine the ability of the Clean Power Plan to promote effective policy via cooperation and compare it to the Affordable Clean Energy plan's ability to do the same.

A. *The CPP's Beneficial Use of Federalism*

Despite opposition by several state governors and attorneys general, the CPP managed to drum up a considerable amount of cooperation among states that led to an increased understanding of regulatory challenges and better solutions to collaborative problems.¹⁶

The CPP, in line with the requirements of the Clean Air Act, endeavored to set emission guidelines based on the "best system of emission reduction" (BSER).¹⁷ The BSER considers costs, environmental impact, health effects beyond air quality, and energy requirements to select the best methods for emission reduction.¹⁸ After selecting the BSERs, the EPA then sets the actual numerical guideline. The final CPP concluded that the BSER for reducing emissions from power generation was a combination of improving coal-plant efficiency, replacing higher-emission electricity generation with existing lower-emitting natural gas units, and substituting renewable-energy generation for existing fossil-fuel generation.¹⁹

The CPP deserves praise for the unique approach it took in setting emission guidelines. The process of developing the CPP utilized the best aspects of federal and state power. Specifically, the CPP allowed the EPA to harness the state-centered strengths of increased engagement, flexibility, and innovation.

1. Engagement.—The CPP brought remarkable state engagement with the creation of federal environmental policy. The EPA had this in mind from the very beginning, evidenced by President Obama's direction that the EPA engage with states and all other interest holders in setting the guidelines.²⁰

15. *Id.* at 327.

16. *See* Pacyniak, *supra* note 11, at 333–34, 334 n.155 (listing states that participated and declined to engage in the CPP rulemaking process).

17. 42 U.S.C. § 7411(a)(1) (2018).

18. *Id.*

19. Clean Power Plan Final Rule, 80 Fed. Reg. 64662, 64707 (Oct. 23, 2015) (to be codified at 40 C.F.R. pt. 60).

20. Memorandum on Power Sector Carbon Pollution Standards, 78 Fed. Reg. 39535, 39535–36

Incorporating all parties of interest is an important way of maximizing the overall utilitarian benefit of a regulatory regime.

Because of the large scope of the CPP, it was natural that stakeholders would want meaningful input. The EPA solicited information from the states, including their previous experiences with GHG-emission-reduction programs, potential strategies to consider as part of the BSER, and the flexibilities for meeting the guidelines they would like to see in the final plan.²¹

Before the release of the proposed plan, the EPA received input from thirty-one different states.²² The range of participating states was broad and included both the staunchly blue (California, Massachusetts, New York) and the staunchly red (Arizona, Utah, Kansas).²³ While there was certainly a great deal of opposition to the CPP (particularly its authority under § 111(d) of the Clean Air Act),²⁴ the nature of such a broad plan prompts participation, lest a state misses out on having its voice heard.

Once the initial proposal was released in June 2014, state involvement grew. The call was only for the EPA to “engage” with states, but the result was that states undertook intensive analyses and shareholder consultations in order to make sure their interests were represented by the larger federal plan.²⁵ It seems that by getting the ball rolling, the federal government lit a fire under state regulators to make an accurate assessment of the problem. This is a prime example of how engaging with the states increases information flow, which naturally increases the efficacy of any proposed measure. By the end of the process, only five states decided to “just say no”

(June 25, 2013), <https://obamawhitehouse.archives.gov/the-press-office/2013/06/25/presidential-memorandum-power-sector-carbon-pollution-standards> [<https://perma.cc/88VT-QMH8>].

21. Pacyniak, *supra* note 11, at 333–34.

22. *Id.* at 334.

23. *Id.* It is worth noting, however, that several states refused to participate until the court battles over the CPP’s legality under § 111(d) were resolved. Among these states was Texas. Jean Chemnick, *‘Just Say No’ Strategy Appears to Be Crumbling*, E&E NEWS (Oct. 28, 2015), <https://www.eenews.net/stories/1060027079> [<https://perma.cc/SZ3G-SEBP>].

24. 42 U.S.C. § 7411(d). Section 111(d) directs the development of emission standards for pollutants emitted by existing sources in listed categories. See MEGAN CERONSKY & TOMÁS CARBONELL, ENVTL. DEF. FUND, SECTION 111(D) OF THE CLEAN AIR ACT: THE FOUNDATION FOR STRONG, FLEXIBLE, AND COST-EFFECTIVE CARBON POLLUTION STANDARDS FOR EXISTING POWER PLANTS 2–3, 3 n.16 (Feb. 2014), https://www.edf.org/sites/default/files/section-111-d-of-the-clean-air-act_the-legal-foundation-for-strong-flexible-cost-effective-carbon-pollution-standards-for-existing-power-plants.pdf [<https://perma.cc/CLW3-DRUC>] (explaining the purpose and evolution of § 111(d)). Challenges to the CPP’s authority under § 111(d) asserted that because power plants are included in the Clean Air Act’s definition of a “source category,” § 111(d) cannot form the basis for regulating power plant emissions. Jonathan H. Adler, *Placing the Clean Power Plant in Context*, WASH. POST: VOLOKH CONSPIRACY (Feb. 10, 2016, 9:20 AM), <https://www.washingtonpost.com/news/volokh-conspiracy/wp/2016/02/10/placing-the-clean-power-plan-in-context/> [<https://perma.cc/FR9M-LUAB>].

25. Pacyniak, *supra* note 11, at 340.

by declining to develop a plan to comply with the new CPP.²⁶ The forty-five participating states (an impressive degree of involvement in a complicated process) demonstrate the willingness of state regulators to respond when prompted by the federal government, rather than just resisting outright. State regulators react to ensure a favorable outcome for their state, and any future large-scale federal environmental regulation, such as ACE, should take notice of the power of engagement.

One of the fears about state involvement in the regulatory process is that it can create a “race to the bottom,” where states compete to lower regulative barriers in order to attract business activities that pollute.²⁷ The CPP is notable because it actually seemed to create an inverse race to the bottom, where states competed for the most beneficial and economically sound regulations.²⁸ The overall increase of engagement feeds into another benefit from the cooperative approach: facilitation of innovation and flexibility.

2. *Flexibility.*—The end result of the process was flexibility for the states in the form of choices on how to meet the emission standards. Choice is at the core of efficient markets and leads to value creation by matching methods to needs. The CPP promoted flexibility by including three primary means for states to comply with the new guidelines.

First, the final CPP, in its most basic form, required uniform performance standards nationwide for fossil-fuel-fired plants and natural-gas-combustion turbines.²⁹ This is known as a “rate-based system,” which seeks to set the amount of carbon that can be emitted per megawatt hour of energy produced.³⁰ A notable feature of the rate-based system was the inclusion of emission-rate credits for producing power via zero-carbon means like nuclear or wind energy.³¹

Second, alternative approaches to meeting the guidelines were offered for states that could more economically comply via other means. For instance, the final CPP gave states the option to comply via a mass-based emission limit, which defined the total-emissions cap as the budget of CO₂ that could be emitted by all the covered producers.³² This approach allows states to tackle the problem on a broader systemic level by increasing total

26. Chemnick, *supra* note 23.

27. Carlson, *supra* note 12, at 1102.

28. Pacyniak, *supra* note 11, at 316.

29. Clean Power Plan Final Rule, 80 Fed. Reg. 64662, 64667 (Oct. 23, 2015) (to be codified at 40 C.F.R. pt. 60).

30. *Mass-Based Versus Rate-Based*, MINN. POLLUTION CONTROL AGENCY, <https://www.pca.state.mn.us/air/mass-based-versus-rate-based> [https://perma.cc/V4VZ-BRUK] [hereinafter MPAC].

31. Pacyniak, *supra* note 11, at 344.

32. Clean Power Plan Final Rule, 80 Fed. Reg. at 64834.

energy efficiency and use, rather than just focusing on the emitting power generators.

Finally, the EPA made the key decision to promote flexibility by allowing states to continue or expand previously existing programs as a way of complying with the new emission guidelines.³³ Many states advocated for this provision during the outreach period.³⁴ It required states to demonstrate that whatever combination of policies they were using could meet the goals.³⁵ By allowing the continuation or expansion of existing state programs, the EPA wisely chose to respect state systems developed with an eye on local needs while preventing wasteful costs resulting from dismantling the programs. The final solution incorporated the new guidelines while avoiding a wasteful switch away from something that was already working, a win-win scenario.

3. *Innovation.*—Innovation often arises when parties are forced to work together to solve problems. The “network effect,” a well-established economic principle, states that there is a benefit that emerges from the flow of information resulting from connecting parties to share information.³⁶ The state engagement in developing the final CPP produced such a benefit, as state regulators exchanged knowledge on pollution control techniques and policy tools and undertook to cooperate between agencies.³⁷

A particularly notable innovation benefit was the increased discussion of market-based solutions to emission reduction via the sharing of information. Specifically, states compared the rate-based and mass-based systems mentioned above in an effort to choose the best option. In both of these systems, there is some level of market-based trading that occurs. In mass-based systems, credits for the amount of emissions are traded.³⁸ The EPA has used mass-based regulations in the past and states are therefore familiar with their operation.³⁹ Rate-based systems, on the other hand, require a more complicated system of credits to offset pollution per unit of power because there is no cap on the actual amount of GHG emitted.⁴⁰ Many states

33. *Id.* at 64666.

34. *See* Pacyniak, *supra* note 11, at 338 (“In short, state officials from across the political spectrum requested that the EPA allow states broad flexibility to integrate existing state energy programs.”).

35. *See id.* at 339 (“One result of allowing for a diversity of compliance approaches—at least in the electricity sector—is that it makes it more complicated to ensure that states programs will meet minimum levels of protectiveness under different scenarios.”).

36. *Network Effect*, INVESTOPEDIA, <https://www.investopedia.com/terms/n/network-effect.asp> [<https://perma.cc/G6W6-QRGB>] (last updated Apr. 5, 2019).

37. Pacyniak, *supra* note 11, at 332.

38. MPAC, *supra* note 30.

39. *Id.*

40. *Id.*

came to the conclusion that the mass-based systems were cheaper and easier to implement.⁴¹ Indeed, independent analysis reached the conclusion that mass-based solutions would result in less expense and lower emissions than rate-based systems, especially when states banded together to establish interstate systems of credit trading.⁴²

As a result of this examination of approaches, state regulators developed more appreciation for “cap-and-trade” style market solutions to emission reduction.⁴³ As discussed above, market solutions are a powerful way to address the externality of carbon emissions. The greater acceptance of such market solutions is an example of the innovation and forward thinking that comes from an engaging and flexible regulatory process.

In summary, the concepts of engagement, flexibility, and innovation informed the construction of the final CPP. Each concept feeds into the other and leads to a better regulatory scheme as a whole. With flexibility comes the incentive to engage in order to identify the best approach for a particular state. Engagement leads to the flow of knowledge as parties attempt to discover the best-fit solution. And the flow of knowledge leads to innovative solutions. Accordingly, ACE should employ engagement, flexibility, and innovation to achieve the best results.

B. *How ACE Can Benefit from the CPP as States Begin to Develop Compliance Programs*

Like the CPP, ACE also participated in an outreach phase. The current EPA touted the receipt of over 270,000 public comments before the finalization of the ACE plan.⁴⁴ Unfortunately, ACE seems to be turning its back on some of the gains borne out of the outreach process for the CPP.

For instance, ACE only permits rate-based standards and excludes mass-based standards.⁴⁵ Consequentially, ACE does not allow power plants to trade emission credits.⁴⁶ This represents a disappointing diversion from the increased acceptance of market-based solutions by the states following the

41. Pacyniak, *supra* note 11, at 350–52.

42. *E.g.*, JENNIFER MACEDONIA ET AL., BIPARTISAN POLICY CTR., MODELING THE EVOLVING POWER SECTOR AND IMPACTS OF THE FINAL CLEAN POWER PLAN 8 (2016), <https://bipartisanpolicy.org/wp-content/uploads/2019/03/BPC-Energy-Clean-Power-Plan-Modeling.pdf> [<https://perma.cc/6T3U-876U>].

43. Pacyniak, *supra* note 11, at 351.

44. PROPOSED ACE FACT SHEET, *supra* note 9, at 1.

45. Stacey L. VanBelleghem & Robert A. Wyman, *6 Things to Know About EPA’s Final ACE Rule*, LATHAM & WATKINS (June 21, 2019), <https://www.globalelr.com/2019/06/6-things-to-know-about-epas-final-ace-rule/> [<https://perma.cc/4NTG-GC7W>].

46. *Id.*; Brian H. Potts, *What’s Actually in President Trump’s (Diet) Clean Power Plan?*, FORBES (Aug. 22, 2018, 11:47 AM), <https://www.forbes.com/sites/brianpotts/2018/08/22/whats-actually-in-president-trumps-diet-clean-power-plan/#5412c3fd3539> [<https://perma.cc/KW5N-XR3QJ>].

exchange of ideas during the CPP outreach. The preclusion of emission-credit trading is also particularly surprising given the general idea that conservative economics is receptive to market-based solutions to problems.

Additionally, the scope of ACE was significantly limited between the time of the proposal and final rule adoption. The Final ACE Rule only applies to coal-powered plants and omits other electricity-generating units such as oil- or natural-gas-fired plants.⁴⁷ The EPA claimed the scope was limited because there was insufficient data to determine BSER technologies.⁴⁸ With the reduction in scope to only coal comes a reduction in flexibility for states that wish to reduce carbon emissions across the board. While perhaps the limited scope of the plan will promote superior solutions in other categories down the line, it seems like lost time against the need for regulating emissions from power generation.

ACE does appear, however, to have learned some lessons from its predecessor. The ACE plan explicitly mentions the goal of flexibility for states in meeting the plan's standards of emissions-rate performance.⁴⁹ Specifically, its focus is on providing adequate time and choice among a list of candidate technologies for adoption in meeting the standards.⁵⁰ By not imposing a singular methodology on the states, ACE follows CPP's lead in considering the knowledge and cost advantages of providing flexibility to state regulators in formulating their compliance plans. States are thus operating on what is essentially a "blank slate."⁵¹ States will have freedom not only to determine their own standards, but also to design implementation timelines and enforcement mechanisms.⁵² Perhaps the lack of precedent will lead to states creatively designing programs to meet the emissions-rate standards. On the other hand, the EPA still retains a right of approval and has signaled that it will not approve state plans that are more stringent on emissions.⁵³ Time will tell how much flexibility to innovate states have in practice.

Overall, it remains to be seen exactly how much ACE will learn from the CPP's implementation. We will need to see ACE in action for at least a period of a few years. In concept, the two plans have the same goal of balancing economic feasibility with sensible emission regulation.

47. VanBellegem & Wyman, *supra* note 45.

48. *Id.*

49. PROPOSED ACE FACT SHEET, *supra* note 9, at 2; *see also* FINAL ACE FACT SHEET, *supra* note 9 (describing the role of states in setting their own performance standards).

50. FINAL ACE FACT SHEET, *supra* note 9; PROPOSED ACE FACT SHEET, *supra* note 9, at 2.

51. VanBellegem & Wyman, *supra* note 45.

52. *Id.*

53. *Id.*

II. The Role of Cost–Benefit Analysis

Cost–benefit analysis has been a staple of environmental regulation since the Reagan Administration, when the President issued an executive order that executive regulatory bodies may only undertake to impose new regulations if an analysis revealed that the costs to society would be outweighed by greater benefits.⁵⁴ Congress has also been receptive to the use of cost–benefit analysis, albeit to a lesser degree.⁵⁵

Approval of the cost–benefit approach by the Executive Branch did not lead to universal acceptance, however. The Judicial Branch did not always look upon the EPA’s attempts to justify regulation via cost–benefit analyses with favor.⁵⁶ That said, the Supreme Court in 2009 held in *Entergy Corp. v. Riverkeeper, Inc.*⁵⁷ that the EPA could rely on cost–benefit analysis in determining the best technology available for reducing negative externalities from cooling water intake at power plants.⁵⁸ The *Entergy* holding illustrates an increased acceptance of such techniques in justifying regulation of energy-generating entities with national performance standards.⁵⁹

Cost–benefit analysis has merit because it utilizes basic economic principles. Its major proponents are those that see environmental problems as the result of market failures; proponents believe that by placing an actual monetary value on all of the costs and benefits associated with a regulation, legislatures and regulators can make smarter decisions and achieve an efficient societal outcome.⁶⁰ For example, an analysis monetizing a regulation’s benefits might consider the avoided medical costs of a cleaner environment, the aesthetic benefits of an improved environment, or the lives

54. Exec. Order 12291, 46 Fed. Reg. 13193, 13193 (Feb. 19, 1981). This executive order was superseded by a similar order during the Clinton Administration, which placed cost–benefit analysis at the core of the regulatory philosophy. Exec. Order 12866, 58 Fed. Reg. 51735, 51735 (Sept. 30, 1993).

55. For example, the Federal Insecticide, Fungicide, and Rodenticide Act and the Toxic Substances Control Act require the EPA to balance the benefits of any policy with the risks to populations and the environment. JAMES SALZMAN & BARTON H. THOMPSON, JR., ENVIRONMENTAL LAW AND POLICY 32 (2003). On the other hand, Congress has prohibited the EPA from considering costs in some scenarios where the benefit is deemed important enough, such as in setting national ambient air quality standards. *Id.*

56. See Eric A. Posner, *Controlling Agencies with Cost-Benefit Analysis: A Political Theory Perspective*, 68 U. CHI. L. REV. 1137, 1137–38 (2001) (providing a brief history of judicial treatment of cost–benefit analysis up until 2001). For example, the Fifth Circuit decided that a cost–benefit justification for a regulation was inadequate. *Corrosion Proof Fittings v. EPA*, 947 F.2d 1201, 1212 (5th Cir. 1991).

57. 556 U.S. 208 (2009).

58. *Id.* at 226. While this holding deals with the Clean Water Act, it is useful in analyzing the judicial restraints on the EPA’s current approach to regulating power-producing entities in the setting of Phase II national performance standards.

59. *Id.* at 224–26.

60. SALZMAN & THOMPSON, *supra* note 55, at 30–31.

saved from lower instances of disease.⁶¹ Monetizing costs can sometimes be more straightforward because there is usually a direct price tag for compliance, but a cost–benefit analysis will also seek to monetize elements such as employment loss and the impact of reduced land development.⁶² The power of the cost–benefit analysis is that it imposes strongly established economic principles as the final arbiter of policy decision-making: if the costs outweigh the benefits, the policy should not be enacted.

The use of cost–benefit analysis is certainly not without criticism. First, some question whether it is appropriate to monetize certain environmental goods and benefits to which the public has a moral right, regardless of cost.⁶³ Who is to say that the life of an asthmatic is only worth so much money? Or that a forest can only continue to exist if it makes financial sense? This is the chief concern that informs Congress’s reluctance to allow a cost–benefit analysis under some regulations. The counterargument here is that most people would agree, for example, that it would not make sense to spend billions of dollars on an extremely strict regulation that would only save a few, highly sensitive individuals from the effects of air pollution.⁶⁴ Therefore, the absolute prohibition on such monetization analysis is not really sensible.

Two other major criticisms are rooted in methodology. There is some skepticism about the ability to quantify costs and benefits objectively and empirically. For example, the economic value of preserving an endangered species could vary wildly depending on which party is asked.⁶⁵ Oftentimes, studies end up describing benefits only on a qualitative basis, which arguably defeats the purpose of attempting to monetize everything. If there are not mutually agreed upon criteria for determining the benefits, the power of cost–benefit analysis as an objective decision-making tool is significantly diminished. Most cost–benefit analyses, however, acknowledge these limitations (including those of the CPP and ACE). Like any other area, society must rely on the best data to make the decisions and hope the methodology and empirical processes continue to improve.

There is also criticism regarding the intertemporal quality of environmental issues. This criticism addresses the imperfect fit between the regulatory costs (which are often immediate) and benefits (which are frequently realized over a longer time period).⁶⁶ As such, some argue that the

61. *Id.* at 31.

62. *Id.*

63. *Id.* at 32.

64. *Id.* at 33.

65. *Id.* at 34. Economists have attempted to define concepts like “option value,” which considers the potential value from having a species or environmental good in the future, or “existence value” from knowing that certain beautiful things exist in the world. *Id.* These concepts have encountered criticism for not being useful because people surveyed usually will not have to bear a direct cost, leading them to inflate their estimation of the benefit. *Id.* at 34–35.

66. *Id.*

benefits in a cost–benefit calculation should be discounted to a present value.⁶⁷ I find this approach appropriate, but it leads to another question over how to calculate the discount rate—obviously, differences in the discount rate applied will lead to very different results.⁶⁸ Finally, there are criticisms about the distributional effects of a utilitarian cost–benefit approach to regulation.⁶⁹

Today, one wonders whether there is room in the discussion for much other than cost–benefit considerations, despite the criticisms of the methodology. Indeed, the discussion in this Note has already touched on cost–benefit concepts. It seems almost impossible to avoid. For example, the EPA-prepared analyses of the CPP and ACE discuss the plans primarily in terms of costs and benefits.⁷⁰ In analyzing the approaches to cost–benefit analysis taken by both plans, it is important to keep in mind both the actual costs and benefits and the distribution of costs and benefits.

A. *Costs and Benefits Under the CPP*

The CPP and ACE both place costs and benefits at the center of their regulatory justification, but do so with strikingly different inputs. The goals evident in the ACE policies provide a look into the specific costs and benefits that the new plan values and therefore seeks to quantify. A comparison of the two plans reveals that the CPP presents a cost–benefit analysis more consistent with finding an optimal social outcome.

In August 2015, the EPA released its final Regulatory Impact Analysis (RIA) of the Clean Power Plan.⁷¹ The RIA attempts to quantify the economic cost of regulatory compliance. Cost estimates in the RIA were calculated as the difference between the cost of electric power generation in the “base case” of no regulation and in the case of CPP implementation.⁷² The RIA broke down the costs between mass-based and rate-based approaches. Specifically, the mass-based approach considers the cost of energy-efficiency

67. *E.g.*, *id.* at 33–34.

68. *Id.* at 35. Some argue for the use of the “private discount rate” that considers the benefit to individuals and economic actors. *Id.* Others propose the “social discount rate,” which discounts the benefits less in order to promote the positive social effect from a more sustainable environment. *Id.*

69. *See, e.g.*, TED GAYER, HAMILTON PROJECT, A BETTER APPROACH TO ENVIRONMENTAL REGULATION: GETTING THE COSTS AND BENEFITS RIGHT 17 (2011) (advocating for less consideration of private costs and benefits resulting from regulation, as the consumer acts rationally regardless of the regulation); SALZMAN & THOMPSON, *supra* note 55, at 36 (arguing that cost–benefit analysis tends to distribute gains and burdens inequitably across socioeconomic status).

70. *See infra* notes 71, 91 and accompanying text.

71. U.S. ENVTL. PROT. AGENCY, REGULATORY IMPACT ANALYSIS FOR THE CLEAN POWER PLAN FINAL RULE (2015), https://www.epa.gov/sites/production/files/2017-10/documents/ria_proposed-cpp-repeal_2017-10.pdf [<https://perma.cc/7CSF-VBXX>] [hereinafter CPP RIA].

72. *Id.* at ES-8.

measures adopted by states to lower demand.⁷³ The rate-based approach captures the energy-efficiency activities taken by individual power plants on the supply side.⁷⁴ The final cost estimates considered the incremental costs from the base case in 2020, 2025, and 2030.⁷⁵

The RIA endeavors to estimate the benefits of the CPP as “Global Climate Benefits.”⁷⁶ This broad term attempts to quantify the total social benefit resulting from regulating the emission of harmful GHG. The report explicitly identifies the following factors for consideration as part of the Global Climate Benefits analysis: net change in agricultural activity and human health, property damage from increased flood risk, and changes in energy-system costs (such as reduced costs for heating and increased costs for air conditioning).⁷⁷ The calculations in the RIA encapsulating all benefits of emission reduction relied on the effect of abating the cost of carbon emissions per year, defined as the social cost of carbon or “SC-CO₂.”⁷⁸ The RIA’s final numbers differed depending on the system implemented, the time period considered, and the discount rate applied. For mass-based plans, the combined climate and health benefits ranged from \$2.9 billion to \$14 billion in 2020, and from \$18 billion to \$89 billion in 2030.⁷⁹ For rate-based plans, the combined climate and health benefits ranged from \$0.8 billion to \$8.2 billion in 2020, and from \$6.4 billion to \$61 billion in 2030.⁸⁰ The conclusion was forceful: the benefits of the final rule substantially outweighed the costs.⁸¹

73. *Id.*

74. *Id.*

75. *Id.* at ES-9. “The EPA estimates the annual incremental compliance cost for the rate-based approach for final emission guidelines to be \$2.5 billion in 2020, \$1.0 billion in 2025, and \$8.4 billion in 2030, including the costs associated with monitoring, reporting, and recordkeeping. The EPA estimates the annual incremental compliance cost for the mass-based approach for final emission guidelines to be \$1.4 billion in 2020, \$3.0 billion in 2025, and \$5.1 billion in 2030, including the costs associated with monitoring, reporting, and recordkeeping.” *Id.*

76. *Id.* at ES-14.

77. *Id.* The unquantified benefit items include reductions in exposure to nitrogen dioxide and sulfur dioxide, reductions in mercury deposits, ecosystem benefits, and changes in visibility impairment.

78. *Id.* at ES-14 to -17. The RIA report relied on four SC-CO₂ estimates of harm per short ton of CO₂ emissions, increasing over time. *Id.* at ES-15. The four estimates were as follows: \$12, \$40, \$60, \$120 per short ton of CO₂ emissions in the year 2020, discounted to 2011 dollars. *Id.* The RIA openly acknowledges the limitations of this metric in addressing certain impacts that are nonquantifiable due to a lack of data. *Id.* at ES-16. However, the RIA states that these metrics represent the best available information for conducting the requisite cost–benefit analysis. *Id.*

79. *Id.* at ES-21 tbl.ES-8. The wide range of potential benefits considers different discount rates and compliance scenarios. Furthermore, the mass-based plans consider a range of actual mass reduction in carbon emission.

80. *Id.* at ES-22 tbl.ES-9. The wide range of potential benefits considers different discount rates and compliance scenarios.

81. *Id.* at ES-21.

Beyond social costs and benefits, the report bore a requirement to estimate the economic impacts of the CPP, including the effect on energy market prices. The RIA estimated a modest increase above the “base case” of no regulation in retail electricity price between 2020 and 2030.⁸² The price of coal was estimated to drop, while coal production was estimated to drop significantly.⁸³ Natural gas, on the other hand, was expected to see a price increase of 4%–5% by 2020 before dropping between 2025 and 2030 (with its use for electricity generation also rising and then falling).⁸⁴

The RIA makes an attempt to estimate the unemployment impact of the CPP, even though “standard benefit-cost analyses have not typically included a separate analysis of regulation-induced employment impacts.”⁸⁵ The bottom-line prediction was a net decrease of approximately 25,000 job-years in 2025 for compliance with the final guidelines.⁸⁶ The lack of focus on this area might be indicative of the CPP’s distributional priorities, which will be discussed later.

Notably absent in Global Climate Benefits is the potential economic benefits to firms that reposition themselves to be leaders in renewable-energy generation as a result of the CPP regulations.⁸⁷ Such benefits are not readily apparent, and might be impossible to quantify, but the overall effect of this shift can create economic opportunity.

Some third-party analyses have supported the EPA’s CPP findings. In fact, it is argued that the cost of compliance has actually *fallen* since the RIA’s publication, meaning the balance of costs and benefits is even more favorable. One study, conducted in 2017 after the Trump Administration made its intention to halt the CPP clear, estimated a further decline in compliance costs due to cheaper renewable energy, extension of federal tax credits for renewables, state programs supporting clean energy, and the falling cost of natural gas.⁸⁸ Despite this, it seems that the Trump Administration and supporters of ACE do not care because the costs they care about addressing lie elsewhere.

The bottom line is the cost–benefit analysis conducted by the CPP looks at the big picture. It seeks to quantify the highest level costs and benefits. It reflects a global view of the climate-change problem consistent with GHG’s

82. *Id.* at ES-24.

83. *Id.*

84. *Id.*

85. *Id.*

86. *Id.* at ES-25.

87. Chapter 8 of the RIA, discussing benefits and costs, almost exclusively discusses the overall social benefits rather than any particular economic benefits. *Id.* at 8-1 to -2. Some critics of the CPP have accused it of picking winners and losers, but the evaluation language does not single out any particular industry that stands to gain.

88. DENISE A. GRAB & JACK LIENKE, INST. FOR POLICY INTEGRITY, THE FALLING COST OF CLEAN POWER PLAN COMPLIANCE 1 (2017).

status as a noncontained pollutant.⁸⁹ Society can accept this approach because it is a necessary solution to a global problem. Anthropogenic climate change, spurred by GHG emissions, is a global crisis that requires direct action now.⁹⁰ As with many similar problems, the best way of addressing the market failure that leads to the negative externality of GHG emissions, in turn leading to destructive climate change, is strong government action. While society can accept this broader principle, we must then ask ourselves a question: Who bears this burden? And is it fair to ask them to do so?

The answer, in part, points to certain communities with deep economic investment in methods of electricity generation that are disfavored by the incentive system set out in the CPP, namely coal. It seems that one of the primary drivers behind ACE's approach to cost-benefit analysis is its attempt to appeal to particular affected communities.

B. *Costs and Benefits Under ACE*

Like the CPP, the ACE plan triggered the same Office for Management and Budget review requirement, resulting in the publication of a Regulatory Impact Analysis.⁹¹ The ACE RIA lays out the costs and benefits of ACE in a similar fashion, but substitutes the policy scenario to be in line with the ACE implementation. Specifically, it assumes that the BSER is the adoption of HRI measures.⁹²

89. It should be noted that the CPP takes into account regional costs at a high level but only considers large categories such as East, West, and California. CPP RIA, *supra* note 71, at ES-17.

90. On October 8, 2018, the United Nations Intergovernmental Panel on Climate Change released a report that garnered much publicity. The report claimed that urgent action is required to prevent a global warming of over 1.5°C above preindustrial levels. A warming above this level would significantly increase the negative effects on ecosystems and human well-being. The report estimates that a 50% reduction in carbon emissions from 2010 levels is required by 2030, and that “net zero” emissions are required by 2050 in order to avoid a greater increase in temperature. INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, GLOBAL WARMING OF 1.5°C, at 14 (2018), http://report.ipcc.ch/sr15/pdf/sr15_spm_final.pdf [<https://perma.cc/EZ29-YXCH>]. The publication of these findings received extensive media coverage and has heightened the urgency of the climate-change debate due to the short twelve-year time frame for action. Matt Simon, *We Need Massive Change to Avoid Climate Hell*, WIRED (Oct. 8, 2018, 1:11 PM), <https://www.wired.com/story/we-need-massive-change-to-avoid-climate-hell/> [<https://perma.cc/9YDM-YD28>].

91. This subpart will evaluate the RIAs for both the proposed and final plans. U.S. ENVTL. PROT. AGENCY, REGULATORY IMPACT ANALYSIS FOR THE PROPOSED EMISSION GUIDELINES FOR GREENHOUSE GAS EMISSIONS FROM EXISTING ELECTRIC UTILITY GENERATING UNITS; REVISIONS TO EMISSION GUIDELINE IMPLEMENTING REGULATIONS; REVISIONS TO NEW SOURCE REVIEW PROGRAM (2018), https://www.epa.gov/sites/production/files/2018-08/documents/utilities_ria_proposed_ace_2018-08.pdf [<https://perma.cc/HKE5-RUK3>] [hereinafter ACE PROPOSAL RIA]; U.S. ENVTL. PROT. AGENCY, REGULATORY IMPACT ANALYSIS FOR THE REPEAL OF THE CLEAN POWER PLAN, AND THE EMISSION GUIDELINES FOR GREENHOUSE GAS EMISSIONS FROM EXISTING ELECTRIC UTILITY GENERATING UNITS (2019), https://www.epa.gov/sites/production/files/2019-06/documents/utilities_ria_final_cpp_repeal_and_ace_2019-06.pdf [<https://perma.cc/3KCN-T853>] [hereinafter FINAL ACE RIA].

92. FINAL ACE RIA, *supra* note 91, at ES-2. These are plant-specific improvements that have

When quantifying the environmental benefits, the ACE RIA mostly sticks to the same formula followed by the CPP RIA in that it uses the SC-CO₂ measure.⁹³ However, the major difference is that the SC-CO₂ quantified by ACE only considers the *domestic* environmental costs avoided, whereas the CPP RIA took a *global* perspective.⁹⁴ This is an important point that will be revisited when comparing the analyses of each plan.

Costs under the ACE RIA focus on the power industry's compliance costs plus monitoring, reporting, and recordkeeping expenses.⁹⁵ The final cost calculation is the difference between the increased power-industry expenses to implement HRI requirements and the costs of compliance in the base case.⁹⁶ The cost framework here explicitly focuses on private compliance costs as an estimate of the social cost, due to the interconnected nature of these economic decisions and their effects on capital owners, employees, and local economies. The final ACE RIA concluded that total costs for the period 2023–2037 range from \$970 million to \$1.6 billion, depending on the discount rate.⁹⁷

The final ACE RIA omits a direct comparison to benefits under the CPP.⁹⁸ Instead, the final ACE RIA evaluates an “illustrative policy scenario” that estimates costs and benefits based on state compliance with the new efficiency standards.⁹⁹ The bottom-line analysis expressed the impact of ACE as the present value of compliance costs and benefits (including health co-benefits).¹⁰⁰ This was consistent with the methodology from the proposal.¹⁰¹ The analysis concludes that the ACE plan net benefits tally between \$370 million and \$1 billion in 2025, and between \$520 million and \$1.4 billion in 2035, depending on the compliance scenario and discount rate.¹⁰² Notably,

a gentler effect on older, dirtier coal plants. Under the CPP, such improvements were disfavored because they allowed unclean power generation to continue at outdated facilities.

93. *Id.* at ES-7.

94. *Id.*; see also Karl Hausker, *The Flawed Analysis Behind Trump Administration's Proposed Repeal of the Clean Power Plan*, WORLD RES. INST. (Oct. 16, 2017), <https://www.wri.org/blog/2017/10/flawed-analysis-behind-trump-administrations-proposed-repeal-clean-power-plan> [<https://perma.cc/AQW4-S7AC>] (discussing the flawed reasoning behind using a domestic-only SC-CO₂). This article was published in advance of the final ACE RIA, but its analysis turned out to be correct when comparing the plan details.

95. FINAL ACE RIA, *supra* note 91, at ES-5.

96. *Id.*

97. *Id.* at ES-4 tbl.ES-1.

98. FINAL ACE FACT SHEET, *supra* note 9, at 2. The EPA made the sudden and bizarre claim that “[t]he impacts of ACE are measured against a baseline that does not assume implementation of the CPP because updated analysis shows the CPP would have no effect on future CO₂ emissions.” *Id.*

99. FINAL ACE RIA, *supra* note 91, at ES-2.

100. *Id.* at ES-3.

101. *Id.* at ES-4 (“This method of comparing costs to domestic climate benefits is consistent with how results were presented in the RIA for the ACE proposal.”).

102. *Id.* at ES-9 tbl.ES-6. The discount rate is pegged at either 3% or 7%.

when removing health co-benefits, the final ACE plan estimated negative benefits associated with CO₂ reduction.¹⁰³ Overall, while these figures are demonstrably lower than those of the CPP, they are not useful for direct comparison to the CPP because they consider only domestic benefits and use a different cost metric (cost of compliance).

The ACE proposal RIA, however, provided a direct comparison to the “base case” of CPP implementation.¹⁰⁴ The ACE proposal estimated that all scenarios would lead to *forgone* benefits compared to implementing the CPP for the period 2023–2037. The results differed depending on the discount rate and compliance scenario.¹⁰⁵ At a discount rate of 3%, the present value of forgone net benefits ranged from \$27.9 billion to \$72 billion depending on the compliance scenario.¹⁰⁶ At a discount rate of 7%, the amount of forgone net benefits ranged from \$12.8 billion to \$36.7 billion depending on the compliance scenario.¹⁰⁷ Although all scenarios estimate forgone benefits, most of the scenarios anticipated a decrease in costs compared to the CPP, ranging from \$0.3 billion to \$6.4 billion depending on the scenario and discount rate.¹⁰⁸

ACE will likely result in higher overall emissions (and therefore forgone environmental benefits) but lower overall costs when compared to the CPP base case.¹⁰⁹ On a surface level, this makes sense: a Republican Administration’s EPA seeks smaller regulation with smaller costs.

The reports also include certain economic analyses (like the CPP RIA) that indicate the benefits to be achieved but not explicitly monetized in a

103. *Id.* at ES-11 tbl.ES-8.

104. ACE PROPOSAL RIA, *supra* note 91, at ES-5. In light of the fact that both the final and proposed ACE RIAs are speculative efforts to assess impact, the author finds an analysis of the Proposal RIA to be appropriate. Furthermore, the Proposal RIA engages in a more honest comparison to the CPP in its methodology, while the Final RIA goes out of its way to avoid such a comparison.

105. ACE PROPOSAL RIA, *supra* note 91, at ES-16 tbl.ES-12. The different compliance scenarios are somewhat complicated. The 2% HRI at \$50/kW scenario considers the effect if the ACE New Source Review reforms are not implemented, at a HSI compliance cost per kW of power of \$50. The 4.5% HRI at \$50/kW scenario considers the effect with the NSR reforms implemented, at a HRI compliance cost per kW of power of \$50. The 4.5% HRI at \$100/kW scenario is the same as the previous, with a higher HIS compliance cost per kW. *Id.* at ES-3.

106. *Id.* at ES-16 tbl.ES-12.

107. *Id.* The ACE proposal RIA presents a dizzying amount of variations to these numbers. This table was the most appropriate because it provides one number (inclusive of co-benefits) discounted to present value.

108. *Id.* at ES-14 tbl.ES-10. The discount rate is pegged at either 3% or 7%.

109. *Id.* at ES-12 (“All estimated benefits reported in Table ES-9 are negative, indicating that each of the four illustrative scenarios yield forgone climate benefits and forgone ancillary health co-benefits relative to the base case, which includes the CPP.”). The final ACE RIA estimates a less than one percent decrease in annual CO₂ emissions in 2025, 2030, and 2035. FINAL ACE RIA, *supra* note 91, at ES-6 tbl.ES-4. The Final ACE Plan still estimates that the total amount of emissions in 2030 will be “as much as” 35% below 2005 levels. FINAL ACE FACT SHEET, *supra* note 9, at 1.

cost–benefit framework. For instance, Chapter 3 of the ACE Proposal RIA includes an analysis of the effect on total coal power generation and coal as a percentage of the power-generation mix.¹¹⁰ Finally, the ACE RIA describes employment and distributional impacts via qualitative description.¹¹¹

C. *Comparing Cost–Benefit Analyses*

While both the CPP and ACE RIAs employ a cost–benefit structure, the approaches to cost and benefit quantification significantly differ. The bottom line of these differences is that the CPP RIA provides a superior evaluation. The CPP’s cost–benefit analysis is superior because of its predicted results, cost estimation, discount-rate methodology, and global approach.

First, and most prominently, the CPP presents a better regulatory outcome than ACE because its benefits are proportionally greater than costs saved under ACE. This is a conclusion that ACE does not try to hide; the ACE proposal RIA openly acknowledges that its best-case scenarios offer a lower benefit total compared to the CPP as quantified by the SC-CO₂.¹¹² This would make sense if the benefits forgone were proportional to cost saved. However, according to the ACE proposal RIA’s direct comparison, the benefits forgone by implementing ACE instead of the CPP are proportionally greater—between 5.4 and 11.8 times greater—than the costs saved when calculated with the lower 3% discount rate.¹¹³ While it is clear that ACE seeks benefits in areas other than the SC-CO₂ quantified benefits,¹¹⁴ it must be remembered that this is a federal regulation. As such, the goal of a federal regulation should be to maximize benefits on a broad scale. The SC-CO₂ metric reflects this to the best of its ability, and therefore the proportional loss in benefits shows the CPP to be superior upon a cost–benefit analysis.

Furthermore, ACE does not quantify costs in a way that best estimates the impact on society. The CPP’s approach of estimating costs by looking at the market cost of power to the consumer is a superior way of estimating societal costs because it touches on the actual money coming out of the consumer’s pocket. ACE’s cost approach, on the other hand, is too far

110. Between 2025 and 2035, the tables predict an increase between 0.7% to 2.9% in total coal-generation capacity compared to the CPP base case, and an increase between 7.4% and 9.2% in coal’s projected generation mix compared to the CPP base case. ACE PROPOSAL RIA, *supra* note 91, at 3-24 tbl.3-18, 3-28 tbl.3-21. Total coal generation for use by the electric-power sector is projected to increase between 7% to 9% by 2030. *Id.* at 3-31.

111. See FINAL ACE RIA, *supra* note 91, at ch. 5. The specific details are beyond the scope of the discussion of cost–benefit analysis.

112. ACE PROPOSAL RIA, *supra* note 91, at ES-10, ES-12, ES-13 tbl.ES-9.

113. See *id.* at ES-16 tbl.ES-12 (presenting cost and benefit scenarios with different compliance and discount rates). For the higher 7% discount rate, foregone benefits are between 4.5 and 10.6 times greater than costs saved. *Id.* These calculations rely on the 4.5% HRI at \$50/kW compliance scenario. *Id.*

114. See *infra* Part III (discussing ACE’s overemphasis on coal).

removed from the actual consumer because it focuses on the compliance costs to private producers. Certainly, the idea is that these costs are eventually passed onto the consumer, and thereby it is a fair way to quantify social costs. But if this is the goal, why not just directly look at the cost the consumer bears, like the CPP does? The focus on the cost to private producers reveals ACE's desire to appeal to the supply-side producers of energy. When evaluating a federal regulation, the better approach is to quantify the cost borne by the people who elected the officeholders and live under the federal government.

The CPP's global approach to quantifying benefits fits the nature of the carbon-emissions problem better than the domestic approach adopted by the ACE RIA. Perhaps it is unsurprising that the new plan under the Trump Administration only seeks to quantify benefits for the United States, but this approach fails to address the nature of carbon emissions. Reduced emissions (and the ensuing superior environmental quality) is an environmental good unbound by geographic borders. Thus, to better appreciate the benefits gained from reduced emissions, it is important to think globally. Some might criticize this approach as too altruistic, but climate change is a global problem that will require global cooperation to curb. Addressing the benefits globally is consistent with this approach and is an accurate representation of the societal good that comes from the implementation of such a regulatory scheme.¹¹⁵

Finally, there is a methodology defect in how ACE discounts benefits as compared to the CPP. The discount rate is probably the most contentious part of any cost-benefit analysis because determining the appropriate discount rate requires addressing the philosophy informing the front end of the analysis. However, there is a basis to critique the ACE RIA's chosen discount rates of 3% and 7% as too high.¹¹⁶ A higher discount rate means that the benefits to future generations are being valued lower in the present. While that might make sense from a coldly numerical standpoint, the nature of regulations centered on curbing climate change should be forward-thinking. Regulations should serve future generations, and the best way to accomplish that goal is to choose a lower discount rate that accurately reflects the benefits sought to be passed forward.

For these reasons, the CPP presents a more compelling cost-benefit analysis, one that should be considered for adoption in the ACE. While cost-

115. See Hausker, *supra* note 94 (discussing how a global approach through the United Nations Framework Convention for Climate Change has been the standard, driven by acknowledgment of excess emissions as a global problem).

116. See *id.* (advocating that the appropriate rate should be between 1% and 3%, as allowed by the U.S. Office for Management and Budget when considering projects with important intergenerational impacts).

benefit analysis is an important tool for evaluating regulatory frameworks, it does not, however, tell the full story.

III. Beyond Cost–Benefit Analysis: ACE’s Overemphasis on Coal

While much is considered in each respective Regulatory Impact Analysis, it is striking how much is *not* included in the quantification of costs and benefits. The analyses themselves reveal this shortcoming. Each analysis explicitly limits the quantified benefits to the SC-CO₂ (whether domestic or global). Although each analysis presents fairly extensive qualitative descriptions of the other additional benefits (such as to employment and specific resource production), there is more to the story. By reading between the lines in the RIAs, the other “costs” and “benefits” that the regulations seek to achieve become visible.

Here lies the biggest problem with the ACE Plan: it unduly favors coal interests in the face of environmental and economic headwinds. This is clear from looking at the ACE documents prepared by the EPA. Both ACE Fact Sheets specifically mention that the goal is to provide coal-fired power plants the option to make on-site HRIs and mention no other form of power generation.¹¹⁷ Indeed, the final ACE plan *only* regulates HRIs for coal plants.¹¹⁸ The focus on coal was apparent even before the final plan was completed: coal is listed first on almost every table in the ACE RIA that focuses on specific subsectors of the power-generation industry.¹¹⁹ ACE attempts to present the unquantified “benefit” of a boost specifically for the coal industry.

These “benefits” fly in the face of both the market demand for cheaper power and the agreed-upon goal for environmental progress, both of which are achieved by increasing the use of natural gas as a source of power generation. Natural gas offers a cleaner and cheaper alternative to coal power generation. A recent Department of Energy Report acknowledged natural gas’s replacement of coal as the leading source of electricity generation in the United States as a result of its declining price.¹²⁰ Furthermore, natural gas combustion emits 50%–60% less CO₂ compared to coal combustion and produces much lower levels of particulate matter and other gases (like sulfur dioxide and nitrogen dioxide).¹²¹ It seems likely that a consumer would prefer

117. FINAL ACE FACT SHEET, *supra* note 9; PROPOSED ACE FACT SHEET, *supra* note 9, at 1.

118. VanBelleghem & Wyman, *supra* note 45.

119. *See, e.g.*, ACE PROPOSAL RIA, *supra* note 91 *passim* (listing coal first throughout the report in tables summarizing its findings).

120. U.S. DEP’T OF ENERGY, STAFF REPORT TO THE SECRETARY ON ELECTRICITY MARKETS AND RELIABILITY 1 (2017), https://www.energy.gov/sites/prod/files/2017/08/f36/Staff%20Report%20on%20Electricity%20Markets%20and%20Reliability_0.pdf [<https://perma.cc/XX6C-H9GQ>].

121. UNION OF CONCERNED SCIENTISTS, ENVIRONMENTAL IMPACTS OF NATURAL GAS (2018), <https://www.ucsusa.org/resources/environmental-impacts-natural-gas> [<https://perma.cc/>].

the less polluting source of fossil-fuel-powered electricity if asked, especially if the less polluting source is cheaper. And, now that natural gas is the cheaper form of power generation, the diminution of coal use should be inevitable. Regulations that prop up coal in the face of these forces are counterproductive and do not serve the common interest.

The CPP is not above similar criticisms related to “picking winners.” The fact is that the incentive structure of the CPP disfavors communities with deep economic investment in coal production. Harm to these communities is not a “cost” considered in the quantification of costs and benefits under the CPP. Furthermore, many would argue that the CPP “favors” renewables and is picking market winners in its own way. A difficult question arises from this: Is it fair for certain communities to bear a greater burden in the transition to cleaner and cheaper energy?

One factor that eases this burden is that this economic impact is often overstated in the minds of Americans. While coal production loomed large on the campaign trail in 2016, the industry as a whole only employs roughly 76,000 people.¹²² For comparison, about the same number of people are employed by the fast-food chain Arby’s.¹²³ The comparison is far from perfect, as coal jobs tend to be more stable, more regionally concentrated, and higher paying. The comparison does, however, highlight that the impact is one that a national economy can bear. In truth, the people who will face the greatest total economic harm will be the capital owners who have invested huge sums into a dying form of energy production. Coal-industry members have made claims that regulations like the CPP will result in “massive costs” for the consumer,¹²⁴ but the research in both the CPP and ACE RIAs does not back this up, especially because there is already a power source cheaper than coal. Such statements are just a self-interested attempt to disguise policies that work against both environmental and economic interests. Even some in coal country have had enough, recognizing the power of interest groups over policy.¹²⁵

It is never economically easy to transition industries or regions, but the time has come for the coal industry to taper down and conclude. On a bright note, the relatively small employee base makes the coal industry a good candidate for economic development and retraining programs. With sensible

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122. Christopher Ingraham, *The Entire Coal Industry Employs Fewer People than Arby’s*, WASH. POST (Mar. 31, 2017, 6:00 AM), <https://www.washingtonpost.com/news/wonk/wp/2017/03/31/8-surprisingly-small-industries-that-employ-more-people-than-coal/> [https://perma.cc/H7T6-WU4N].

123. *Id.*

124. Kara Van Pelt, *U.S. Repeal of Carbon Rule Criticized in Coal Country*, REUTERS (Nov. 28, 2017, 6:08 AM), <https://www.reuters.com/article/us-usa-epa-carbon/u-s-repeal-of-carbon-rule-criticized-in-coal-country-idUSKBN1DS1EW> [https://perma.cc/TJ4R-EHEZ].

125. *Id.*

regulation, the country as a whole should be able to transition into cheaper and cleaner power generation, and the affected communities can transition away from an economically and environmentally outmoded industry.

Conclusion

The Clean Power Plan might be a mummy, but there are important lessons to be learned from its origin, terms, and ultimate demise. Overall, the CPP succeeded through the way it was designed, the way it analyzed its costs and benefits, and the way it crafted a forward-thinking regulatory scheme that abided by market forces without forcing winners and losers.

The CPP illustrates how regulatory review incorporating public participation leads to better regulatory outcomes for all stakeholders. In addition, giving stakeholders an incentive to participate leads to unforeseen benefits by fostering innovation and communication.

Furthermore, the CPP applied an appropriate cost-benefit analysis that addressed the impact on consumers, as well as the global nature of the climate change problem. ACE should learn some lessons from the CPP and endeavor to be a more effective federal regulation.

Finally, while the CPP was not free of influence from certain interests, it reflected a fair effort to strike the balance between necessary change and market-driven progress in the power sector rather than cater to special interest groups. Going forward, this is perhaps the greatest concern with ACE. Federal regulations should work for the people, not for isolated economic interests that wield outsized political influence.

Crafting effective and sustainable environmental regulation is a long, arduous process that can often yield inconsistent results. While the ACE plan does some things well, it could definitely learn a lesson or two from the CPP.