

# ROLES FOR STATE ENERGY REGULATORS IN CLIMATE CHANGE MITIGATION

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*The construction of new power plants in the United States carries the risk of significantly contributing to global climate change. After concluding that the current federal regulatory response to climate change risks from power plants is inadequate, this Article examines three potential roles for state energy regulators to play as a bridge climate mitigation strategy until a cohesive federal policy is enacted. State energy regulators have received relatively little attention as potential climate change regulators, but they are well positioned to analyze and mitigate climate change risks from new power plants. The Article considers the advantages and drawbacks of state energy regulators considering greenhouse gas risks in traditional utility regulatory proceedings. It describes an innovative strategy used by the State of Michigan to incorporate state energy regulators into state environmental permitting proceedings. Finally, the Article considers a more dramatic proposal to merge energy and environmental considerations into a single power plant siting regulatory process where state energy regulators affirmatively decide what type of power plant to build and use a competitive bidding process to select a private owner of the plant.*

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## INTRODUCTION

The decision to build a new electric generating plant has enormous significance. Modern power plants often cost billions of dollars to construct and remain in operation for decades. In the United States, investing in a new generating facility is a decision traditionally made by private, monopolized utilities that are regulated both by state economic regulators implementing state law and state environmental agencies implementing federal law.<sup>1</sup> No single regulator squarely confronts the fundamental question of how to balance the trade-offs between environmental burdens and inexpensive energy supply goals.<sup>2</sup> As a result, the regulatory process for

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1. Lincoln Davies, *Alternative Energy and the Energy-Environment Disconnect*, 46 IDAHO L. REV. 473, 491 (2010); see also Amy Wildermuth, *The Next Step: The Integration of Energy Law and Environmental Law*, 31 UTAH ENVTL. L. REV. 369 (2011).

2. Environmental regulators seek to mitigate the impact on the environment from electricity generation. This often has the effect of increasing costs of electricity production to promote environmental benefits. The upward pressure on costs contrasts with the tradi-

approving new power plants is fractured, inefficient, and incomplete in its analysis of all of the relevant considerations.<sup>3</sup> This system has been changing over the past few decades, but is still largely intact.<sup>4</sup>

Power plants have a number of environmental impacts, but they are particularly large emitters of greenhouse gases (GHGs) that contribute to global climate change.<sup>5</sup> The risk of global climate change poses an exceptionally difficult challenge for the U.S. system of energy and environmental regulation.<sup>6</sup> In addition, the longer governments wait to act, the more diffi-

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tional goals of economic regulators of monopoly public utilities. Economic regulators have been concerned primarily with ensuring reliable supply of electricity while protecting consumers from unwarranted rate increases. Davies, *supra* note 1, at 494–95.

3. See *id.* at 500. See generally Peter Huber, *Electricity and the Environment: In Search of Regulatory Authority*, 100 HARV. L. REV. 1002 (1987); James T. Marsh & James P. Ramey Jr., *Delays and Bottlenecks in the Licensing Process Affecting Utilities: The Role of Improved Procedures and Advanced Planning*, 1970 DUKE L. J. 25 (1970); Irving R. Kaufman, *Power for the People—and by the People: Utilities, the Environment and the Public Interest*, 46 N.Y.U. L. REV. 867 (1971).

4. Economic regulators are playing a reduced role in electricity generation decisions as the United States has moved toward a system of wholesale electricity competition. The need for traditional economic regulation of electricity generation decisions has been called into serious question in recent years. Indeed, many believe that electricity generation, unlike the electricity transmission and distribution, is not a natural monopoly that warrants traditional economic regulation. David B. Spence, *The Politics of Electricity Restructuring: Theory vs. Practice*, 40 WAKE FOREST L. REV. 417, 418–23 (2005).

5. Electricity generation accounts for approximately 39% of total U.S. carbon dioxide emissions and 7% of total world carbon dioxide emissions. U.S. ENVT'L PROT. AGENCY, INVENTORY OF U.S. GREENHOUSE GAS EMISSIONS AND SINKS: 1990–2009, EXECUTIVE SUMMARY 5–6 (2011), available at <http://epa.gov/climatechange/Downloads/ghgemissions/US-GHG-Inventory-2011-Executive-Summary.pdf> (estimating total U.S. carbon dioxide emissions from electricity generation as 2.15 billion tons out of a total 5.51 billion tons of U.S. carbon dioxide emissions in 2009); INT'L ENERGY AGENCY, CO<sub>2</sub> EMISSIONS FROM FUEL COMBUSTION HIGHLIGHTS 46, 58 (2011), available at <http://www.iea.org/co2highlights.pdf> (estimating total world carbon dioxide emissions of approximately 29 billion tons in 2009).

6. See generally Richard J. Lazarus, *Super Wicked Problems and Climate Change: Restraining the Present to Liberate the Future*, 94 CORNELL L. REV. 1153 (2009). Though the merits of climate change science continue to be debated by some politicians and popular media figures, the evidence developed by climate scientists collected over the past few decades has left little doubt that the threat of climate change is real and that man's actions are contributing to it. See generally INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, CLIMATE CHANGE 2007: THE PHYSICAL SCIENCE BASIS, (Susan Solomon et al. eds., 2007), available at [http://www.ipcc.ch/publications\\_and\\_data/publications\\_ipcc\\_fourth\\_assessment\\_report\\_wg1\\_report\\_the\\_physical\\_science\\_basis.htm](http://www.ipcc.ch/publications_and_data/publications_ipcc_fourth_assessment_report_wg1_report_the_physical_science_basis.htm). Scientific uncertainty regarding the precise impacts of a warming earth, as well as the economic impacts of both climate change and actions to mitigate climate change, remains. INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, CLIMATE CHANGE 2007: SYNTHESIS REPORT 72–73 (2007) [hereinafter IPCC SYNTHESIS REPORT], available at [http://www.ipcc.ch/pdf/assessment-report/ar4/syr/ar4\\_syr.pdf](http://www.ipcc.ch/pdf/assessment-report/ar4/syr/ar4_syr.pdf). But there is at least some risk of global catastrophe, and the remaining uncertainties have yielded a legitimate debate about what scale of response to mitigate the risk of climate change is appropriate.

cult and expensive it becomes to achieve mitigation.<sup>7</sup> Meanwhile, there is a need for investment in new electric generating plants over the next decade.<sup>8</sup>

Given the scale of the problem and the ineffectiveness of solutions to date, some commentators have advocated an “all hands on deck” strategy of climate change mitigation.<sup>9</sup> If the first choice of policy mechanisms—an international, economy-wide price on carbon—seems unlikely to be enacted, pragmatic risk management dictates that policymakers should make the best of existing regulatory structures or utilize flawed, but still comparatively helpful, policies. In the long-term, it could turn out that realistic, pragmatic, cost-effective steps to mitigate climate change may be more likely to come not by instituting a geopolitically challenging international top-down price on carbon, but by incorporating thoughtful climate change mitigation strategies into existing regulatory structures.<sup>10</sup> Climate change mitigation may also be better achieved (or more politically feasible) through a sector-specific approach, rather than economy-wide regulation.<sup>11</sup>

State governments can serve important stopgap roles when the federal government inadequately addresses a problem. Much legal scholarship has been written about state leadership in GHG mitigation generally,<sup>12</sup> but relatively little has focused on the potential role of state utility regulators in mitigating climate risks. In the face of inadequate international and federal regulation of GHGs, this Article analyzes three potential roles that state energy regulators may be able to play to mitigate climate change risk from new power plants. First, state energy regulators could consider using environmental “adders” to project GHG externality costs in the traditional proceedings that approve new investments in electricity supply. Second, energy regulators could perform a similar analytical role in a different legal context by assisting state environmental regulators in Clean Air Act (CAA) permitting. Finally, a state could dramatically shift the responsibility for choosing an electric generation technology from private actors seeking

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7. See Lazarus, *supra* note 6, at 1160.

8. See *infra* text accompanying note 14.

9. See, e.g., Katherine A. Trisolini, *All Hands on Deck: Local Governments and the Potential for Bidirectional Climate Change Regulation*, 62 STAN. L. REV. 669, 677 (2010).

10. See, e.g., William Boyd, *Climate Change, Fragmentation, and the Challenges of Global Environmental Law: Elements of a Post-Copenhagen Assemblage*, 32 U. PA. J. INT'L L. 457 (2010) (analyzing the shortcomings of one-size-fits-all policy mechanism in the context of one climate related “sector”—international forest management).

11. See, e.g., The United Nations Framework Convention on Climate Change, Bali, Dec. 3–15, 2007, *Rep. of the Conference of the Parties on its 13th Sess.*, 4, U.N. Doc. FCCC/CP/2007/6/Add.1 (Mar. 14, 2008), available at <http://unfccc.int/resource/docs/2007/cop13/eng/06a01.pdf> (noting that nations negotiating an international climate change treaty will consider “sector-specific approaches” to mitigating climate change).

12. See, e.g. Kirsten Engel, *State and Local Climate Change Initiatives: What is Motivating State and Local Governments to Address a Global Problem and What Does This Say About Federalism and Environmental Law?*, 38 URB. LAW. 1015 (2006).

government approval to state energy regulators. Once regulators have decided on the type of power plant to be built, a competitive bidding process could be employed to provide private ownership of the facility in a manner that is least costly for ratepayers.

State energy regulators can effectively address the environmental risks from climate change and the financial risks associated with complying with future national or international climate change regulatory regimes. While state energy regulators have not traditionally analyzed environmental impacts in their regulatory proceedings, GHG emissions are a problem well-suited to their expertise. The costs imposed by GHGs are best addressed by considering a range of projected global externality costs. Unlike more traditional environmental considerations, these analyses do not require specific toxicology reports regarding a pollutant's public health impact in a specific area. Rather, analyzing GHG risks is more akin to a pure financial cost analysis. Analyzing whether it is prudent to build a new power plant and which type of power plant should be built is a task utility regulators are likely better suited to perform than environmental regulators.

For energy regulators, mitigating climate risk may also be seen as an outgrowth of their goal to reduce future financial risk to ratepayers. If and when a national or international climate regulatory regime is enacted, it will likely have huge compliance costs for utilities that have not taken prudent steps to mitigate their GHG emissions. But from an institutional design perspective, state utility regulators may be able to do more than protect customers from anticipated future costs. Energy regulators have skill sets and expert staffs that enable them to engage in the critical analysis regarding which types of new generating capacity best balance the different goals of achieving reliability and environmental sustainability at a low cost to customers. Energy regulators in many states have traditionally left environmental tradeoffs to other policymakers, so this would be an expanded role for some energy regulators. It may nonetheless be warranted.

The potential roles for energy regulators discussed in this Article have drawbacks, even deep flaws.<sup>13</sup> But policymakers must be pragmatic in choosing policy solutions to mitigate climate risk. They cannot become so enamored with a single potential solution—whether it is cap-and-trade or a carbon tax—that they dismiss any other less comprehensive or efficient solutions. Policymakers should recognize and understand a policy's short-

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13. There is no perfect solution to climate change. A carbon tax is itself imperfect. Determining the proper amount of the tax by estimating the average social cost of climate change risk per unit of GHG is an incredibly difficult quantitative task. See *infra* text accompanying notes 68–80. A GHG cap-and-trade regime is imperfect. Setting the proper level of emissions to be capped (particularly in a politicized process) involves another exceedingly difficult quantitative estimation of risks and costs. Measuring and enforcing the cap across a number of sectors is likewise extraordinarily difficult.

comings, but nonetheless consider implementing it over the riskier adherence to the status quo.

## I. THE NEED FOR STATE REGULATORY RESPONSES

### *A. The Need for New Electric Generating Capacity*

The U.S. electricity infrastructure is aging. The electricity industry will need to invest in new replacement generation capacity over the next decade as obsolete power plants are retired.<sup>14</sup> This need is being accelerated by new environmental regulations on existing generation.<sup>15</sup> Compliance with these new rules will be difficult and likely cost-prohibitive for many older coal-fired power plants in particular. Utility giant American Electric Power recently predicted that pending EPA regulations would force it to shutter 25% of its coal fleet.<sup>16</sup> These forthcoming regulations will likely drive significant retirements in the existing U.S. coal plant fleet.<sup>17</sup>

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14. The expected life of most large fossil fuel power plants is 40 years. See JEFFREY FANG & PAUL GALEN, ISSUES AND METHODS IN INCORPORATING ENVIRONMENTAL EXTERNALITIES INTO THE INTEGRATED RESOURCE PLANNING PROCESS 5 (Nat'l Renewable Energy Lab. Report No. NREL/TP-461-6684, Nov. 1994) available at <http://www.nrel.gov/docs/legosti/old/6684.pdf>. And at the end of 2010, just over one-half of all U.S. electric generating capacity was over 30 years old, with approximately one-quarter over 40 years old. *Age of Electric Power Generators Varies Widely*, U.S. ENERGY INFO. ADMIN. (June 16, 2011), <http://www.eia.gov/todayinenergy/detail.cfm?id=1830>. While some of these facilities may be utilized beyond their expected useful life, a number of aging power plants across the United States are likely to be retired in the next decade.

15. See, e.g., National Emission Standards for Hazardous Air Pollutants From Coal- and Oil-Fired Electric Utility Steam Generating Units and Standards of Performance for Fossil-Fuel-Fired Electric Utility, Industrial-Commercial-Institutional, and Small Industrial-Commercial-Institutional Steam Generating Units, 76 Fed. Reg. 24,976 (May 3, 2011) (to be codified at 40 C.F.R. pts. 60, 63); Hazardous and Solid Waste Management System; Identification and Listing of Special Wastes; Disposal of Coal Combustion Residuals From Electric Utilities, 75 Fed. Reg. 35,128 (June 21, 2010) (to be codified at 40 C.F.R. pts. 257, 261, 264, 265, 268, 271, 302); National Pollutant Discharge Elimination System—Cooling Water Intake Structures at Existing Facilities and Phase I Facilities, 76 Fed. Reg. 22,174 (Apr. 20, 2011). The D.C. Circuit recently struck down another EPA regulation dealing with air pollution that crosses state borders, but left an earlier version of the rule in place while EPA promulgates a new rule. *EME Homer City Generation, L.P. v. Envtl. Prot. Agency*, No. 11-1302, 2012 U.S. App. LEXIS 17535 (D.C. Cir. Aug. 21, 2012).

16. Gabriel Nelson, *AEP Predicts Need to Shutter 25% of Coal Fleet*, E&ENEWS PM (June 9, 2011), <http://www.eenews.net/public/eenewspm/2011/06/09/3>.

17. The U.S. Energy Information Administration recently estimated that nearly 49 gigawatts of coal-fired generating capacity will be retired in the next 10 years, driven in part by the new EPA regulations. U.S. ENERGY INFO. ADMIN., U.S. DEP'T OF ENERGY, ANNUAL ENERGY OUTLOOK 2012 at 4, 45 (2012) [hereinafter ANNUAL ENERGY OUTLOOK 2012], available at [http://www.eia.gov/forecasts/aoe/pdf/0383\(2012\).pdf](http://www.eia.gov/forecasts/aoe/pdf/0383(2012).pdf). The existing U.S. coal fleet is 308 gigawatts. *Id.* at 150.

At the same time, despite huge opportunities to reduce U.S. electricity demand via energy efficiency,<sup>18</sup> there is still likely to be increased electricity demand as the U.S. economy grows.<sup>19</sup> Accordingly, over the next decade, utilities around the United States will need to invest in electric generating capacity, primarily to replace aging and obsolete plants.

### *B. The Inadequacy of Existing Federal Greenhouse Gas Regulations*

#### 1. Failure to Enact an Economy-Wide “Price on Carbon”

There is a consensus among many academics that the most efficient and effective government policy to address the risks of climate change would be a national, or international, “carbon price.”<sup>20</sup> Environmental regulation designed to incorporate the full social costs of electricity generation into price could theoretically reach a socially efficient outcome in a competitive electricity market.<sup>21</sup> Accordingly, one potentially rational system for choosing new electricity generation would be to do away with economic regulation of electricity generation and instead use competitive wholesale markets. However, it seems unlikely that the United States will adopt either a national system of wholesale electricity competition or an effective price on carbon in the near future.<sup>22</sup>

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18. Brandon Hofmeister, *Bridging the Gap: Using Social Psychology to Design Market Interventions to Overcome the Energy Efficiency Gap in Residential Energy Markets*, 19 SOUTHEASTERN ENVTL. L.J. 1, 3–4 (2010).

19. The Energy Information Administration’s 2012 Annual Energy Outlook predicts that total U.S. electricity supply will grow by approximately 3% through 2020, adding 72.5 gigawatts of new generating capacity. ANNUAL ENERGY OUTLOOK 2012, *supra* note 17, at 47, 148, 150.

20. A carbon price could be implemented either through a cap-and-trade system of pollution allowances or a tax on GHG emissions. See, e.g., William D. Nordhaus, *After Kyoto: Alternative Mechanisms to Control Global Warming*, 96 AM. ECON. REV., May 2006, at 31, 31–34; Richard J. Pierce, Jr., *Energy Independence and Global Warming*, 37 ENVTL. L. 595, 600–02 (2007); Robert N. Stavins, *A Meaningful U.S. Cap and Trade System to Address Climate Change*, 32 HARV. ENVTL. L. REV. 293 (2008); Reuven S. Avi-Yonah & David M. Uhlmann, *Combating Global Climate Change: Why a Carbon Tax is a Better Response to Global Warming than Cap and Trade*, 28 STAN. ENVTL. L.J. 3 (2009).

21. Cf. Guido Calabresi, *Some Thoughts on Risk Distribution and the Law of Torts*, 70 YALE L.J. 499, 500–03 (1961).

22. See generally Richard J. Pierce, Jr., *Completing the Process of Restructuring the Electricity Market*, 40 WAKE FOREST L. REV. 451 (2005); John Broder, ‘Cap and Trade’ Loses Its Standing as Energy Policy of Choice, N.Y. TIMES, Mar. 26, 2010, at A13.

## 2. Inadequacy of GHG Regulation Under the Clean Air Act

The EPA, spurred on by the landmark 2007 Supreme Court decision in *Massachusetts v. Environmental Protection Agency*,<sup>23</sup> has recently begun to implement GHG regulations under the existing CAA for major sources of emissions like power plants.<sup>24</sup> However, the viability of these regulations—both legally and politically—is currently at risk.

Under the CAA, stationary sources of pollutants must implement the “best available control technology” (BACT) for each pollutant before the construction or major modification of any “major emitting facility” that has the “potential to emit two hundred and fifty tons per year or more of any air pollutant.”<sup>25</sup> This 250 ton threshold is a significant limitation on the scope of facilities subject to permitting requirements for the pollutants traditionally regulated under the CAA, such as sulfur dioxide or nitrous oxides.<sup>26</sup> GHGs are generally emitted in much greater quantities than the other air pollutants regulated by the BACT requirement, however, leading to many additional facilities falling within the scope of BACT requirements.<sup>27</sup>

The CAA also includes another permitting requirement for existing stationary sources of air pollution known as Title V operating permits.<sup>28</sup> This program applies to sources that have the potential to emit 100 tons per

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23. *Massachusetts v. Envtl. Prot. Agency*, 549 U.S. 497, 528 (2007) (holding that GHGs are “air pollutants” under the CAA). This landmark decision set forth a chain reaction of events that eventually led to the EPA regulating GHG emissions from stationary sources like power plants under the CAA. See generally Jonathan Adler, *Heat Expands All Things: The Proliferation of Greenhouse Gas Regulation Under the Obama Administration*, 34 HARV.J.L. & PUB POL’Y 421, 426–38 (2011) [hereinafter Adler, *Heat Expands*].

24. E.g., Prevention of Significant Deterioration and Title V Greenhouse Gas Tailoring Rule, 75 Fed. Reg. 31,514 (June 3, 2010) [hereinafter Tailoring Rule]; Standards of Performance for Greenhouse Gas Emissions for New Stationary Sources: Electric Utility Generating Units, 77 Fed. Reg. 22,392 (proposed Apr. 13, 2012) [hereinafter Proposed GHG NSPS Rule].

25. 42 U.S.C. § 7475(a)(4) (2006); 42 U.S.C. § 7479(1) (2006). The definition also includes a lower threshold of 100 tons per year of any air pollutant for certain expressly listed facilities.

26. Prior to the GHG BACT requirement, approximately 800 permits with the BACT requirement for new or modified sources of air pollution were issued under the CAA each year. Tailoring Rule, *supra* note 24, at 31,537.

27. The EPA estimated that if the CAA were applied to GHG BACT determinations, over 84,000 sources would require permits for new construction or major modifications annually. *Id.* at 31,540.

28. A Title V operating permit centralizes all of the CAA’s various substantive requirements for each source into one permit, but does not add any additional substantive pollution reduction requirements for applicants. *Id.* at 31,521. The permit does require major sources of air pollution to keep and report records of emissions and to pay an administrative fee. *Id.*

year of any pollutant subject to regulation.<sup>29</sup> The EPA estimated that if the 100 ton threshold for Title V permits went into effect for GHG emissions, the number of existing regulated sources of air pollution would go from 15,000 to over 6 million sources.<sup>30</sup>

Processing millions of GHG permits would add enormous costs for both private industry and government regulators.<sup>31</sup> Consequently, the EPA issued a final rule that narrowly tailors the BACT and Title V permit requirements so that they apply to far fewer sources than the text of the CAA provides.<sup>32</sup> To justify this tailoring despite the clear statutory text, the EPA has relied upon three different statutory interpretation rationales—the doctrine of “absurd results,” and what the EPA calls the “administrative necessity” and “one-step-at-a-time” doctrines.<sup>33</sup> The EPA argues that fidelity to the specific text of the CAA would result in such a large number of small sources being subject to such high compliance costs that it would contradict Congress’ actual intent.<sup>34</sup>

The EPA is walking a statutory interpretation tightrope with this rule. It is arguing that Congress could not possibly have intended the CAA to regulate small sources of GHGs, but that the CAA provides that large sources of GHGs must be regulated. Regardless of actual legislative intent or policy arguments about implementation, courts might seek fidelity to the explicit text.<sup>35</sup> Such a strict textual reading could result in striking down the tailoring rule as inconsistent with the statutory text.

However, it is hard to imagine that a reviewing court would read the Act to require the EPA to regulate millions of small sources of GHGs given the practical consequences of such a decision.<sup>36</sup> If a court did some-

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29. 42 U.S.C. § 7661 (2006) (referencing 42 U.S.C. § 7602(j)).

30. Tailoring Rule, *supra* note 24, at 31,540.

31. The EPA estimated that the additional administrative cost for government regulators alone would be \$22.5 billion per year, a 300-fold increase over the current administrative costs of approximately \$74 million per year. *Id.* at 31,540.

32. The rule applies the BACT and Title V requirements to facilities that either already must comply with these permitting requirements for other pollutants or facilities that emit more than 100,000 tons of GHGs annually. *Id.* at 31,516.

33. *Id.* at 31,541.

34. *Id.*

35. The analysis used in *Massachusetts v. EPA*, 549 U.S. 497, 528–32 (2007), bolsters the EPA’s argument that GHGs must be regulated under the CAA. The Supreme Court explicitly rejected the argument that Congress did not actually intend for the Act to regulate GHGs, relying instead on the unambiguous text of the CAA. *Id.* at 528–32. This fidelity to the explicit text of the statute—despite good arguments that members of Congress did not, in fact, actually intend for GHGs to be regulated under the CAA and that regulation would lead to administrative difficulties—suggests that the future interpretations of CAA’s authority regarding GHGs should be made similarly.

36. Indeed, no one seems to be arguing for that result. Even the environmental group challenging the EPA’s tailoring rule as too lax is not arguing that the CAA requires small

how reach that result, there would be tremendous political pressure on Congress to amend the CAA to remove this regulatory burden.

The EPA's interpretation was challenged by a number of states, non-profit associations, and corporations, but in June of 2012, the Federal Court of Appeals for the District of Columbia held these plaintiffs lacked standing to challenge the rule.<sup>37</sup> The D.C. Circuit's decision prolongs the legal uncertainty surrounding the EPA's GHG rules for stationary sources.

In addition to the BACT requirement, the CAA also requires "performance standards" for "new sources" of air pollutants.<sup>38</sup> These new source performance standards (NSPS) have traditionally been promulgated as minimum technological standards applying to specific, newly installed sources of emissions, such as new coal-fired power plants.<sup>39</sup> Pursuant to a settlement agreement, the EPA issued proposed NSPS for GHGs from power plants in the spring of 2012.<sup>40</sup> The proposed rule requires new coal-fired or natural gas-fired plants to achieve a GHG emission rate achievable by a modern natural gas unit.<sup>41</sup> The Proposed GHG NSPS Rule has come

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sources of GHGs to be regulated. Robin Bravender, *Enviro Group Sues EPA Over Greenhouse Gas "Tailoring" Rule*, N.Y. TIMES GREENWIRE (Aug. 2, 2010), <http://www.nytimes.com/gwire/2010/08/02/greenwire-enviro-group-sues-epa-over-greenhouse-gas-tail-49225.html>. A reviewing court might, for example, distinguish the statutory definition of "air pollutant" from the statutory definition of "major emitting source" in terms of how closely the explicit text must be followed, relying in part on the dire consequences painted by the EPA. The latter may truly be absurd, while the former was merely unanticipated. But it is hard to predict what circumstances may cause a court to disregard the unambiguous text of a statute, particularly in an era of the revival of textualism in the federal judiciary. JOHN MANNING & MATTHEW STEPHENSON, *LEGISLATION AND REGULATION* 49 (2010).

37. Coalition for Responsible Regulation, Inc. v. Envtl. Prot. Agency, No. 09-1322 slip op. at 81 (D.C. Cir. June 26, 2012).

38. 42 U.S.C. § 7411 (2006).

39. See generally Standards of Performance for New Stationary Sources, 40 C.F.R. pt. 60 (2011).

40. Proposed GHG NSPS Rule, *supra* note 24; Jean Chemnick, *EPA Seen Likely to Miss Deadline on Rule for Greenhouse Gas Emissions From Utilities*, N.Y. TIMES GREENWIRE (Sept. 14, 2011), <http://www.nytimes.com/gwire/2011/09/14/greenwire-epa-seen-likely-to-miss-deadline-on-rule-for-g-41611.html>.

41. Any new electric generating units that use steam turbines and combined cycle technologies would be required to emit less than 1,000 pounds of carbon dioxide equivalent per megawatt-hour of electricity generated. Proposed GHG NSPS Rule, *supra* note 24, at 22,394. If this rule is finalized in its current form, it would make it very unlikely for new coal plants to be constructed in the United States unless they utilize carbon capture and sequestration technology. Because carbon capture and sequestration technology is not yet commercially viable, the rule would effectively ban new coal plants using current technology in the United States. The proposed rule does contain a novel 30-year compliance option whereby traditional coal plants could operate without carbon capture and sequestration technology for a 10-year period, and then incorporate carbon capture and sequestration for a twenty year period in such a way that the average emissions over thirty years meets the 1000 ton standard. *Id.*

under significant political attack by business groups and will undoubtedly face legal challenge if finalized.<sup>42</sup>

The EPA's GHG regulatory actions may also change for political reasons. There already exists a significant sentiment in Congress to revoke the EPA's authority to implement this program either permanently or temporarily.<sup>43</sup> Congressional Republicans have also been attempting to restrict the EPA's GHG regulatory powers by inserting restrictive provisions in appropriations legislation.<sup>44</sup> The reelection of President Obama makes outright repeal of the EPA's authority less likely. However, it is difficult to forecast whether Congress or the Administration will make changes to the EPA's GHG regulatory authority in the near future, and even less certain what will happen after President Obama leaves office.

In addition to BACT, Title V, and NSPS, the CAA may also require the EPA to promulgate National Ambient Air Quality Standards (NAAQS) for GHGs.<sup>45</sup> NAAQS are designed to keep the levels of certain criteria air pollutants in the outside air below standards designed to meet health and welfare goals.<sup>46</sup> If a NAAQS is promulgated, states are then

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42. The President of the U.S. Chamber of Commerce has called the rule "legally dubious." Jean Chemnick, *Chamber President Slams EPA's 'Legally Dubious' Greenhouse Gas Rule*, ENV'T & ENERGY DAILY (Apr. 10, 2012), <http://www.eenews.net/eed/> (available by subscription). One possible legal challenge is that the combination of combined cycle plants with traditional steam plants in the same standard violates the CAA. *Former EPA Air Chief Holmstead Discusses Challenges to NSPS Rule*, E&E TV (Apr. 2, 2012), <http://www.eenews.net/tv/2012/04/02/>. In its proposed rule, EPA argues that the text of the CAA provides the Administrator the ability to publish a list of sources and broadly to "revise" that list, which EPA argues it is doing by combining two previously separate sources into one category. Proposed GHG NSPS Rule, *supra* note 24, at 22,398 (citing CAA § 111(b)(1)(A)).

43. The House of Representative passed a bill completely repealing the EPA's authority to regulate GHGs under the CAA on April 7, 2011 by a vote of 255–172. Robin Bravender, *House Votes to Kill EPA Climate Regulations*, POLITICO (Apr. 7, 2011, 3:39 PM), <http://www.politico.com/news/stories/0411/52759.html>. On April 6, 2011, the Senate voted on a number of different proposals to restrict the EPA's GHG regulatory authority. While none received the sixty votes necessary to overcome a filibuster, seventeen Senate Democrats voted in favor of some form of restriction on EPA's GHG regulatory authority. Robin Bravender & Darren Samuelsohn, *Senate Rejects Efforts to Block EPA Climate Regulations*, POLITICO (Apr. 6, 2011, 6:18 PM), <http://www.politico.com/news/stories/0411/52699.html>.

44. Lauren Morello et al., *Republicans Gut EPA Climate Rules, Slash Deeply Into Climate Research, Aid and Technology Programs*, N.Y. TIMES CLIMATEWIRE (Feb. 14, 2011), <http://www.nytimes.com/cwire/2011/02/14/14climatewire-republicans-gut-epa-climate-rules-slash-deep-87716.html>.

45. INIMAI M. CHETTIAR & JASON A. SCHWARTZ, N.Y.U. SCHOOL OF LAW INST. FOR POLICY INTEGRITY, THE ROAD AHEAD: EPA'S OPTIONS AND OBLIGATIONS FOR REGULATING GREENHOUSE GASES 36–39 (2009).

46. Gregory B. Foote, *Considering Alternatives: The Case for Limiting CO<sub>2</sub> Emissions From Power Plants Through New Source Review*, 34 ENVTL. LAW REP. 10642, 10644 (2004).

required to adopt implementation plans to keep the level of pollution in the ambient air within that state below this level.<sup>47</sup>

If the EPA set a NAAQS for GHGs, presumably the entire country would either be in attainment or in non-attainment because GHGs do not remain localized in the atmosphere. Listing GHGs as criteria pollutants subject to a NAAQS would also likely make existing sources of GHGs subject to performance standards under the act.<sup>48</sup> This would raise significant compliance burdens. The EPA has not implemented a NAAQS for GHGs and has not announced any plans to take this step in the future.

The difficulty of applying the BACT, Title V, and NAAQS provisions of the CAA to the problem of GHGs illustrates how the existing text of the CAA is poorly suited to regulate GHGs. Jody Freeman, the former Counselor for Energy and Climate Change to President Barack Obama, recently wrote that using the CAA's regulatory authority

was never the Obama Administration's preferred option for addressing climate change. The President had called on Congress to adopt new legislation imposing a market-based cap on carbon and other GHGs. This, it was thought, would produce a more comprehensive strategy than could be achieved under the existing CAA, which, despite its strengths, is not designed optimally for GHG regulation.<sup>49</sup>

"Not optimal" is an understatement. The CAA's many inadequacies for addressing GHGs make it likely that the regulations will be altered or discontinued entirely—either judicially, legislatively, or administratively.<sup>50</sup>

Even if the EPA's GHG requirements for new power plants remain in effect, they are inadequate to address the risk of climate change. First, the

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47. 42 U.S.C. § 7410 (2006). In areas that do not meet the NAAQS standards, the new source review standard applied is the lowest achievable emissions rate, which is a stricter standard than BACT. 42 U.S.C. § 7503(a)(2) (2006); 42 U.S.C. § 7501(3) (2006). New sources of pollution in non-attainment areas must also obtain offsets—reductions in pollution equal to the amount of new emissions from the proposed new source. 42 U.S.C. § 7503(c) (2006).

48. 42 U.S.C. § 7411(d) (2006).

49. Jody Freeman, *The Obama Administration's National Auto Policy: Lessons from the "Car Deal"*, 35 HARV. ENVTL. L. REV. 343, 367–68 (2011) (footnotes omitted).

50. If the EPA's actions were designed in part to spur congressional legislation, that goal has not yet been met. The only thing that may be certain is that whatever the result of the EPA's efforts to regulate GHGs under the existing CAA, the process has already proven to be, in the words one of the act's primary legislative sponsors, John Dingell, a "glorious mess." Jonas Monast, Tim Profeta & David Cooley, Avoiding the Glorious Mess: A Sensible Approach to Climate Change and the Clean Air Act 1 (Oct. 2010) (working paper, Duke Univ. Nicholas Inst. for Envtl. Policy Solutions), available at <http://nicholasinstitute.duke.edu/climate/policydesign/avoiding-the-glorious-mess>.

EPA interprets the BACT provisions of the CAA to mitigate pollution from a particular type of source—such as a coal-fired power plant.<sup>51</sup> The EPA's interpretation does not require direct comparison of different technologies of electricity generation, such as comparing the emissions profile of a coal plant with a nuclear plant. GHG BACT will not result in the dramatic GHG reductions necessary to significantly transform the electricity sector's emissions profile.<sup>52</sup> The International Energy Agency's 2010 World Energy Outlook suggests that to reach the goal of maintaining global warming below two degrees Celsius, the world's electric generating capacity would need to shift dramatically to include much more renewable energy and nuclear power.<sup>53</sup> While such shifts are possible using existing technologies,<sup>54</sup> GHG BACT would only succeed in driving such results by accident.<sup>55</sup>

The EPA has backed away from this methodology in the Proposed GHG NSPS Rule, which directly compares emissions from new coal plants against emissions from natural gas combined-cycle plants.<sup>56</sup> However, the proposed NSPS standard is still a blunt command-and-control regulatory tool that will not efficiently promote cross-technology comparisons. Minimum technology standards like BACT and the NSPS do not work very efficiently.<sup>57</sup> Academics have argued for decades that the "best available technology" used in the CAA and Clean Water Act (CWA) tend to have high transaction costs and result in significant and costly litigation.<sup>58</sup> These

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51. U.S. ENVTL. PROT. AGENCY, PSD AND TITLE V PERMITTING GUIDANCE FOR GREENHOUSE GASES, EPA-457/B-11-001 at 26 (Mar. 2011), available at <http://www.epa.gov/nsr/ghgdocs/ghgpermittingguidance.pdf>. The Guidance suggests that a state permitting agency *may* seek to "redefine the source" and perform cross-technology comparisons under a BACT analysis, but is not required to do so.

52. Adler, *Heat Expands*, *supra* note 23, at 444–49; see also Jonathan Adler, *Eyes on a Climate Prize: Rewarding Energy Innovation to Achieve Climate Stabilization*, 35 HARV. ENVTL. L. REV. 1, 6–7 (2011) [hereinafter Adler, *Eyes on a Climate Prize*].

53. INT'L ENERGY AGENCY, WORLD ENERGY OUTLOOK 2010 EXECUTIVE SUMMARY 12 (2010), available at <http://www.iea.org/Textbase/npsum/weo2010sum.pdf>.

54. See generally Mark Z. Jacobson & Mark A. Delucchi, *Providing All Global Energy with Wind, Water, and Solar Power, Part 1: Technologies, Energy Resources, Quantities and Areas of Infrastructure, and Materials*, 39 ENERGY POL'Y 1154 (2011).

55. BACT regulations would indirectly promote cross-technology comparisons by raising the price of electricity produced by coal plants, but because there is no comparison of the relative cost-effectiveness of using other generating resources, there is no guarantee that this effect on certain power plants would result in an efficient outcome. See Huber, *supra* note 3, at 1013.

56. See Proposed GHG NSPS Rule, *supra* note 24.

57. See Gregory E. Wannier et al., *Prevailing Academic View on Compliance Flexibility Under § 111 of the Clean Air Act 7* (Res. for the Future, Discussion Paper RFF DF 11-29, 2011).

58. See, e.g., Bruce A. Ackerman & Richard B. Stewart, *Reforming Environmental Law*, 37 STAN. L. REV. 1333, 1333 (1985).

standards also do not provide strong incentives for developing new, more environmentally friendly technologies.<sup>59</sup>

## II. ROLES FOR STATE ENERGY REGULATORS TO MITIGATE CLIMATE IMPACTS FROM NEW POWER PLANTS

In the face of the policy uncertainty and inadequacy at the federal level and the need to invest in new power plants in the next decade, states should consider enlarging the traditional role of energy regulators to address GHGs from proposed new power plants. This section explores three distinct possible roles for state energy regulators that could serve as a bridge to a national or international climate regulatory policy.

### *A. GHG Adders in Utility Regulatory Proceedings*

#### 1. The Role of Adders

Traditionally, the role of state energy regulators has been to approve the construction of new power plants that are reasonably necessary to meet expected energy demands. The rationale was to protect ratepayers against unnecessary costs from monopoly utilities. In some circumstances approval comes through proceedings where a utility filed an application to increase electricity rates on consumers, and in some states there are specialized “certificate of need” proceedings where construction of new power plants are considered either by the energy regulatory commission or a different siting board.<sup>60</sup> This regulatory authority allows state regulators the oppor-

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59. *Id.* at 1336; see also Adler, *Eyes on a Climate Prize*, *supra* note 52, at 1, 36.

60. Jim Rossi, *Transmission Siting in Deregulated Wholesale Power Markets: The Cross-Sound Cable As a Case Study of FERC's Role Under Existing Law*, 15 DUKE ENVT'L L & POL'Y F. 315, 315 (2005). The continued validity of this regulatory oversight role has been called into question as the United States has moved toward competitive markets in electricity generation. *Id.* In a truly competitive, well-functioning market that adequately addresses externalities, there would be no need for a regulator to determine when a plant was necessary and what kind of plant was appropriate to build. The price signal might adequately decide when and what kind of new generating plants should be built. Bernard S. Black & Richard J. Pierce, Jr., *The Choice Between Markets and Central Planning in Regulating the U.S. Electricity Industry*, 93 COLUM. L. REV. 1339, 1385, 1389 (1993). But the United States does not have a system where externalities such as greenhouse gases are adequately addressed, nor does it have a truly competitive electricity generation market. Pierce, *supra* note 20, at 597. In particular, the retail electricity generation market is still regulated by traditional energy regulators in many states. Pierce, *supra* note 22, at 463. There may be policy rationales for this fact—perhaps retail consumers do not possess adequate expertise to analyze electricity supply options or perhaps individual retail customers not have sufficient bargaining power to make efficient choices about electricity generation supply. David B. Spence, *Can Law Manage Competitive Energy Markets?*, 93 CORNELL L. REV. 765, 810–11 (2008); David Spence & Robert Prentice, *The Transformation of American Energy Markets and the Problem of Market*

tunity to analyze the prudence of proposed investments not just on the metric of financial cost, but on the true social cost of new generation with externalities included.

In the early 1990s, a number of states experimented with what came to be known as environmental adders. The basic concept is fairly straightforward: utility regulatory proceedings should quantitatively include the social cost of environmental externalities (as an “adder”) in the costs of power plants.<sup>61</sup> Typically these programs express the adder as a value of harm per unit of electricity generated.<sup>62</sup>

Consider a simplified example. Assume a state energy regulator has a duty to issue a certificate of need prior to a utility commencing construction on a new electric generating unit. The commission has a statutory duty to protect utility customers from unreasonable rates charged by monopoly utilities. The commission achieves this duty by approving generating options that 1) are in fact necessary to meet projected demand, and 2) have the lowest expected costs for consumers. If the expected cost of electricity from a new coal-fired generating unit is 9.5 cents per kilowatt-hour and the expected cost of electricity from a new nuclear unit is 11.5 cents per kilowatt-hour, one might expect the utility to propose, and the commission to approve, the coal-fired generating unit as the lowest cost unit. If, however, the estimated social costs posed by GHG emissions are considered as costs of electricity generation, the lowest cost option may change. Should, for example, the expected social cost of climate change risk from each kilowatt-hour of electricity be estimated to be 3 cents for a coal plant, but 0 cents per kilowatt-hour from a nuclear plant, the nuclear plant becomes the lowest cost option.

In practice, the analysis is more complicated than this simplified example suggests. Rather than a single cost figure, it is sensible for both utilities and regulators to consider a range of potential costs for a facility. The expected cost of a facility itself is dependent on a number of variables,

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*Power*, 53 B.C. L. REV. 131, 134 (2012). Or the continued existence of regulated retail electricity markets may be best explained by interest group politics—utilities are powerful players in state politics who can effectively bar reforms that would threaten their monopoly status. Pierce, *supra* note 22, at 477–79; George Stigler, *The Theory of Economic Regulation*, 2 BELL J. ECON. MGMT. 3, 3 (1971). Whatever the reason, regulated retail electricity markets continue to exist in the United States, and likely will continue to exist in the next decade.

61. Black & Pierce, *supra* note 60, at 1399–1400. Public utility commissions have a variety of regulatory powers over electric utilities. When environmental adders have been implemented in the United States, they have typically been used in proceedings either to (1) approve construction of new generating facilities, or (2) to approve long-term plans for meeting electricity demands, often through a process known as integrated resource planning. *Id.*; see also RICHARD J. PIERCE, JR. & ERNEST GELLHORN, REGULATED INDUSTRIES IN A NUTSHELL 383–84 (4th ed. 1999).

62. Black & Pierce, *supra* note 60, at 1400.

including future projected fuel prices. Fuel prices can fluctuate significantly, so costs are often projected over a variety of scenarios. The decision of what type of power plant is reasonable and prudent also includes evaluation of more than just lowest generation cost, but also improved system reliability. Accordingly, there is always some degree of qualitative analysis baked into regulatory decisions regarding whether particular power plants should be built. Future GHG prices may also be best considered over a variety of scenarios, making the analysis more complicated and subjective, but ultimately leading to a more well-informed process.

The experiment with environmental adders in the 1990s was fairly short-lived in many states. A few states adopted quantitative adders, but many other states merely incorporated environmental attributes qualitatively in regulatory proceedings.<sup>63</sup> Others, like Michigan, explicitly rejected the use of environmental adders based on reasons such as the public service commission's lack of institutional competence to evaluate environmental impacts, the perceived lack of rigorous scientific evidence linking emissions to environmental harms, and the existence of other government agencies perceived to be better suited to address environmental externalities.<sup>64</sup> In the case of Massachusetts, an attempt to use environmental adders was found to exceed the statutory authority of the utility commission.<sup>65</sup> In other states, the appeal of using environmental adders began to wane when the 1990 CAA Amendments were fully operational and the EPA's cap-and-trade program for acid rain pollutants made environmental adders for those pollutants less necessary. Throughout the 1990s and early 2000s, states shifted their attention to other policy options, such as renewable portfolio standards and "green" utility generating fleets.

GHG adders are worth reconsidering for GHG mitigation purposes. In many instances, their implementation will not require significant changes to existing regulatory processes. Many states already require a certificate of need process before allowing a utility to build a new generating facility. In some cases, GHG adders may not even require amendments to energy regulatory statutes.<sup>66</sup> It may even be possible to construe a regulatory stat-

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63. FANG & GALEN, *supra* note 14, at 35–38.

64. *Id.* at 35.

65. Mass. Elec. Co. v. Dep't of Pub. Utils., 643 N.E.2d 1029, 1033 (Mass. 1994).

66. For example, Rhode Island's Energy Facility Siting Board, which must approve new electric generating units, is directed to consider the environmental costs of new energy facilities in its approval process. R.I. GEN. LAWS ANN. §§ 42-98-2(3), 42-98-8(3), 42-98-11(3) (West 2012). The Illinois Public Utility Act provides in a legislative findings section that the goals of electricity regulation include "the protection of the environment from the adverse external costs of public utility services so that (i) environmental costs of proposed actions having a significant impact on the environment and the environmental impact of the alternatives are identified, documented, and considered in the regulatory process." 220 ILL. COMP. STAT. ANN. 5/1-102(b) (West 2012). Florida's Electrical Power Plant Siting Act

ute that does not mention environmental issues—but that directs the commission to regulate the rates of electricity service and provide general supervision of the terms and conditions of utility service—as authorizing GHG adders. It is well-recognized that rate regulation's primary intent is to achieve low costs of electricity service for consumers, but this could be conceptualized so as to allow the commission to consider all of the costs of service—including environmental costs or potential future regulatory compliance costs—under the broad term “costs”.<sup>67</sup>

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authorizes the board ruling on a power plant certification to consider whether constructing a facility will “[e]ffect a reasonable balance between the need for the facility [as determined by the Florida Public Service Commission] and the impacts upon air and water quality, fish and wildlife, water resources, and other natural resources of the state resulting from the construction and operation of the facility.” FLA. STAT. § 403.509(3)(e) (West 2012). The Florida Public Service Commission has the exclusive authority to determine whether there is a need for the proposed facility under the act. FLA. STAT. § 403.519(3) (West 2012). In 2007, the Florida Public Service Commission used this authority to deny that need existed for two coal-fired power plants, noting that the applicant had not determined it was the most cost-effective alternative available given the threat of climate regulation and uncertain coal and natural gas prices. *In re Petition for Determination of Need for Glades Power Park Units 1 and 2 Elec. Power Plants in Glades Cnty.*, by Fla. Power & Light Co., Docket No. 070098-E1, Order No. PSC-07-0557-FOF-EI, Order Den. Pet. for Determination of Need, (July 2, 2007), available at <http://www.psc.state.fl.us/library/filings/07/05350-07/05350-07.pdf>. Other states with certificate of need laws would likely need a statutory change in order to implement environmental adders. In Virginia, the State Corporation Commission, which must approve construction of new generating units, has the duty to consider the effect of the facility on the environment. If, however, the project receives an environmental permit from a state or federal agency, the Commission “shall impose no additional conditions with respect to such matters [that were governed by the permit].” VA. CODE ANN. § 56-46.1(a) (West 2012). North Dakota’s electric regulatory statue is more direct on the usage of environmental adders by the electric regulatory commission: they are flatly prohibited for proceedings regarding “planning, selection, or acquisition of electric resources.” N.D. CENT. CODE ANN. 49-02-23 (West 2012).

67. A commission engaging on this route with only broad statutory authority to regulate utilities will likely face challenges. For example, the Massachusetts Department of Public Utilities attempted to incorporate environmental externalities into a utility planning processes in the early 1990s. See generally Rudy Perkins, *Electricity Deregulation, Environmental Externalities and the Limitations of Price*, 39 B.C. L. REV. 993, 1018–21 (1998). The Massachusetts Supreme Court, in response to an appeal brought by a Massachusetts utility and the National Coal Association, determined that the department exceeded its statutory authority by implementing a system of environmental adders. Mass. Elec. Co. v. Dep’t of Pub. Utils., 643 N.E.2d 1029, 1033 (Mass. 1994). The decision was based in part on the notion that the department “does not have responsibility for the protection of the environment” but merely regulates utility rates. *Id.* at 1033. The court determined that the department could consider environmental costs so far as they were likely to result in increased actual compliance costs with existing or foreseeable environmental regulations, but did not have the authority to consider environmental externalities as costs themselves. *Id.* at 1034. The statutory analysis was fairly thin, apparently relying upon the stereotypical division of authority between energy and environmental regulators that many academic commentators have found problematic.

## 2. Criticisms of Adders

General criticisms of state energy regulators playing roles in climate change mitigation efforts are considered in Section D. Two potential criticisms specific to GHG adders are considered here.

### a. Valuation

The most significant challenge to implementing a system of GHG adders is determining the value or range of values for the social cost of GHGs. To be socially efficient, the value of a GHG adder should attempt to precisely value the social cost of the pollution addressed.<sup>68</sup> Determining this value is a difficult estimation challenge requiring a number of assumptions, making the process prone to variations in outcomes.<sup>69</sup> Perhaps the toughest hurdle is the remaining scientific uncertainty concerning the expected long-term impacts of climate change.<sup>70</sup>

The selection of a discount rate is another difficult aspect of valuing GHG externalities. A discount rate is used to discount future costs and benefits to give them a net present value today. The discount rate is particularly important because climate change plays out over a period of many decades, and a small change in the discount rate can have a huge impact on the net present value of a future harm discounted to today's prices.<sup>71</sup> More importantly, however, because climate change is an intergenerational problem, a large discount rate can be unfairly used to enrich the current generation by underestimating, and pushing back, the costs borne on future generations. Frank Ackerman and Lisa Heinzerling argue that no discount rate should be applied to future climate change harms because of these intergenerational effects.<sup>72</sup> However, some discounting to account for ex-

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68. Calabresi, *supra* note 21.

69. PIERCE & GELLHORN, *supra* note 61, at 384.

70. See IPCC SYNTHESIS REPORT, *supra* note 6, at 72–73.

71. Michael Greenstone et al., *Estimating the Social Cost of Carbon for Use in U.S. Federal Rulemakings: A Summary and Interpretation* 11–12 (MIT Ctr. for Energy & Envtl. Policy Research, Working Paper No. 2011-006, 2011). Discount rates could be determined by either “descriptive” or “prescriptive” approaches. *Id.* at 12, 15. Descriptive approaches attempt to discern discount rates from observations of actual human behavior (either through experimentation or by implication). *Id.* at 12. Prescriptive approaches, rather than looking to outside evidence to select a discount rate, instead attempt to explicitly include normative approaches regarding how to weigh future costs against future benefits. *Id.* Descriptive approaches have been more widely used in cost-benefit analyses in the United States. Descriptive approaches are probably not appropriate for discounting climate change risks. There is significant evidence that humans do not rationally value future risks against current costs in their actual behavior. See ANNUAL ENERGY OUTLOOK 2012, *supra* note 17, at 20–24.

72. Frank Ackerman & Lisa Heinzerling, *Pricing the Priceless: Cost-Benefit Analysis of Environmental Protection*, 150 U. PA. L. REV. 1553, 1570–71 (2002).

pected inflation over a period of decades is probably appropriate when comparing costs today with benefits in future decades.

A third valuation issue is determining the geographic scope of the impacts considered. Some states may consider only valuing expected climate change impacts within the borders of the state itself. This would be problematic: to efficiently internalize the costs of global externality, the proper scale should be to consider the expected global impacts. Otherwise, energy regulators are allowing ratepayers to externalize the costs of their consumption onto others.<sup>73</sup> Moreover, to the extent adders are implemented as financial risk mitigation measures, they should attempt to value expected compliance costs of national or international GHG regulations. If future regulations are well designed, they should more closely track global externality costs than any state-specific costs. Additionally, because there is already an extensive scientific and economic literature regarding worldwide valuation, state regulators can reduce their administrative burdens by adopting these measures rather than engaging in costly state-specific valuation proceedings.

Another valuation challenge is that state energy regulators may have little institutional competence in valuing GHG externalities.<sup>74</sup> While this is an obstacle, there is also an obvious remedy. Commissions can hire expert staff or consultants to fill this competency gap. And though many states are facing difficult budget deficits,<sup>75</sup> public utilities commissions often remain insulated from state budget crises since many are not funded by state taxes, but by charges to regulated utilities.<sup>76</sup>

Because of the valuation difficulties, public utility commissions that implemented environmental adders in the 1990s often used a shortcut. Rather than trying to estimate the actual value of the social cost, they instead calculated the adder based on the marginal cost of complying with existing environmental command-and-control regulations.<sup>77</sup> This is a poor methodology for valuing social cost; it attempts to determine a value

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73. Climate change may actually be perceived as net beneficial to certain states. Some cold-weather regions may experience extended agricultural growing seasons, reduced home heating needs, or increased tourism seasons. Other regions with access to water may find themselves with valuable natural resources in a water-constrained world. The potential for this analysis offers a hook for emissions-intensive interest groups to argue that a particular state's adder should be reduced. This is yet another reason why states implementing adders should use a global externality value.

74. Black & Pierce, *supra* note 60, at 1428.

75. STEPHEN C. FEHR ET AL., THE PEW CTR. ON THE STATES, STATE OF THE STATES: HOW THE RECESSION MIGHT CHANGE STATES 2 (Diane Fancher et al. eds., 2010), available at [http://www.pewstates.org/uploadedFiles/PCS\\_Assets/2010/2010\\_State%20of%20the%20States\\_web.pdf](http://www.pewstates.org/uploadedFiles/PCS_Assets/2010/2010_State%20of%20the%20States_web.pdf).

76. See, e.g., MICH. COMP. LAWS 460.112 (2009).

77. Black & Pierce, *supra* note 60, at 1420.

through a strained, circular assumption. As Kip Viscusi has pointed out, our regulatory regimes often bear little resemblance to a reasoned economic analysis of risk avoidance.<sup>78</sup> Despite the difficulties, regulators using environmental adders should attempt to base them on the estimated social cost of pollution, not the costs of required pollution controls.

Due to climate change's complicated effects, regulators will never have complete certainty regarding its expected impacts. However, it is clear that there is *some* risk caused by climate change, and policymakers can at least begin to attempt to estimate the costs of its implications.

Despite the difficulties of valuing GHG externalities for adder programs, the same valuation problems arise when trying to determine the proper level of a carbon price, and a similar problem arises when trying to determine the appropriate cap in a cap-and-trade regime. Public utility commissions with a staff of trained economists who hear expert testimony may be more likely than Congress to accurately value the externalities of GHGs. The commission process in most states is often less politicized and more technocratic than a legislative process—though it is certainly not free from politics and there always remains a risk of regulatory capture.

The valuation of GHG externalities will likely continue to improve as policymakers gain more scientific understanding about the likely impacts of climate change. If implemented, GHG adders should adjust accordingly with the current best scientific and economic analyses. Indeed, the implementation of state GHG adders would likely aid in the progression of valuation techniques. By deeply diving into the valuation methodologies in contested case hearings with real consequences, states might be able to discern best practices that would inform future national or international carbon pricing efforts.

Finally, because of the many variables in valuing GHG externalities, different state energy regulators could have wide variations. This multi-variability could result in heightened regulatory uncertainty regarding how GHGs will be—and should be—treated in the United States. To help mitigate this issue, collaborative federalism might serve a useful role.<sup>79</sup> Even if the federal government is politically unable to implement a carbon price, the expertise of its economists at various agencies and national laboratories could collaborate to create a consensus and peer-reviewed methodology for valuing GHG externalities. State energy regulators could still hear evi-

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78. See Kip Viscusi & Ted Gayer, *Safety at Any Price?*, 25 REGULATION 54, 58 (2002), available at <http://www.cato.org/pubs/regulation/regv25n3/v25n3-12.pdf>.

79. Cf. Hari Osofsky, *Diagonal Federalism and Climate Change: Implications for the Obama Administration*, 62 ALA. L. REV. 237, 290–92 (2011) (suggesting that the Obama Administration consider policies that enable state and local governments to take action on GHG mitigation in the transportation sector by means such as technical assistance and grants).

dence and make their own decisions about the proper figure, but they would likely give great deference to such a consensus.

This process has already begun. In 2010, the United States government established an interagency working group composed of federal regulators to fix a dollar value to the social cost of CO<sub>2</sub> emission. The exercise resulted net present values per ton of CO<sub>2</sub> of \$5, \$21, \$35, based on the use of different discount rates, and a sensitivity analysis of \$65 a ton.<sup>80</sup> The \$65 value represents a potential high cost scenario; the difference in the first three values is primarily attributable to the use of different discount rates.

### b. Enforcement

Unlike emissions taxes, which give power producers continuing incentive to reduce emissions, environmental adders do not provide the same incentive to reduce emissions once approval is granted.<sup>81</sup> Critics of GHG adders therefore claim that producers will keep emissions at the estimated amount only if regulators exercise vigorous oversight.<sup>82</sup> Given the strict GHG reporting requirements already mandated by federal law,<sup>83</sup> this regulatory oversight should not be difficult or costly to achieve. Initial approvals of the plant should be made contingent on operating within the estimated emissions targets, with appropriate penalties and enforcement mechanisms for exceeding the projections.

Moreover, the assertion that enforcement will prove costly and difficult seems to presume that individual power plant operators have the ability to significantly alter the plant's emissions profile. This seems unlikely given the relatively static technological attributes of individual electric generating facilities. To put it another way, a natural gas plant is not suddenly going to start burning coal and double its expected emissions. Such a change would require massive capital changes to the plant.<sup>84</sup> For example, the primary

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80. U.S. GOV'T INTERAGENCY WORKING GRP. ON SOC. COST OF CARBON, TECHNICAL SUPPORT DOCUMENT: SOCIAL COST OF CARBON FOR REGULATORY IMPACT ANALYSIS UNDER EXECUTIVE ORDER 12,866 at 3 (2010), available at <http://www.whitehouse.gov/sites/default/files/omb/inforeg/for-agencies/Social-Cost-of-Carbon-for-RIA.pdf>.

81. Black & Pierce, *supra* note 60, at 1405.

82. *Id.*

83. Mandatory Reporting of Greenhouse Gases, 74 Fed. Reg. 56,260 (Oct. 30, 2009).

84. ASPEN ENVTL. GRP., IMPLICATIONS OF GREATER RELIANCE ON NATURAL GAS FOR ELECTRICITY GENERATION 4 (2010), available at <http://www.publicpower.org/files/PDFs/ImplicationsOfGreaterRelianceOnNGforElectricityGeneration.pdf> ("Aspen's research uncovers no instances of coal plant retrofits to natural gas and, in fact, virtually all of the public references to conversion of coal to natural gas or repowering turn out instead to be replacements. The reason is economics. Even the U.S. Government Accountability Office (GAO), when it looked at . . . switching the Capitol Building power plant to natural gas, noted that not only was switching all U.S. coal-fired generation infeasible due the gas supply and infrastructure required, but that it would be more cost-effective to construct new

measures that an individual coal-fired plant can take to vary its emissions profile depend on fundamental plant design—either improving the electrical efficiency of the generation or adding on a carbon capture and sequestration component.<sup>85</sup> These are not things that are altered easily, cheaply, or discreetly. There may be some emissions changes that can be obtained by choosing different types of fuel sources, but the differences do not seem as dramatic for GHG emissions as they are for sulfur dioxide emissions, which can be significantly lowered by burning coal with a low sulfur content.<sup>86</sup> Marginal changes to fuel type are not likely to produce dramatic changes in GHG emissions profiles.

Finally, even if such gaming were possible and even if enforcement oversight were relatively lax, it could still be deterred by imposing significant fines in the event of gaming. The penalty should be set at the estimated social cost of carbon, which would allow it to simulate a carbon tax if a utility seeks to exceed its projected GHG emissions. Enforcement mechanisms would also be required to effectively implement cap-and-trade mechanisms or carbon taxes. While a national enforcement agency may have economies of scale over a state enforcement agency, the need for enforcement is not a convincing reason to refuse to implement a GHG adder scheme altogether.

### *B. Participation in Clean Air Act Permitting Proceedings*

If states do not enable energy regulators to play a role in considering GHG externalities when approving new generation in the standard energy regulatory proceedings, energy regulators may find a role in environmental regulatory proceedings. While state environmental regulators are not required to make cross-technology comparisons as part of the BACT permitting process under the CAA, they do have discretion to require such

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gas-fired units than to retrofit existing coal-fired units to burn natural gas.”). A price on carbon might affect the decision whether to run an individual coal plant or another form of electricity generation such as a natural gas plant. But these dispatch decisions take place once the decision to build the facilities have already been made and the capital to build them is already spent. GHG adders attempt to impact the generation decision prior to the expenditure of upfront capital.

85. OFFICE OF AIR QUALITY PLANNING & STANDARDS, U.S. ENVTL. PROT. AGENCY, AVAILABLE AND EMERGING TECHNOLOGIES FOR REDUCING GREENHOUSE GAS EMISSIONS FROM COAL-FIRED ELECTRIC GENERATING UNITS 25 (2010), available at <http://www.epa.gov/nsr/ghgdocs/electricgeneration.pdf>

86. *Compare id.* at 20 (explaining that average carbon dioxide emissions vary approximately 10%—from 205.3 to 227.4 pounds per million BTU—among the four major U.S. coal varieties) *with* U.S. ENERGY INFO. ADMIN., ANNUAL ENERGY OUTLOOK 2002 WITH PROJECTIONS TO 2020, MARKET TRENDS—COAL, available at <http://www.eia.gov/aoe/archive/aoe02/coal.html> (explaining that use of low sulfur coal can reduce average SO<sub>2</sub> emissions by 85%).

comparisons.<sup>87</sup> Environmental regulators also have authority to consider a “no build” alternative before permitting a new source of air pollution.<sup>88</sup> State environmental regulators who wish to exercise this discretion may seek to require two distinct conditions before issuing an air permit for a new electric generating facility: first, whether there is truly a need for the new power plant and, second, whether the proposed generation technology best meets that need in a manner that mitigates climate change risk. State energy regulators could play a key role in analyzing these questions. Their expertise in determining need and analyzing the prudence of investments in power plants could play a helpful role in assisting state environmental regulators in their air permitting decisions. For example, energy regulators could implement a GHG adder system to analyze different generation options.

State and federal permitting authorities have rarely used the CAA to compare cross-technology alternatives. One noticeable exception occurred recently in Michigan, where Governor Jennifer Granholm relied on this authority to issue an executive directive requiring an alternatives analysis to be completed during CAA permitting for new coal-fired plants.<sup>89</sup> Granholm directed the Michigan environmental agency to consider whether a need existed for the electricity provided by the proposed plant.<sup>90</sup> She

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87. U.S. ENVTL. PROT. AGENCY, PSD AND TITLE V PERMITTING GUIDANCE FOR GREENHOUSE GASES, EPA-457/B-11-001 at 26–27 (2011), available at <http://www.epa.gov/nsr/ghgdocs/ghgpermittingguidance.pdf>.

88. Before a permit may be granted, interested persons are allowed to “submit written or oral presentations on the air quality impact of such source, alternatives thereto, control technology requirements, and other appropriate considerations.” 42 U.S.C. § 7475(a)(2) (2006). Accordingly, commenters can and often do suggest that the plant not be built at all, but the demand be met instead by conservation, using existing resources, or other alternatives such as using alternative electric generating sources. The CAA itself provides no guidance on whether and how a permitting agency should evaluate these comments. Under the Administrative Procedure Act, however, an agency’s decisionmaking must not be arbitrary or capricious, which some Supreme Court precedent has suggested entails some level of reasonability in decisionmaking. *See, e.g.*, Motor Vehicles Mfrs. Ass’n v. State Farm Mut. Auto. Ins. Co., 463 U.S. 29, 43 (1983) (“Normally, an agency rule would be arbitrary and capricious if the agency has relied on factors which Congress has not intended it to consider, entirely failed to consider an important aspect of the problem, offered an explanation for its decision that runs counter to the evidence before the agency, or is so implausible that it could not be ascribed to a difference in view or the product of agency expertise.”). Presumably an agency which is required to “consider” alternatives to a proposed power plant in the permitting process would have the authority to make determinations of whether the permit should be granted or not based on those alternatives. This could open the door for cross-technology comparisons or a “no build” alternative in the CAA permitting process.

89. Mich. Exec. Directive No. 2009-2 (Feb. 3, 2009), available at <http://www.michigan.gov/granholm/0,4587,7-168-36898-208125--,00.html>. The Executive Directive also noted that a provision of Michigan state law required consideration of feasible and prudent alternatives prior to administrative actions that may result in pollution.

90. *Id.*

further ordered the agency to deny a permit application to a coal-fired power plant if it determined, with the assistance of the Michigan Public Service Commission, "that a feasible and prudent alternative to the construction of a new proposed coal-fired electricity generating plant exists consistent with the reasonable requirements of the public health, safety, and welfare that would better protect the air, water, and other natural resources of this state."<sup>91</sup> This directive resulted in Michigan Public Service Commission proceedings that analyzed both the need for the electricity and alternative generation technologies.<sup>92</sup>

Relying primarily on the analyses that the need for the facilities was not adequately demonstrated, the Michigan environmental agency denied the permit applications for two coal-fired power plants in 2010.<sup>93</sup> The agency also granted a permit for another coal-fired power plant on the explicit condition that a significant quantity of existing coal-fired electricity generation be retired.<sup>94</sup> The permit denials were challenged in two Michigan trial courts. Both courts found the denials based on need for the facilities to be unlawful.<sup>95</sup> Appeals are currently pending.

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91. *Id.*

92. Mich. Pub. Serv. Comm'n Staff Rep., Docket No. U-15996, Consumers Energy Electric Generation Alternatives Analysis for Proposed Permit to Install (PTI) No. 341-07 for an Advanced Supercritical Pulverized Coal Boiler at the Karn-Weadock Generating Station, Essexville, Mich. (Sept. 8, 2009), <http://efile.mpsc.state.mi.us/efile/docs/15996/0190.pdf>; Mich. Pub. Serv. Comm'n Staff Rep., Docket No. U-16000, Wolverine Power Cooperative Electric Generation Alternatives Analysis for Proposed Permit to Install (PTI) No. 317-07 for Circulating Fluidized Bed Coal Boilers at Rogers City, Mich. (Sept. 8, 2009), <http://efile.mpsc.state.mi.us/efile/docs/16000/0144.pdf>; Mich. Pub. Serv. Comm'n Staff Rep., Docket No. U-16077, Holland Board of Public Works Electric Generation Alternatives Analysis for Proposed Permit to Install (PTI) No. 25-07 for Circulating Fluidized Bed Coal Boiler in Holland, Mich. (July 7, 2010), <http://efile.mpsc.state.mi.us/efile/docs/16077/0077.pdf>.

93. Letter from G. Vinson Hellwig, Chief, Mich. Dept. of Envtl. Quality, to Brian L. Warner, Wolverine Power Supply Coop. (May 21, 2010), available at <http://www.deq.state.mi.us/aps/downloads/permits/pubnotice/317-07/DenialLtr.pdf>; Letter from G. Vinson Hellwig, Chief, Mich. Dept. of Envtl. Quality, to David G. Koster, Power Res. Dir., Holland Bd. of Pub. Works (Aug. 20, 2010), available at <http://www.deq.state.mi.us/aps/downloads/permits/PubNotice/25-07/25-07DenialLtr.pdf>.

94. Letter from G. Vinson Hellwig, Chief, Mich. Dept. of Envtl. Quality, to Steven T. Wawro, Manager, Next Generation (Dec. 29, 2009), available at <http://www.deq.state.mi.us/aps/downloads/permits/pubnotice/341-07/341-07CoLtr.pdf>; Michigan Department of Environmental Quality, Permit to Install No. 341-07, Appendix D, Coal-Fired Power Plant Retirement Plan and Schedule Agreement 73-74, available at [http://www.deq.state.mi.us/aps/downloads/permits/pubnotice/341-07/341-07\\_Rev1.pdf](http://www.deq.state.mi.us/aps/downloads/permits/pubnotice/341-07/341-07_Rev1.pdf). This permit has subsequently been voided by request of the permitted utility, which has abandoned plans to build the plant. Letter from Sue Thelen, Permit Section, Dept. of Envtl. Quality, to Rajesh Swaminathan, Consumers Energy (Dec. 5, 2011) (on file with author).

95. Wolverine Power Supply Coop., Inc. v. Mich. Dep't of Natural Res. & Env't, No. 10-7686-CE (Missaukee Cnty. Cir. Ct. Jan. 28, 2011) (on file with author); City of Holland

Granholm's policy was highly visible and became quite politicized in Michigan. The Michigan Attorney General accused the Governor of acting unlawfully.<sup>96</sup> The Speaker of the Michigan House of Representatives, a member of the Governor's political party, was sharply critical of the policy.<sup>97</sup> Seventy-four members of the 110-member House signed a petition asking the Governor to rescind the directive.<sup>98</sup> Much of the criticism of the directive focused on the alleged loss of construction jobs that would have been created by construction of new coal-fired power plants.<sup>99</sup> At the request of Granholm, the Michigan Public Service Commission estimated that the construction of one of the plants whose permit was denied under the policy would have resulted in a massive rate increase for customers.<sup>100</sup> In 2011, under a new gubernatorial administration, the Michigan environmental agency issued permits for both of the previously denied proposed coal plants.<sup>101</sup>

### *C. Regulator Selection of Generating Technology*

A third potential role for state energy regulators would be a fairly substantial departure from the traditional energy regulatory model. States could shift the responsibility for selecting the generation resources from regulated utilities to the regulator. Anthony White, a former member of the United Kingdom's National Grid Executive Committee and a current advisor to institutions that finance energy projects, has recently suggested that the United Kingdom reorient its electricity regulatory policy in this manner

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v. Mich. Dep't of Natural Res. & Env't, No. 10-002031-AA (Ottawa Cnty. Cir. Ct. Dec. 15, 2010) (on file with author).

96. Mich. Op. Att'y Gen. 7224 (2009) available at <http://www.ag.state.mi.us/opinion/datafiles/2000s/op10301.htm>.

97. Gongwer News Serv., *Coal Fired Fury: Did Gov. Granholm's Stance on Power Plants Ignite Speaker Dillon's Independence*, DOME MAG. (Oct. 9, 2009), <http://domemagazine.com/blogs/wu100909>.

98. *Harding: DEQ Should Not Be Involved In Energy Policy or Regulation*, DOWAGIAC NEWS (Mar. 27, 2009), <http://www.dowagiacnews.com/2009/03/27/harding-deq-should-not-be-involved-in-energy-policy-or-regulation/>.

99. *See id.*

100. Letter from Orjiakor Isiogu, Chairman, Mich. Pub. Serv. Comm'n, to Jennifer Granholm, Governor of Mich. (May 21, 2010), available at <http://www.deq.state.mi.us/aps/downloads/permits/pubnotice/317-07/PSCNotificationLtrtoGov.pdf>.

101. Letter from G. Vinson Hellwig, Chief, Mich. Dept. of Envtl. Quality, to Brian L. Warner, Wolverine Power Supply Coop. (June 29, 2011), available at <http://www.deq.state.mi.us/aps/downloads/permits/PubNotice/317-07/Remand/317-07ApLtr.pdf>; Letter from G. Vinson Hellwig, Chief, Mich. Dept. of Envtl. Quality, to David G. Koster, Power Res. Dir., Holland Bd. of Pub. Works (Feb. 11, 2011), <http://www.deq.state.mi.us/aps/downloads/permits/PubNotice/25-07/25-07ApLtr.pdf>.

to mitigate the risk of climate change.<sup>102</sup> White's proposal is notable because he had previously been a strong proponent of electricity competition in the United Kingdom. However, he now suggests that government regulators should play a much more active role in choosing new generation facilities in order to deal with climate risk.

White proposes that a competitive wholesale electricity market is unlikely to produce the investments needed to dramatically reduce GHG emissions in the United Kingdom despite the country's participation in the European Union's GHG cap-and-trade regulation and its own domestic renewable energy mandate.<sup>103</sup> White argues that competitive electricity generation markets do not necessarily always produce the lowest cost generation solution; rather, he believes that markets often produce the most financeable solution.<sup>104</sup> And the most financeable option is usually that which has already been financed, i.e., relying on technologies that are already widely used.<sup>105</sup>

The most financeable electricity generation technology is currently natural gas-fired plants, which have relatively low initial capital costs and short construction times.<sup>106</sup> Accordingly, natural gas has accounted for a large portion of the generating capacity built in the United Kingdom since the country moved to a competitive wholesale market.<sup>107</sup> Likewise, natural gas-fired generation has comprised 81% of the total U.S. generating capacity additions in the past decade.<sup>108</sup> This trend appeared even before the massive reductions in natural gas prices in recent years. Most of the remaining power generating units built in the last decade were wind turbines, which are financeable because they are the lowest cost option in the segregated renewable energy market created by state renewable energy mandates.<sup>109</sup>

From a GHG mitigation standpoint, the increase in natural gas-fired generation is beneficial in the short-term. Natural gas-fired generation

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102. Anthony White, *Is Our Power Market Fit for Purpose?*, Remarks to the U.K. Energy and Utilities Forum Event: Copenhagen, Carbon Floors and the Single Buyer (Nov. 3, 2009).

103. *Id.* at 3.

104. *Id.*

105. *Id.*

106. Jim Watson, *The Technology that Drove the 'Dash for Gas'*, 11 POWER ENGINEERING J. 11, 16 (1997); see U.S. ENERGY INFO. ADMIN., LEVELIZED COST OF NEW GENERATION RESOURCES IN THE ANNUAL ENERGY OUTLOOK 2012 at 4 (July 2012) [hereinafter LEVELIZED COST], available at [http://www.eia.gov/forecasts/aoe/electricity\\_generation.cfm](http://www.eia.gov/forecasts/aoe/electricity_generation.cfm).

107. Watson, *supra* note 106, at 11.

108. *Most Electric Generating Capacity Additions in the Last Decade Were Natural Gas-Fired*, U.S. ENERGY INFO. ADMIN. (July 5, 2011), <http://www.eia.gov/todayinenergy/detail.cfm?id=2070>.

109. See *Renewable and Alternative Fuels: Wind*, U.S. ENERGY INFO. ADMIN. (Jan. 2011), <http://www.eia.gov/cneaf/solar.renewables/page/wind/wind.html>.

produces an estimated 50% of the carbon dioxide per unit of electricity when compared with coal-fired generation.<sup>110</sup> Yet regardless of the short-term benefits of natural gas, in order to successfully mitigate the long-term risk of climate change, the electricity generation sector must dramatically reduce its GHG emissions.<sup>111</sup> Building traditional natural gas-fired facilities for the next forty years will not successfully achieve these goals. Zero-carbon electric generating options—such as fossil fuel plants with carbon capture and sequestration technologies or nuclear power plants—tend to be capital-intensive and have long lead times.<sup>112</sup> Other zero-carbon technologies—like wind and solar farms—do not have long lead times but remain capital-intensive investments.<sup>113</sup>

White believes that the current electricity markets are unlikely to produce enough financeable large zero-carbon generation projects, even with a carbon price and renewable energy mandate. Accordingly, he proposes that the United Kingdom move to a “single buyer” system to procure new electric generating units.<sup>114</sup> The government would specify the type of generation sought and use a competitive bidding process to determine the builder and owner of the power plant. The systems would still be privately owned, but would sell power to U.K. distribution utilities through periodic auctions. The government “buyer” would actually not own or operate plants, but merely direct the type of generation to be built.<sup>115</sup>

The United Kingdom, which has a national electricity regulatory system, could more easily implement such a system nationally than the United States.<sup>116</sup> Creating a national single buyer system in the United States would require a dramatic shift in energy regulatory authority from states to

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110. *Natural Gas*, U.S. ENVTL. PROTECTION AGENCY, <http://epa.gov/cleanenergy/energy-and-you/affect/natural-gas.html> (last updated Oct. 17, 2012). However, there have been recent suggestions that natural gas emitted during the fuel's extraction process—the so-called “fugitive” emissions—may significantly reduce its positive greenhouse profile. Natural gas is composed primarily of methane gas, which is itself a greenhouse gas that has a much greater global warming potential than carbon dioxide does. See Robert W. Howarth et al., *Methane and the Greenhouse-Gas Footprint of Natural Gas from Shale Formations: A Letter*, 106 CLIMATIC CHANGE 679, 679–80 (2011). But see Lawrence M Cathles III et al., *A Commentary on “The Greenhouse-Gas Footprint of Natural Gas in Shale Formations” by R.W. Howarth, R. Santoro, and Anthony Ingraffea*, 113 CLIMATIC CHANGE 525, 525–35 (2012).

111. See *supra* text accompanying notes 51–53, 102–105.

112. White, *supra* note 102.

113. Solar and wind farms have maintenance costs, but have no ongoing fuel costs, unlike fossil fuel facilities. See LEVELIZED COST, *supra* note 106.

114. White, *supra* note 102.

115. *Id.*

116. *About Us*, OFF. GAS & ELECTRICITY MARKETS, <http://www.ofgem.gov.uk/About%20us/Pages/AboutUsPage.aspx> (last visited Oct. 30, 2012).

the federal government.<sup>117</sup> An individual U.S. state, however, could begin to implement a system of direct government choice over generation technology. Such a change would be quite complicated and politically controversial. It is beyond the scope of this Article to consider all of the possible implementation challenges with such a reform, but a brief sketch of the possible benefits and challenges follows.

### 1. Implementation Options

There are a number of variations of White's proposal that might be implemented by a U.S. state. First, a state could decide to require incumbent utilities to divest themselves from their current electric generating assets and rely solely on purchased power contracts that result from a competitive bidding process directed by government regulators.<sup>118</sup> If generation were divested, the distribution of electricity, which most economists acknowledge is a natural monopoly warranting regulation, could remain regulated by traditional methods.<sup>119</sup> Electricity generation, which most economists believe is not a natural monopoly, would then become subject to the competitive bidding system.<sup>120</sup> When the state energy regulator determined that new generating capacity was necessary to serve consumer demands, it could require utilities to enter into a long-term power purchase agreement with a new generator, using technology selected by the regulator.<sup>121</sup> The construction of the new facility could even be financed by a state authority using government bonds.

A state could also allow utilities to maintain ownership of their existing assets, but require that all electricity supply be competitively bid, subject to restraints set by the regulators. The regulated utility could submit bids to provide new generation. Competitive bidding best practices might be borrowed from government or private sector contracting to ensure that the incumbent utilities maintained incentives to produce electricity efficiently

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117. Indeed, it may likely be more politically feasible for the United States to pass a cap-and-trade system than to implement a national system of wholesale power regulation.

118. This method could avoid constitutional takings problems if the utilities would divest their holdings through a market process that would compensate utility shareholders for the fair market value of their assets. Requiring the sale of assets might be a boon for utility shareholders if they are allowed to recover a sale value for older assets that have already been fully or mostly paid for by utility rates. It may, however, result in increased electricity prices for customers if market electricity prices are greater than regulated costs of service.

119. See PIERCE & GELLHORN, *supra* note 61, at 9.

120. See *id.* at 51–52.

121. This could be done on an individual utility basis, or, in states with more than one regulated utility, could be accomplished with a multi-utility power purchasing pool.

and at low cost.<sup>122</sup> Long-term power purchase agreements could be carefully drafted to ensure proper incentives for efficient delivery of electricity.<sup>123</sup> Government-directed competitive bidding proceedings for electricity generation have already been widely and successfully used in the United States.<sup>124</sup>

In addition to deciding whether incumbent utilities maintain *any* generating capacity, state energy regulators would also need to decide how specific the bidding parameters would be. One method is for the energy regulator to choose the needed electricity capacity and an environmental profile for electricity generation, but leave the choice of the technology to the bidding process (i.e., “build 1,000 megawatts of power with fewer than X greenhouse gas emissions per kilowatt-hour”). This method would allow the most competition among different technologies, but still require potentially costly monitoring of generation to ensure compliance.

Alternatively, the energy regulator could select the capacity and actual technology to be used (i.e., “build a 1,000 megawatt nuclear plant”). In this scenario the market participants would still compete over price factors such as the location and operational design of the power source. Choosing a type of generation may reduce the need to monitor GHG emissions after construction. It also may minimize the precise importance of the GHG valuation problem by instead simply selecting a technology with minimal GHG emissions. This method would also allow the regulator to consider the attributes of different energy technologies to manage the system’s reliability needs. For example, perhaps due to the retirement of a number of older coal plants, the energy regulator may determine that a dispatchable “baseload” plant is necessary to meet customer demands.

The energy regulator could also decide the location of the generation (i.e., “build a 1,000 megawatt offshore wind farm plant in this exact location”). Such direction would allow the government to take account of the localized environmental and aesthetic impacts that are often contentious in the siting of electricity generation. It would also allow for a more nuanced analysis of the impact on the reliability of the electricity grid and necessary

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122. For example, states might consider reverse auction mechanisms to discover the lowest prices that the market could bear to produce electricity.

123. One manner of requiring competitive power supply might be to require regulated utilities to use the competitive day-ahead markets for all of their power sales. Because this option does not offer long-term price certainty, however, this would probably not be a preferable option. California’s attempts at harnessing competitive electricity markets failed in part because they made just such a requirement. Spence, *supra* note 4, at 437–39.

124. Paul L. Joskow, *Regulatory Failure, Regulatory Reform, and Structural Change in the Electrical Power Industry*, in BROOKINGS PAPERS ON ECONOMIC ACTIVITY: MICROECONOMICS 1989 at 125, 176–78 (Martin Neil Baily & Clifford Winston eds., 1989).

transmission or distribution upgrades.<sup>125</sup> In general, however, the more constraints the government places on the available options, the less likely there will be a substantial range of options and prices in the competitive bidding process.

Under this system, an energy regulator could attempt to consider other environmental externalities in addition to GHGs, or it could simply use this method to focus on GHGs. Either way, a winning bidder would still need to comply with existing federal regulations by obtaining any permits required by the EPA or the Nuclear Regulatory Commission. Thus, state energy regulators need not consider every potential environmental externality when setting bid parameters. The more externalities considered, the more complex and subjective setting the bid criteria becomes. The process could ultimately become unwieldy.<sup>126</sup> If an energy regulator deemed other environmental externalities were sufficiently mitigated by traditional environmental regulation, it might focus primarily on the tradeoffs involved in climate change mitigation.

## 2. Potential Benefits

A move to competitive bidding for generation would continue the trend of opening electricity generation to more market competition, which is an efficient manner of allocating resources.<sup>127</sup> Deciding on new electricity generation is a complex balancing act that includes a number of tradeoffs. All methods of electricity generation, including methods that use renewable fuels, result in some type of environmental harm.<sup>128</sup> Markets may not be effective at resolving these difficult tradeoffs—even with environmental

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125. So long as the state does not restrict potential bidders to firms within the state, choosing a location within the state should not violate the Dormant Commerce Clause. See *infra* text accompanying notes 234–249.

126. Indeed, environmental impacts occur throughout the value chain of the electricity production process—from coal mining and transport to coal ash disposal. Attempting to consider and evaluate all of these holistically is a difficult undertaking.

127. The new market for electricity supply, like every market, would have its outer bounds defined by the government. There is no such thing as a completely free market. Markets are always constrained by the background rules created and enforced by the government. In the United States, these typically have been the common law doctrines of tort, contract, and property, together with state and federal statutes and agency regulations. The market itself is a tool—a means to an end—which may be the promotion of efficiency or the promotion of freedom so long as it does not impact the freedom of others. Setting the parameters of what we as a society are willing to buy and sell is completely appropriate in a market-based system, *See generally* Joseph Singer, *Things That We Would Like to Take for Granted: Minimum Standards for the Legal Framework of a Free and Democratic Society*, 2 HARV. L. & POL'Y REV. 139 (2008).

128. Wildermuth, *supra* note 1, at 375–79.

taxes or GHG adders—because ultimately it is incredibly difficult to place a specific monetary value on environmental externalities.<sup>129</sup>

The competitive bidding model could also be used to effectuate a more comprehensive merger of the energy and environmental regulatory systems in the electricity sector. As Peter Huber has described, the traditional regulatory model for new generating units involves a maze of required permits where many different agencies can say no, but no individual agency can say yes.<sup>130</sup> Rather than having one government decisionmaker squarely confront the full range of trade-offs involved in any decision to build new generating capacity, the current system has a number of disparate permitting requirements, focused variously on water usage, air emissions, waste disposal, cost to consumers, etc.<sup>131</sup> Ultimately an investor-owned utility company proposing a new generating plant is concerned with maximizing shareholder profits and will therefore attempt to run the regulatory gauntlet by choosing the type of facility most likely to garner approval. But this does not mean the utility is making an optimized choice that best serves the public interest. Indeed, this fractured and uncoordinated regulatory process creates significant transaction costs and incoherent policies.<sup>132</sup> As Huber puts it:

A regulatory system that makes choices through sheer inertia, bureaucratic complexity, and failure to coordinate will move in preferred directions only by blind luck. Whatever regulatory solutions policymakers may individually favor, progressive environmental management demands affirmative regulatory supervision.

The final irony is that under the most paralyzed of all possible regulatory systems, only the regulatees have any real power to choose among different generation or conservation technologies. That they may do so by following the path of least regulatory resistance rather than the path of greatest safety or environmental protection should come as no surprise: one major justification for regulation in the first place was that utilities lack appropriate incentive to police themselves. And even if a utility is environmentally conscious and well-intentioned, it is powerless to implement its agenda unless it can win approval from the regulatory system.<sup>133</sup>

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129. See *supra* text accompanying notes 74–80; see also Joseph P. Tomain, “Our Generation’s Sputnik Moment”: *Regulating Energy Innovation*, 31 UTAH ENVTL. L. REV. 389, 395–96 (2011).

130. Huber, *supra* note 3, at 1024–25.

131. *Id.* at 1003.

132. *Id.*

133. *Id.* at 1053.

Centralized regulation in environmental areas, as Huber points out, is needed not only to address externalities but also to “consent to some risks and environmental effects and to reject others in light of the best available assessment of the aggregate public interest.”<sup>134</sup> While there will no doubt be significant disagreement over what types of generation actually best serve the public interest, it may be better to squarely face that question than to use the currently fractured system of regulatory approval.<sup>135</sup>

It might be preferable to have a system that streamlines all regulation of utility plant siting into one uniform approval and selection process, *ex ante*, and then relies on private markets to provide the lowest cost of supply.<sup>136</sup> Rather than enduring the transaction costs of multiple permitting processes (including creating taxes or emissions rights), a single regulatory body could decide which type of generation is most prudent and allow markets to attain the lowest feasible price. The significant environmental impacts associated with electricity generation may be better considered by a government regulator—ultimately accountable to the public—making a thoughtful affirmative decision about what type of generation is appropriate than by a private corporation—ultimately accountable to the profit motivation of shareholders—making a decision about generation based on compliance with a myriad of cost-imposing regulations.

While this system would make the government more responsible for energy choices, it may in some ways reduce the amount of government oversight of the electricity industry. The existing energy and environmental regulatory frameworks already set significant parameters on new generating resources.<sup>137</sup> Consolidating the regulatory process into as few proceedings as possible could have a number of positive effects. First, it may significantly reduce the transaction costs of the existing regulatory process—both in the permit processing and in terms of environmental monitoring and compliance. Second, it would potentially result in enhanced regulatory certainty in a system with large amounts of regulatory risk. This could in turn make it easier to finance and build new electricity generation. Finally, it might reach more rational results regarding which types of energy systems most effectively provide low-cost service in an environmentally prudent manner.

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134. *Id.* at 1009.

135. *Id.* at 1054.

136. This would, of course require significant changes from the status quo. But given that many federal environmental statutes are implemented by state agencies, a state with the will to merge energy and environmental protection could begin to move in that direction—either by statute, or in states that give governors broad executive reorganization authority, by executive order. Rather than having the air division of state environmental agency issue a permit under the CAA and the water division issue a permit under the CWA, and the state utility commission issue a certificate of need, these regulatory proceedings might be merged into a single siting process that complied with the relevant federal regulations.

137. Huber, *supra* note 3, at 1005–07.

### 3. Potential Disadvantages

A more streamlined regulatory approval process would have significant potential drawbacks as well. One advantage of fractured regulatory proceedings is expertise in mitigating a particular risk, which may be lost in such a merged system.<sup>138</sup> Such a major change in the regulatory process comes with transition costs and may lead to additional regulatory uncertainties. A streamlined system may also not result in increased regulatory certainty if the decision made by the government agency were at risk of easy reversal.<sup>139</sup> This type of system may not easily adapt to changing knowledge of environmental impacts and may lock in choices that are ultimately imprudent in hindsight. Most significantly, this system places a great deal of authority in a single government body that might be subject to political influences, agency capture, or inadequate incentives to minimize costs and maximize environmental protection. In particular, very precise selection criteria or narrow bid submission time frames might be used by regulators to compromise the competitive bidding process by practically selecting a winning bidder in the selection criteria.

Before his appointment to the judiciary, Supreme Court Justice Stephen Breyer described some of the pitfalls of having government agencies select a single private sector owner of a scarce item.<sup>140</sup> First, it is difficult—perhaps impossible—to craft truly objective selection standards without

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138. But such regulatory focus may also lead to tunnel vision and lack of focus on the bigger picture.

139. For example, utilities and banks might fear they could not rely on a successful bid if there is a chance that the bid would be overturned by a subsequent decision of the board—perhaps if the membership of the decisionmaking board changed after the election of a new Governor. To address this issue, the board's governing procedures could generally give preclusive effect to previous decisions of the board, such that they could not be easily reconsidered. The governing board could also be given long-term, staggered terms to lessen the likelihood of swift changes in policy after an election. Another method of ensuring against regulatory “flip-flops” would be to enable private entities that successfully win generation contracts to use government bonding authority. State bonding authority may be used authorized for private activity bonds such as the building of hospitals. INTERNAL REVENUE SERV., TAX-EXEMPT PRIVATE ACTIVITY BONDS COMPLIANCE GUIDE (2012), available at <http://www.irs.gov/pub/irs-pdf/p4078.pdf>. Allowing state bonding authority to be used to finance electricity projects would have a number of beneficial attributes. It would potentially lower the cost of capital for electricity generators and therefore result in lower costs for consumers. In addition, government bonding would level the playing field for smaller independent power producers against large incumbent utilities. Finally, it would likely address the possibility that the government could reverse its approval decision because the bonds issued could include enforceable covenants against the state to preclude a regulatory reversal.

140. Stephen Breyer, *Analyzing Regulatory Failure: Mismatches, Less Restrictive Alternatives, and Reform*, 92 HARV. L. REV. 547, 566–68 (1979).

some subjective judgment entering the analysis.<sup>141</sup> Second, if there are too many individual standards or factors simultaneously being applied to the decision without clear rules about how to weigh factors, the decisionmaking process becomes unmanageable and risks inconsistency.<sup>142</sup> These difficulties raise suspicions of corruption when political appointees award valuable entitlements to the private sector.<sup>143</sup>

Breyer is describing systems that do not use competitive bidding, but which use administrative proceedings to determine a single recipient of a right. The competitive bidding process itself will temper some of his objections, such as improper politicization of awards. Breyer's analysis would still apply to the process of setting the bid parameters, however. These concerns can be assuaged by attempting to use sound electricity planning practices in determining the bid parameters. Utilities and utility commissions have decades of experience in integrated resource planning of electricity supply, and a number of best practices have emerged,<sup>144</sup> yet the process, multivariable by nature, remains prone to subjectivity.

Moreover, some of Breyer's critiques of government resource allocations also apply to private decisions. Private utility executives must weigh a number of difficult objectives in deciding what type of power plant to build. There is no perfectly objective way to make this decision.<sup>145</sup> As Huber pointed out, the fractured regulatory system leads utility companies to select the new power plant most likely to be approved by government regulators—not necessarily the most socially optimal power plant. As White describes, the financial markets also constrain utility executives' choice as to which types of facilities will be loaned money. And the ultimate driver of any private corporation's behavior is to maximize shareholders' expectations of returns on investment. In the traditional regulatory system this has meant investing heavily in new capital projects, which earn utilities a rate of return set by public utility commissions. Balancing all of these factors is no less subjective because a utility executive, rather than a government agency, is performing the task.<sup>146</sup>

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141. *Id.*

142. *Id.*

143. *Id.*

144. STATE AND LOCAL ENERGY EFFICIENCY ACTION NETWORK, U.S. DEP'T OF ENERGY, USING INTEGRATED RESOURCE PLANNING TO ENCOURAGE INVESTMENTS IN COST-EFFECTIVE ENERGY EFFICIENCY MEASURES 5–7 (2011).

145. The existing process relies heavily on price, a fairly objective measure, but forward-looking estimates of price include a number of subjective and contestable assumptions. *See generally* VACLAV SMIL, ENERGY AT THE CROSSROADS 121–80 (2003) (noting the difficulties of forecasting energy trends).

146. This type of subjective balancing is not new to electricity generation. The Federal Energy Regulatory Commission has been making holistic, subjective determinations about

Environmental taxes designed by legislatures to internalize externalities could provide objective price signals to private utilities. However, a system of taxes relies on legislatures to determine the proper externality price and then individual private companies to make decisions. This system may have the sheen of objectivity, but at its core, a system of taxes is not significantly less subjective about the crucial risk tradeoffs. If a tax is set by statute, it may also less be adaptable to changing circumstances than a government regulatory process.

Finally, this proposal would likely be portrayed as a dramatic government intervention into private markets and could be politically infeasible in the United States.<sup>147</sup> This charge could be rebutted by noting that the proposal could actually bolster the use of markets in wholesale electricity provision. In addition, the electricity sector is unique in the size of its externalities, particularly the externality of climate change risk. Moreover, this industry is already heavily regulated. Energy regulators tell utilities how much they can charge customers. Environmental regulators implementing BACT tell utilities what types of scrubbers they must put on their power plants.<sup>148</sup> Laws in twenty-nine states tell utilities they must sell a minimum amount of energy produced by renewable sources.<sup>149</sup> For over thirty years, the Public Utility Regulatory Policies Act has mandated that public utilities purchase power produced from renewable fuels.<sup>150</sup> And 16.5% of the electric generating capacity in the United States is actually owned by a government entity today.<sup>151</sup> This policy proposal would not make a substantial difference in the level of regulatory oversight over the industry, and may actually simplify the regulatory environment if the process can bring together disjointed permitting activities.

In addition, current retail electricity consumers often do not have any real choice over the type of generation that they are provided. Nor do they ultimately care where the electricity they use daily actually comes from, so long as their bills aren't too high and the lights still turn on. Their electric utility makes the generation decision for them, subject to regulation based

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hydropower license approvals for decades. However, this analysis typically doesn't include analysis of alternative generating technologies. Huber, *supra* note 3, at 1016.

147. Electricity generation is a large revenue generator for incumbent utilities, which have considerable political power and influence. Utilities will not want to lose their monopoly protections over generation. See generally Stigler, *supra* note 60.

148. 42 U.S.C. § 7475(a)(4) (2006).

149. Ryan Wiser, Lawrence Berkeley Nat'l Lab., The State of the Market: Update on the Implementation of U.S. Renewables Portfolio Standards, Remarks at Renewable Energy Markets Conference 4 (Nov. 16, 2011), available at <http://renewableenergymarkets.com/docs/presentations/2011/Ryan%20Wiser.pdf>.

150. 16 U.S.C. § 824a-3 (Supp. VI 2011).

151. See AM. PUB. POWER ASS'N, U.S. ELECTRIC INDUSTRY STATISTICS 3 (2012), <http://www.publicpower.org/files/PDFs/USElectricUtilityIndustryStatistics.pdf>.

on environmental and cost factors.<sup>152</sup> Shifting the generation decision to a government agency is not substantially different from a customer choice perspective. In either circumstance, someone else with more technical expertise makes the decision about the best type of generation to provide electricity, working to lower all of the relevant costs, including environmental impacts. Rather than a profit-maximizing corporation, in this case it would be a government entity ultimately accountable to the democratic process.

Despite these arguments, this proposal would likely be characterized as a dramatic government intervention, which may ultimately be fatal to its adoption.<sup>153</sup> At a time when many have called for a comprehensive national energy policy, however, it is a measure worth considering.

#### *D. Criticisms of State Policies to Mitigate Global Climate Change*

##### 1. The Mismatch of Global Causes and Local Solutions

Professors Bernard Black and Richard Pierce argue, with much intuitive appeal, that the only proper response to an international problem like climate change is an international response, noting that “[o]ne state acting alone, even one country acting alone, can accomplish little (except self-impoveryment).”<sup>154</sup> From a rational actor perspective, no state should be

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152. It is true that in states with retail electricity competition it is theoretically possible that electricity providers could compete on the source of their generation rather than just the price of their product, but there is little evidence this actually occurs in practice. There are also voluntary “green generation” programs that allow retail customers to purchase “renewable energy” from their providers for additional fees. See, e.g., *Green Currents*, DTE ENERGY, <http://www.dteenergy.com/residentialCustomers/productsPrograms/greenCurrents/greenCurrents.html> (last visited Nov. 2, 2012). These programs do not ensure that actual renewably produced electrons flow into the customers home, but that the utility purchases a small amount of renewable electricity (or purchases the tradable environmental attribute of a renewably produced unit of electricity). The vast majority of utility customers do not exercise either of these options, however. They simply pay their bill to the incumbent electric company.

153. See Jon Hanson, *Ideology, Psychology, and Law*, in *IDEOLOGY, PSYCHOLOGY, AND LAW* 3, 19 (Jon Hanson ed., 2012); Ronald Chen & Jon Hanson, *The Illusion of Law: The Legitimating Schemas of Modern Policy and Corporate Law*, 103 MICH. L. REV. 1, 7–22 (2004). There are however, some ways in which this type of system might be a more politically achievable method of mitigating climate risk than carbon taxes and cap-and-trade systems. Unlike carbon taxes and allowance purchasing requirements, there is a less visible link to increased customer costs from a system that affirmatively chooses one type of generation. Government decisionmaking regarding electricity generation may also be seen as preferable to corporate decisionmaking if it is framed as promoting very popular clean energy against polluting technologies. See Barry Rabe, *Race to the Top: The Expanding Role of U.S. State Renewable Portfolio Standards*, 7 SUSTAINABLE DEV. L. & POL’Y, Spring 2007, at 10, 10.

154. Black & Pierce, *supra* note 60 at 1416–18; see also Janice A. Beecher, *Why Public Utilities Should Ignore Externalities*, 19 U.S. ASS’N FOR ENERGY ECON. DIALOGUE, 2011, at 1,

willing to impose costs on itself in what may be a futile attempt to mitigate a risk that, by itself, the state is unable to significantly impact. Nonetheless, this view may underestimate the potential value of state actions when global or national actions are not likely to be forthcoming. Global climate change is the textbook example of a difficult global collective action problem. In the context of an imperfect and irrational policy environment, state GHG actions may have a place.

First, the sum of many non-global actions to reduce GHGs emissions may have a significant effect on mitigating climate change risk.<sup>155</sup> Many individual states and countries are already acting to mitigate GHGs.<sup>156</sup> As Katherine Trisolini has argued, even the sum of hundreds of U.S. local government commitments to reduce GHGs would have an effect that is globally significant.<sup>157</sup>

Second, state actions can help to improve subsequent federal or international actions. States can serve as laboratories to work out the bugs of complicated regulatory responses.<sup>158</sup> For example, states' attempt to value the externalities caused by GHGs in contested administrative hearings will result in a heightened scrutiny to the methodologies used in valuing GHG externalities.

Third, state actions to address GHGs may drive regulated industries to support uniform federal regulatory policies that preempt state action. Over twenty-five years ago, E. Donald Elliott, Bruce A. Ackerman, and John C. Millian argued that the CAA was adopted not because Congress was valiantly seeking to protect the air, or environmental groups overcame collective action problems in persuading Congress, but because "two well-organized industrial groups, the automobile industry and the soft coal industry—were threatened with a state of affairs even worse from their perspective than federal air pollution legislation—namely, inconsistent and progressively more stringent environmental laws at the state and local

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3–5, available at [http://dialogue.usaee.org/index.php?option=com\\_content&view=article&id=139&Itemid=366](http://dialogue.usaee.org/index.php?option=com_content&view=article&id=139&Itemid=366).

155. Indeed, it may be the only realistic short-term solution to begin implementing low-cost mitigation efforts. Reaching consensus on international climate policies is proving to be as difficult as passing a comprehensive U.S. climate policy. See Cinnamon Carlarne, *The Glue That Binds or the Straw That Broke the Camel's Back?: Exploring the Implications of U.S. Reengagement In Global Climate Change*, 19 TUL. J. INT'L & COMP. L. 113, 147–48 (2010).

156. The European Union has been operating a GHG cap-and-trade program for a number of years. Council Directive 2003/87, 2003 O.J. (L275)32(EC). State renewable energy standards have resulted in dramatic changes to the U.S. electricity generation market, collectively driving a huge national investment in wind energy over the past decade. *Renewable and Alternative Fuels: Wind*, *supra* note 109.

157. Trisolini, *supra* note 9, at 676.

158. Robert B. McKinstry, Jr., *Laboratories for Local Solutions for Global Problems*, 12 PENN ST. ENVTL. L. REV. 15, 64–67 (2004).

level.”<sup>159</sup> Likewise, a number of state regulatory actions preceded the 1990 CAA amendments addressing the interstate problem of acid rain.<sup>160</sup> More recently, Benjamin Ewing and Douglas Kysar have argued that in the United States’ system of overlapping authority, government actors not ideally suited to address a problem may nonetheless serve an important role by taking actions that “prod or plead” other institutional actors to enact policies.<sup>161</sup>

This potential benefit of state regulatory actions should not be overemphasized, however. State actions could prompt both pro- and anti-regulatory preemption measures from the federal government.<sup>162</sup> Rather than promoting federal GHG regulation, state regulatory moves might instead promote federal prohibitions of state GHG regulations without accompanying federal regulation.

Fourth, GHG mitigation efforts by state energy regulators may aid the continued technological developments of low carbon electricity generation. Creating demand for manufacturing at scale is an essential step in driving technological advancements for cost-effective low carbon technologies, which some view as a market failure.<sup>163</sup> In an era of budget austerity, this is unlikely to be accomplished solely by government subsidies. In order to drive markets for low carbon generation, the costs of fossil fuel-fired generation should represent their full social costs.

To someone who predicts or assumes states are rational economic actors, it is difficult to explain why state and local governments would chose to take actions that add costs for their citizens and cannot by themselves succeed in achieving their aims. It is a dangerous oversimplification, however, to conceive of any government action as if it were attributable to a single reason, economically rational or not. The political environment in states or countries may drive governments to take action on climate change despite its not being economically rational under a narrow view of the state’s self-interest.<sup>164</sup>

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159. E. Donald Elliott, Bruce A. Ackerman & John C. Millian, *Toward a Theory of Statutory Evolution: The Federalization of Environmental Law*, 1 J.L. ECON. & ORG. 313, 326 (1985).

160. J.R. DeShazo & Jody Freeman, *Timing and Form of Federal Regulation: the Case of Climate Change*, 155 U. PA. L. REV. 1499, 1514–15 (2007).

161. Benjamin Ewing & Douglas A. Kysar, *Prods and Pleas: Limited Government in an Era of Unlimited Harm*, 121 YALE L.J. 350, 354–55 (2011).

162. DeShazo & Freeman, *supra* note 160, at 1500.

163. Tomain, *supra* note 129, at 397.

164. DeShazo & Freeman, *supra* note 160, at 1519–20. It is possible that states foresee that future federal or international climate regulation is likely and are acting to mitigate the future regulatory compliance costs. It may also be the case that some state policymakers intend to spur the federal government to act by passing local regulatory measures. The smaller size of states makes it easier for environmental groups to successfully lobby for state

Black and Pierce suggest that there may be a role for state efforts to address GHGs “if regulators believe that out-of-state harms should be given significant weight.”<sup>165</sup> They continue:

We have grave doubts, though, about whether [public utility commissions] should be giving away ratepayers’ money in this way, even for a noble cause. Such a decision runs directly contrary to the central justification for [commissions’] existence—to ensure that consumers do not pay too much for electric power. Altruism is a quintessentially political decision, which politicians should make, and then take credit or blame at the polls. It is not the job of appointed regulators.<sup>166</sup>

This statement improperly frames non-global actions on climate change as “altruism” or “giving away ratepayers’ money.”<sup>167</sup> This way of framing GHG policies obscures their purpose. It is not simply “altruism” to take actions to mitigate a potentially catastrophic global environmental risk.

One could just as easily frame the failure to price GHG externalities as enabling ratepayers to pass the risk of climate change produced by their electricity usage to others. Black and Pierce are correct that energy regulators should attempt to keep prices low for consumers. But energy regulators have always strived to do more than ensure customers pay the lowest prices for electricity. They have also traditionally focused, for instance, on ensuring reliable service and whether the utility has enough revenue to serve its customers. Energy regulators should also strive to ensure that consumers are paying the true costs of their electricity. Refusing to price GHGs might be tantamount to the willful exploitation of outsiders by refusing to recognize a known externality. Accounting for these costs therefore is not purely altruism, but attempting to make electricity prices accurately reflect the true costs of electricity consumption.<sup>168</sup>

GHG mitigation efforts by state energy regulators also have a purpose distinct from climate change mitigation—they serve as a sound financial

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level policies than federal policies. Elliott, Ackerman & Millian, *supra* note 159, at 329. State political environments can also vary significantly from the federal political environment. For example, the coal or automobile industries may not be powerful in any individual state. *See id.*

165. Black & Pierce, *supra* note 60, at 1419.

166. *Id.*

167. *Id.*

168. Some state utility commissions will likely choose not to impose additional costs of electricity upon ratepayers because of competitiveness concerns. They may view themselves as competing with other states for jobs, and see lower electricity rates as essential to attracting and retaining jobs. For the vast majority of businesses, however, a marginal increase in electricity rates will not be the determining factor in their location decision, particularly if there are already sunk costs at an existing location.

risk mitigation measure. Because there is a strong likelihood that federal regulation will eventually address GHGs, it is prudent for state regulators to account for the financial cost of this risk when deciding on new generating plants. Power plants often cost billions of dollars in upfront costs and have expected lives that stretch decades.<sup>169</sup> Attempting to price the externality's social cost is a decent metric for incorporating potential future federal GHG regulatory costs.<sup>170</sup>

Finally, state energy regulators should not necessarily defer to legislators when determining whether and how to address GHG externalities.<sup>171</sup> Elected politicians may be poorly suited to internalize GHG externalities because of the short-term nature of the U.S. election cycle and the long-term implications of climate change.<sup>172</sup> A more politically insulated and expert body such as a public service commission is more likely to be able to accurately value GHG externalities, just as an insulated expert body is likewise better able to set utility rates.

State solutions to global problems are not ideal or efficient. There are significant theoretical, political, and practical problems with state GHG mitigation actions.<sup>173</sup> Despite these problems, however, state actions may nonetheless be warranted.

## 2. Double Counting with Other Regulatory Measures

Another valid criticism lodged against state climate mitigation policies is that they might inefficiently duplicate federal environmental regulations. In order to efficiently internalize an externality, a policy should attempt to price the social harm accurately and attribute it to the activity that produced the harm.<sup>174</sup> Theoretically, an environmental adder should therefore attempt to discount costs of compliance with environmental laws designed

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169. See FANG & GALEN, *supra* note 14; ANNUAL ENERGY OUTLOOK 2012, *supra* note 17.

170. Indeed, for many state energy regulators who see their role as primarily ensuring low prices for consumers without regard to environmental concerns, this federal regulatory risk will be the primary rationale for implementing GHG adders.

171. Public Service Commissioners themselves are elected, not appointed, in thirteen states. *Elected Commissions*, NAT'L ASS'N REG. UTIL. COMMISSIONERS, <http://www.naruc.org/about.cfm?c=elected> (last visited Nov. 2, 2012).

172. See Lazarus, *supra* note 6, at 1184–85.

173. In addition to the problems noted above, states which move forward with GHG policies may help create a level of temporary climate policy certainty within their state, but may actually exacerbate the existing regulatory uncertainty regarding overall federal GHG regulation in the United States. This regulatory uncertainty is particularly problematic for firms like electricity providers who must make extremely large capital investments. Andrew P. Morris, Bruce Yandle & Andrew Dorchak, *Choosing How to Regulate*, 29 HARV. ENVTL. L. REV. 179, 228 (2005).

174. Calabresi, *supra* note 21, at 500, 505.

to address the same problem.<sup>175</sup> If environmental harms are over-weighted by duplicative regulations, society would underutilize certain forms of electricity generation.

Such discounting would not be necessary in certain instances. For example, in states that are implementing GHG cap-and-trade programs, such as California<sup>176</sup> or the New England states implementing the Regional Greenhouse Gas Initiative (RGGI),<sup>177</sup> energy regulators would not need to estimate the cap-and-trade compliance costs when implementing a GHG adder policy. The energy regulator could just ignore any potential RGGI expenses and instead use the GHG adder. The proposed plant may need to eventually acquire emission allowances, but whether these allowances adequately internalize the cost of GHGs *ex post* is a separate question from whether the power plant should be built *ex ante*.<sup>178</sup>

Discounting for “double counting” becomes more difficult when the regulatory system uses a command-and-control system like BACT or NSPS. A state implementing an environmental adder system could attempt to discount the costs of compliance with such regulations. Because attempts to put a precise value on regulatory overlap is such a complex regulatory challenge, state energy regulators may reasonably choose not to attempt to discount these policies, even if the result is theoretically inefficient deterrence of GHGs. There are a number of rationales for this policy choice.

First, when harms and costs are uncertain anyway, perhaps some over-deterrence is consistent with the precautionary principle.<sup>179</sup> Moreover, the current costs of low-carbon generation are currently very similar to the costs of new fossil fuel-fired generation.<sup>180</sup> When this price difference is added to the large rate base of many large utilities, the resulting premium paid for low-emission energy will often be very small for individual rate-payers.

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175. PIERCE & GELLHORN, *supra* note 61, at 384.

176. See California Global Warming Solutions Act of 2006, CAL. HEALTH & SAFETY CODE §§ 38500–38599 (West 2006).

177. See REGIONAL GREENHOUSE GAS INITIATIVE, <http://www.rggi.org> (last visited Sept. 15, 2012).

178. Indeed, it seems likely, in the case of RGGI, that the costs of compliance will be lower than the value of the externality that GHGs create for society. In 2010, for example, the RGGI price per ton of carbon dioxide was hovering around \$2 per ton. POTOMAC ECON., ANNUAL REPORT ON THE MARKET FOR RGGI CO<sub>2</sub> ALLOWANCES: 2010 (2010), available at [http://www.rggi.org/docs/MM\\_2010\\_Annual\\_Report.pdf](http://www.rggi.org/docs/MM_2010_Annual_Report.pdf). This is far lower than the current range of estimates for the social cost of GHGs. U.S. GOV'T INTERAGENCY WORKING GRP. ON SOC. COST OF CARBON, *supra* note 80, at 3.

179. Indeed, it may be economically efficient to favor environmental preservation over development in the context of irreversible harms. Kenneth J. Arrow & Anthony C. Fisher, *Environmental Preservation, Uncertainty, and Irreversibility*, 88 Q.J. ECON. 312 (1974).

180. LEVELIZED COST, *supra* note 106, at 4.

Second, it is clear that not every state (and certainly not every country) will adequately incorporate climate risk into their regulations affecting energy construction and consumption. Potential over-deterrence in some areas still results in some mitigation in a world where the climate risk is being significantly under-deterring overall.<sup>181</sup>

Third, fossil fuels have received huge subsidies and regulatory advantages for decades.<sup>182</sup> Given this historical imbalance in favor of fossil fuels, there should be less concern if the balance for future investments tips slightly in favor of lower emissions technologies.

Finally, the scale of the sources and numbers of GHGs itself may be a reason to have overlapping mitigation policies at different government levels. A single centralized policy may be insufficient to meet the GHG mitigation need if it is poorly designed. For example, a national cap-and-trade program will be of little use if the cap is set at a level that will not generate sufficient emissions reductions. Precisely because climate change is such a large and multi-faceted problem, policymakers may not be able to put all of their eggs in the basket of one international pricing policy. Effective and conservative risk mitigation might warrant duplicative mitigation efforts from a variety of levels of government.

Imposing a state GHG mitigation for new power plants on top of the existing federal regulatory framework will be a duplicative and inefficient method of regulating GHGs.<sup>183</sup> Having two distinct GHG regulations for new power plants may not add as many administrative or transaction costs as might appear at first glance, however. First, the additional requirement of BACT for GHGs does not significantly increase the transaction costs of the existing environmental permitting processes. Any new power plant that relies on combustion, for example, will already need to secure a BACT permit for a number of other air pollutants besides GHGs.<sup>184</sup>

Second, environmental adders do not add significant new transaction costs to compliance with utility regulations. Regulated utilities already

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181. See INT'L ENERGY AGENCY, WORLD ENERGY OUTLOOK 2010 EXECUTIVE SUMMARY 3 (2010), available at <http://www.iea.org/Textbase/npsum/weo2010sum.pdf>.

182. Joseph P. Tomain, *The Dominant Model of United States Energy Policy*, 61 U. COLO. L. REV. 355, 375 (1990).

183. A system that adequately prices GHG externalities into the decision of what type of generation to build would render unnecessary a BACT or NSPS review process for GHG controls. A national regulation that prices GHG externalities into the costs of new power plants would be a superior policy to both a system of state GHG adders and a command-and-control regulatory system for GHGs. But the prospects of such a policy seem quite slim in the near future.

184. Because BACT for GHGs is a new requirement, however, there is certainly some significant litigation risk involved with what actually constitutes "best available control technology" for GHGs.

must receive either *ex ante* or *ex post* approval by state utility regulators for major investments in new power plants.<sup>185</sup>

Moreover, when deciding whether to invest in new electric generating plants, utilities already routinely factor in an expected price for GHGs under the expectation that at some point GHGs will become regulated pollutants.<sup>186</sup> Indeed, failing to account for these risks would probably constitute a failure to adequately serve the interests of utility shareholders.<sup>187</sup> Many lenders also require utilities to consider GHG risks in order to borrow money to construct new plants.<sup>188</sup>

A process that gives state utility commission approval of the exact methodology for valuing GHG externalities might therefore actually be welcomed by utilities. It would give them certainty regarding their ability to recover reasonably made investments if they used GHG accounting methodologies approved by their regulators.

### 3. Interaction with Electricity Competition

The U.S. move toward wholesale electricity competition has benefited consumers. As Paul Joskow and Roger Noll have written, “[i]f economics has any scientifically settled issues, one is surely that price and entry regulation in perfectly competitive industries generates economic inefficiencies.”<sup>189</sup> In a perfectly competitive electricity market, a price signal could theoretically determine when new power plants should be built, making regulatory approvals unnecessary.<sup>190</sup> Competition among suppliers

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185. Davies, *supra* note 1, at 494–96.

186. See, e.g., CONSUMERS ENERGY, ELECTRIC GENERATION ALTERNATIVES ANALYSIS, 27 n.35 (June 2009), <http://efile.mpsc.state.mi.us/efile/docs/15996/0001.pdf>.

187. See Securities and Exchange Commission Guidance Regarding Disclosure Related to Climate Change, 75 Fed. Reg. 6290 (Feb. 8, 2010).

188. A coalition of large U.S. financial institutions which provide financing to utilities for new generating units has announced it will conduct “enhanced due diligence” before financing any new power plants that burn fossil fuels. See *Leading Wall Street Banks Establish the Carbon Principles*, CARBON PRINCIPLES (Feb. 4, 2008), <http://carbonprinciples.org/documents/Carbon%20Principles%20Press%20Release%20Final.pdf>. This enhanced due diligence process requires consideration of alternative low-carbon resources such as energy efficiency and renewable energy, as well as using “conservative” assumptions, including measuring significant costs from future GHG regulations. See *Fossil Fuel Generation Financing Enhanced Environmental Diligence Process*, CARBON PRINCIPLES, 6, [http://carbonprinciples.org/documents/Carbon%20Principles%20Enhanced%20Diligence%20Final\\_pdf.zip](http://carbonprinciples.org/documents/Carbon%20Principles%20Enhanced%20Diligence%20Final_pdf.zip) (last visited Oct. 20, 2012).

189. Paul L. Joskow & Roger C. Noll, *Regulation in Theory and Practice: An Overview*, in STUDIES IN PUBLIC REGULATION 1, 4 (Gary Fromm ed., 1981).

190. While this is sound in theory, in practice, competitive markets may not send a price signal to suppliers to build a new plant until the supply shortage causes a bottleneck and spike in electricity prices. At this point a number of market players may simultaneously

could protect consumers from excessive or unnecessary costs. Accordingly, some might argue that regulatory pre-approvals attempting to address GHGs could disrupt the positive benefits of competitive electricity markets.<sup>191</sup>

Regulatory approvals of electricity supply decisions made by regulated retail monopoly utilities can be made consistent with wholesale electricity competition, however. Many states continue to regulate retail electricity supply with traditional economic regulation, but participate in competitive wholesale markets.<sup>192</sup> Retail customers of regulated monopoly utilities cannot opt out of service because of potentially lower electricity prices from an alternative supplier, but they can still reap benefits from wholesale competition. Competitive wholesale markets provide regulated utilities an option to buy and sell electricity and provide important price discovery information to regulators.

To encourage needed investments in new generation by regulated retail utilities in competitive wholesale markets, devices like a certificate of necessity that guarantees cost recovery for a power plant can play a valuable role. Michigan, for example, recently enacted a certificate of necessity law after a comprehensive study determined the existing market dynamics would not likely create the right incentives for investing in needed new

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try to build new supply, overcorrecting for the shortage. Because utility investments tend to be so expensive and bulky, this can lead to significant inefficiencies.

191. See Black & Pierce, *supra* note 60, at 1407.

192. Retail electricity competition, unlike wholesale electricity competition, has not proven to be a boon for most relatively small ratepayers who are unsophisticated about electricity consumption and contracts. As Professor Pierce has noted,

It is much easier to structure an effectively competitive wholesale electricity market than to structure an effectively competitive retail market . . . In short, as the size of the typical transaction declines, transaction costs increase relative to transaction benefits until, at some point, costs exceed benefits. Thus, it is relatively easy to design a market in which electricity distributors and industrial customers that purchase large quantities of electricity can obtain large net benefits as a result of their access to a competitive market, but it is devilishly difficult to design a market in which small consumers can obtain net benefits by purchasing on a competitive market.

Richard Pierce, *Completing the Process of Restructuring the Electricity Market*, 40 WAKE FOREST L. REV. 451, 462–63 (2005). The move toward retail electricity competition in the United States has slowed significantly since the California electricity crisis of 2000. E.g., David B. Spence, *Can Law Manage Competitive Energy Markets?*, 93 CORNELL L. REV. 765, 774 (2008). Currently, fifteen states and the District of Columbia have retail electricity competition. No state has chosen to move to a system of retail choice in recent years, while a number of states have taken action to restrict the effects of retail electricity competition. *Status of Electricity Restructuring by State*, U.S. ENERGY INFO. ADMIN., [http://www.eia.gov/cneaf/electricity/page/restructuring/restructure\\_elect.html](http://www.eia.gov/cneaf/electricity/page/restructuring/restructure_elect.html) (last visited Sept. 16, 2012).

generation.<sup>193</sup> Energy regulators could require a pre-approval not only prior to constructing new utility-owned generation, but also to prior to entering into major wholesale power purchase agreements.<sup>194</sup>

Adding GHG regulatory policies to some participants in regional wholesale markets but not others may result in some price distortion.<sup>195</sup> But as Joel Eisen has argued, because the U.S. electricity system is still only partially deregulated and therefore distorted anyway, there may still be a role for environmental concerns in state utility policymaking.<sup>196</sup>

Proponents of full retail deregulation may claim that state energy regulators that implement GHG policies will simply prolong the country's flawed regulation of electricity markets. Concerns about path dependency could always be raised if one is seeking to make marginal improvements to flawed systems of regulations. It is hard to isolate the entrenching effect caused by any single amendment to an existing regulatory system. Making improvements to an imperfect system is often more important and achievable than waiting for the unlikely possibility that the entire regulatory system is thrown out.

#### 4. Ignoring Existing Facilities

GHG policies that focus exclusively on new plants may give utilities the perverse incentive to extend the life of older plants rather than build new plants.<sup>197</sup> However, this concern may be less problematic in this particular instance because other EPA regulations unrelated to climate change will likely drive the retirement of a number of older coal-fired units, the largest emitters of GHGs.<sup>198</sup>

Moreover, considering GHGs in decisions about new power plant construction is vitally important to long-term climate mitigation. Plants are often extremely large, expensive, and have lives of forty years or more.

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193. MICH. COMP. LAWS § 460.6s (2009); J. PETER LARK, MICH. PUB. SERV. COMM'N, MICHIGAN'S 21ST CENTURY ELECTRIC ENERGY PLAN 15–17 (2007), available at [http://www.michigan.gov/documents/mpsc/21stcenturyenergyplan\\_185274\\_7.pdf](http://www.michigan.gov/documents/mpsc/21stcenturyenergyplan_185274_7.pdf).

194. Requiring a GHG adder to be considered prior to signing a major PPA should not violate the Federal Energy Regulatory Commission's exclusive jurisdiction over the regulation of wholesale electricity sales. *See infra* text accompanying notes 201–211.

195. The degree of distortion caused by state GHG policies is an empirical question. For example, if natural gas prices remain low in the short-term, a GHG policy may have little distorting effect, but simply bolster the decision to select a technology that is lower cost without considering GHG externalities. This does not mean that GHG adder policies do not have any real value. Fuel prices can change rapidly. If natural gas prices spike up, GHG adder policies may continue to make natural gas fired plants preferable to coal plants.

196. Joel Eisen, *The Environmental Responsibility of the Regionalizing Electric Utility Industry*, 15 DUKE ENVTL. L. & POL'Y F. 295, 307–08 (2005).

197. Black & Pierce, *supra* note 60, at 1402.

198. *See supra* text accompanying note 195.

Regulating GHGs from new construction only also has the effect of phasing in the costs of GHG reductions, which means GHG regulations will not cause a large shock to the economy.<sup>199</sup>

### 5. Insufficient Integration of Externality Costs in Consumer Prices

GHG policies that impact utility investment decisions but which do not impose a tax on emissions are further imperfect because the full cost of the regulation is not actually passed through to consumers. As such, the full costs of GHGs are not felt at the end-user level and consumers “will consume too much power.”<sup>200</sup>

However, incorporating GHG externalities into new investment decisions still has a comparative advantage over the status quo in terms of mitigating climate change. In addition, this criticism is based on an assumption that electricity customers are rational actors whose consumption habits are sensitive to slight changes in electricity prices. This is a false assumption—electricity demand is notoriously price inelastic.<sup>201</sup> Moreover, electricity customers face a number of structural and cognitive barriers that prevent them from acting as rational economic consumers.<sup>202</sup> Accordingly, it is not clear whether there would be a significant impact on actual electricity consumption if GHGs were incorporated into electricity prices.

### 6. Leakage

“Leakage” of GHG emissions could occur if customers move from suppliers subject to GHG regulations to unregulated suppliers because of

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199. It is also conceivable that a state or group of states that wishes to incorporate GHG externalities into the operation of existing plants could do so. In states whose regulated utilities do not participate in regional wholesale electricity markets, state commissions could order utilities to consider the price of GHG emissions when determining their dispatch decisions. Michael Dworkin et al., *Energy Transmission and Storage*, in THE LAW OF CLEAN ENERGY, 531, 544 (Michael B. Gerrard ed., 2011). If a state were operating in a competitive regional wholesale market, an environmental dispatch could be proposed by a Regional Transmission Organization (RTO), subject to FERC approval. See 16 U.S.C. § 824d (2006); Eisen, *supra* note 196, at 306. This is unlikely because it would require substantial agreement among a number of entities involved in RTO governance. Alternatively, FERC could potentially issue a rule requiring RTOs to use environmental dispatch methodologies. This would be a bold administrative move that might require FERC to broaden the way it interprets the Federal Power Act to include environmental externalities in determining when rates are just and reasonable. See Grand Council of the Crees v. Fed. Energy Regulatory Comm'n, 198 F.3d 950, 957 (D.C. Cir. 2000).

200. Black & Pierce, *supra* note 60, at 1403.

201. Anthony Paul et al., *A Partial Adjustment Model of U.S. Electricity Demand by Region, Season, and Sector* 19 (Res. for the Future, Discussion Paper No. 08-50, 2009), available at <http://www.rff.org/Publications/Pages/PublicationDetails.aspx?PublicationID=20773>.

202. Hofmeister, *supra* note 18, at 12–27.

price differential. In jurisdictions with traditionally regulated monopoly retail electricity suppliers, leakage concerns are minimized because customers are forbidden from switching to out-of-state electricity suppliers. It remains possible, however, that differential electricity prices will result in relocation to states that choose not to implement GHG policies.

The degree of leakage is an empirical question. Relocating a firm or a residence requires significant transaction costs and includes a number of concerns wholly unrelated to electricity costs. A GHG program for new generation decisions is unlikely to result in dramatic increases in electricity prices that might drive relocations. First, the current costs of new low- or zero-carbon electricity is already comparable to the costs of new coal-fired generation.<sup>203</sup> Moreover, even if the cost differential were significant, costs for new generation will often make up only a small percentage of the total revenue requirement of regulated utilities. Regulated utilities have significant existing supply options, and therefore any additional incremental costs for less carbon intensive new generation will not likely drive large rate increases.

Leakage, however, may also lead to price effects in the coal supply market. There is a real concern that a state GHG mitigation policy may reduce demand for coal, thereby reducing price, and making coal more attractive to states and countries that do not price the externalities of GHGs. It is unclear how much a reduction in U.S. demand will lower the international coal price. This effect reinforces the notion that ultimately a climate solution requires cooperation amongst a number of different countries and jurisdictions. Any effective state or national GHG regulatory system will add costs to the use of coal.

## 7. Energy Source Substitution Effects

Black and Pierce point out that environmental policies “raise the cost of utility-supplied electric power relative to other energy sources,” giving consumers an incentive “to switch from electric power to direct burning of fuel.”<sup>204</sup> As an example, Black and Pierce suggest that consumers might switch to much dirtier gasoline powered appliances.<sup>205</sup>

While this is theoretically possible, the practical impact of this switch from electric-powered lawn mowers, leaf-blowers, and hedge trimmers will likely be quite small. For the vast majority of electricity uses, there is no simple and easy substitute that is powered by direct combustion.<sup>206</sup> It is

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203. LEVELIZED COST, *supra* note 106, at 4.

204. Black & Pierce, *supra* note 60, at 1406.

205. *Id.*

206. SMIL, *supra* note 145, at 32.

unlikely that Americans will switch to refrigerators, televisions, computers, or lighting powered by direct combustion.

In addition, this point assumes that the market for electrical consumer products is sensitive to fuel prices. This is an empirical question, and the evidence suggests that consumer purchases are not very sensitive to energy costs.<sup>207</sup> Increases in electricity prices due to one new generating unit that may have a slightly higher price are likely to be so small that they would be unnoticed by most consumers. Consumers also exhibit a strong status quo bias against substituting new goods for goods they already own.<sup>208</sup>

A comprehensive sector-specific climate policy could help to reduce unwarranted substitution effects. For example, the EPA has enacted pollution control standards for gasoline-powered lawn equipment that have greatly improved their environmental accountability compared to the hedge trimmers of the early 1990s that Black and Pierce decried as notoriously dirty.<sup>209</sup>

## 8. Slippery Slope to Regulating Other Externalities

One potentially powerful critique of GHG regulation by state utility commission is a slippery slope argument. If a state public utility commission deems the federal response to the externality of climate change to be insufficient, what is to stop it from deeming other forms of federal environmental regulation insufficient? Perhaps a state might not think the federal government's mercury or ground level ozone rules are sufficient to completely account for the social cost of these pollutants. States may, on this reasoning, attempt to implement environmental policies for a number of pollutants, duplicating federal environmental regulatory efforts. A system of environmental regulation where every state completely revisits and sets slightly different standards than the federal environmental standards could be quite inefficient.

This is certainly a serious potential drawback. It is not, however, ultimately fatal. The ability for states to exceed federal minimum standards provides a good system check if the federal government is not sufficiently acting to mitigate environmental risks. This seems clearly to be the case in climate change, which may be the single greatest unaccounted-for environmental externality currently facing the world.<sup>210</sup> In rare instances of federal

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207. Hofmeister, *supra* note 18, at 24–25.

208. *Id.* at 18–19.

209. U.S. ENVTL. PROT. AGENCY, EPA420-F-08-013, EPA FINALIZES EMISSION STANDARDS FOR NEW NONROAD SPARK-IGNITION ENGINES, EQUIPMENT, AND VESSELS (2008), available at <http://www.epa.gov/otaqregs/nonroad/marinesi-equipid/420f08013.pdf>.

210. NICHOLAS STERN, THE ECONOMICS OF CLIMATE CHANGE: THE STERN REVIEW (2007).

government policy failure like of this stature, a state may seek to implement its own regulatory program.<sup>211</sup> Such instances are more likely to be the exception than the rule, however. The CAA and CWA have long provided a uniform national floor, not a ceiling, on environmental regulations.<sup>212</sup> Thus, states have had the ability to exceed federal environmental regulations in the United States for decades, and this ability has not led to a crisis of overlapping state regulatory measures regulating air and water quality. State environmental policymakers might defer to the regulatory decisions of expert federal agencies, or they might wish not to pose additional regulatory compliance costs on businesses. If state policymakers have a fairly small disagreement about the level of environmental protection provided by a federal mercury rule, they may not seek to implement their own duplicative regulatory overlay. The political and institutional costs of implementing a new regulatory scheme probably do not warrant only marginal improvements to a federal regulation.

### *E. Potential Constitutional Challenges to State GHG Mitigation Policies*

#### 1. Preemption by the Federal Power Act

The Federal Energy Regulatory Commission (FERC) has the exclusive authority to set rates for wholesale electricity sales made by private utilities under the Federal Power Act (FPA).<sup>213</sup> State GHG regulations that impact wholesale electricity rates might therefore be challenged as preempted by the FPA.<sup>214</sup> Such challenges are unlikely to succeed if the state energy

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211. Climate change, as a globally caused problem with global effects, may provide a less compelling case for states to exceed federal minimums than environmental harms with localized impacts. But because of the magnitude of the global catastrophic risks of climate change, some states may seek to do what they can to mitigate and in so doing help to spur national climate regulations along. *See* text accompanying notes 154–173.

212. 42 U.S.C. § 7416 (2006); 33 U.S.C. § 1370 (2006).

213. 16 U.S.C. §§ 824, 824d, 824e (2006). The act limits jurisdiction to sales made “in interstate commerce.” The Supreme Court has determined, however, that there is interstate commerce any time that the electricity sold is connected to an interstate electric grid, which encompasses most wholesale transactions in the United States. *Fed. Power Comm'n v. Fla. Power & Light Co.*, 404 U.S. 453 (1972). Wholesale transactions of electricity not part of an interstate electric grid occur only in limited places in the United States, such as Hawaii, Alaska, and parts of Texas.

214. *See, e.g.*, Complaint for Declaratory and Injunctive Relief at paras. 109–110, *North Dakota v. Swanson*, No. 11-03232, 2011 WL 5223597 (D. Minn. filed Nov. 2, 2011). The complaint’s focus is on the outright ban on new sources of electricity that would increase Minnesota’s carbon dioxide emissions, but a similar argument might be made with regard to the GHG adder provision. The complaint also alleges that Minnesota’s GHG provisions frustrate the purposes of the Energy Policy Act of 1992, which seeks to promote efficient and competitive wholesale markets, by interfering with regional transmission planning efforts. *Id.* at paras. 117–118. This argument proves too much. Any state regulation of elec-

regulatory program is carefully designed. FERC has interpreted the FPA to allow states to “choose to require a utility to construct generation capacity of a preferred technology or to purchase power from the supplier of a particular type of resource.”<sup>215</sup> Accordingly, a state energy regulator using GHG adders in a certificate of need proceeding or issuing a competitive bid for a specific type of generation is not likely to violate the FPA. These policies set a prerequisite on the type of electricity a utility can purchase; they are not a direct attempt to regulate wholesale prices for that electricity.<sup>216</sup>

A state energy regulator, however, might violate FERC’s jurisdiction if it attempted to incorporate GHG adders to smaller wholesale market transactions. The regional wholesale markets use day-ahead and real-time markets. Regulated utilities use these markets to balance short-term supply and demand. These markets do not allow bidders to restrict the sources of electricity when determining which offers of electricity will be accepted based on environmental attributes.<sup>217</sup>

To incorporate GHG externalities into short-term market transactions, states might include GHG adders in annual utility commission approval procedures for electricity supply procurement plans.<sup>218</sup> The adder could then be incorporated *ex ante* for the average GHG emissions of all of the resources of the regional wholesale market. The utility would weigh market transactions against other supply options such as long-term purchase power agreements and the resulting plan would need regulatory

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tricity generation has some impact on wholesale markets, and the FPA clearly intends for a continued state role in the regulation of utilities. *See* 16 U.S.C. § 824(a) (2006).

215. S. Cal. Edison Co., 70 FERC 61,215, 61,676 (1995). FERC recently affirmed this authority. Cal. Pub. Util. Comm’n, 132 FERC 61,047, para. 26 (2010).

216. It is true that this prerequisite may change if wholesale prices change in a GHG adder system, but the energy regulator is still not regulating the wholesale rates with GHG adders. At the time of the certificate of need proceeding, there is no wholesale utility transaction that is being regulated by the commission. The commission is merely determining exactly what type of generation is prudent to meet the utility’s supply needs. In this way a GHG adder is analogous to a state renewable energy mandate. The state should not run afoul of the FPA because its chosen electricity generation selection policy is more sensitive to electricity prices than a flat renewable energy mandate. S. Cal. Edison Co., 70 FERC 61,215, 61,676 (1995).

217. Dworkin et al., *supra* note 199, at 543–44.

218. Many states require approval of such plans. *See, e.g.*, MICH. COMP. LAWS § 460.6j(4)–(7) (2009).

approval.<sup>219</sup> This would be only a rough way to incorporate GHG adders into the price of electricity.<sup>220</sup>

## 2. Preemption by the Clean Air Act

A claim suggesting state GHG policies are preempted by the CAA would likely not succeed. There is no express preemption of state GHG adders in the statutory text. There is no direct conflict between the CAA's permitting provisions and GHG policies incorporated into state energy regulatory procedures.<sup>221</sup> In addition, state GHG policies are not an "obstacle" to the purposes of the CAA.<sup>222</sup> State policies would assist a primary purpose of the CAA's emissions regulations, which "is to encourage or otherwise promote reasonable Federal, State, and local governmental actions" to prevent pollution such as GHGs.<sup>223</sup> Implied "field" preemption requires a clear inference of legislative intent to preempt state law, reflecting the importance of state sovereignty.<sup>224</sup> This intent is not clearly exhibited by the CAA, which includes a very broad savings clause that explicitly provides that state air pollution standards that are stricter than the federal minimums are not preempted by the act.<sup>225</sup>

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219. If the utility's actual use of market transactions differed from this approved plan, it is conceivable (though perhaps practically unlikely) that an energy regulator would disallow rate recovery for excessive use of market transactions.

220. The inability to easily incorporate GHG adders into short-term market procurement decisions is problematic. If GHG adders are not added to these small market transactions, this might make these transactions less costly and encourage cost-minimizing utilities to make more use of small market transactions. However, the utility's own incentives to build new construction itself in a regulated system acts to counteract this dynamic. Utilities in regulated systems generally earn a rate of return on capital investments they make, but do not earn a rate of return on long-term power purchase agreements or short-term market transactions. PIERCE & GELLHORN, *supra* note 61, at 94–98. Accordingly, when faced with the choice of whether to build or buy, a utility acting in the interests of its shareholders will generally choose to build.

221. *Cf. Southland Corp. v. Keating*, 465 U.S. 1 (1984) (invalidating state law that conflicts with federal law).

222. *Cf. Hines v. Davidowitz*, 312 U.S. 52, 67 (1941) (overturning law that presents an "obstacle" to the "accomplishment and execution" of federal law).

223. 42 U.S.C. § 7401(c) (2006). To the extent that a subsidiary purpose of the CAA is to achieve this pollution prevention in a cost-effective manner, adders effectively serve this purpose as well. One could argue, however, that the duplicative nature of the dual regulatory schemes is not cost effective.

224. *Am. Elec. Power Co. v. Connecticut*, 131 S. Ct. 2527, 2537 (2011).

225. 42 U.S.C. § 7416 (2006). The Supreme Court has also held that while comprehensive federal regulation of nuclear energy preempts all state nuclear safety regulation, it does not preempt the states from regulating the economic aspects of nuclear power, such as refusing to grant a certificate of need for a new nuclear power plant on the ground that it was not economically viable. *Pac. Gas & Elec. Co. v. State Energy Res. Conservation & Dev. Comm'n*, 461 U.S. 190 (1983). State GHG policies which influence generation options may be likewise defended as economic risk mitigation measures.

In the summer of 2011, the Supreme Court decided *American Electric Power Co. v. Connecticut*, holding that the CAA's emerging GHG regulations displaced potential federal common law actions claiming GHG emissions created a public nuisance.<sup>226</sup> The standard for displacement the court employed was "whether the field has been occupied," which sounds quite similar to the test for so-called "field preemption" of state laws by federal statutes.<sup>227</sup> However, the analysis for displacement of federal common law by a federal statute is distinct from the analysis of preemption of state law by federal law under the Supremacy Clause.<sup>228</sup> Respect for the sovereignty of individual states in the federal system leads courts to apply a general presumption against preemption.<sup>229</sup>

In the analogous context of the CWA, the Supreme Court has held that while federal common law actions were displaced, state common law actions were not preempted.<sup>230</sup> The Court held, however, that state common law nuisance claims are preempted if they attempt to address sources outside of the state's borders.<sup>231</sup> This might prove to be a problematic precedent for states wishing to apply GHG policies to sources outside of the state's borders.<sup>232</sup> GHG policies are distinguishable from nuisance claims, however, because nuisance law includes the possibility of injunctive relief. Unlike injunctions issued under state nuisance law, a GHG policy would not necessarily directly intrude on the activities of an out-of-state electricity provider. Rather, adders would only impact the ability of in-state consumers to purchase electricity from particular sources. While it may reduce demand for the product of an out-of-state electricity producer, a GHG mitigation policy would not lead to the complex and costly maze of differing injunctive standards that the Supreme Court feared might exist if various state nuisance laws could all be applied to the same pollution source.<sup>233</sup> Because of the interstate nature of wholesale electricity markets, a state cannot effectively mitigate GHG emissions attributable to its electricity consumption unless the state is able to limit its imports of GHG-intensive electricity. If the CAA's savings clause has any meaning as applied

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226. 131 S. Ct. at 2537.

227. *Id.* at 2538.

228. *Id.* at 2540 (declining to rule on whether state nuisance law claims were preempted by the CAA).

229. *Rice v. Santa Fe Elevator Corp.*, 331 U.S. 218, 230 (1947).

230. *Milwaukee v. Illinois*, 451 U.S. 304, 353 (1981); *Int'l Paper Co. v. Ouellette*, 479 U.S. 481 (1987).

231. *Int'l Paper*, 479 U.S. at 497.

232. The Fourth Circuit recently relied on this precedent to find that state nuisance laws which resulted in injunctions requiring pollution scrubbers to be applied to an out-of-state power plant were preempted by the CAA. *North Carolina ex rel. Cooper v. Tenn. Valley Auth.*, 615 F.3d 291, 309 (2010).

233. *Int'l Paper*, 479 U.S. at 496–97.

to state GHG mitigation efforts, it should be applied to allow states to mitigate GHGs from the state's consumption, not merely from pollution sources within the state's borders.

### 3. Dormant Commerce Clause

The Supreme Court has interpreted the Commerce Clause to prohibit states from discriminating against out-of-state providers of goods or services.<sup>234</sup> State laws that facially discriminate against out-of-state producers face a form of strict scrutiny and are almost always found invalid under this so-called "dormant" aspect of the Commerce Clause.<sup>235</sup> Therefore, a state energy regulatory requirement that forced utilities to purchase electricity or fuel *only* from within that state may violate the Dormant Commerce Clause.<sup>236</sup> Strict scrutiny can also apply to a facially neutral statute if it is enacted with a clear legislative purpose to discriminate against out-of-state producers.<sup>237</sup> To avoid strict scrutiny, states should not use the details of GHG adders as a thinly veiled protectionist tool that favors in-state generation.<sup>238</sup>

Additionally, facially neutral state statutes that have a discriminatory effect on out-of-state commerce may violate the Dormant Commerce Clause. To determine when facially neutral statutes cross the constitutional line, the Supreme Court has used a balancing test:

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234. U.S. CONST. art. I, § 8 cl. 3; *Granholm v. Heald*, 544 U.S. 460, 472 (2005).

235. *Granholm*, 544 U.S. at 476. A discriminatory statute might be found valid if it "advances a legitimate local purpose that cannot be adequately served by reasonable nondiscriminatory alternatives," but this is a very high bar. *New Energy Co. v. Limbach*, 486 U.S. 269, 278 (1988). A federal statute can also explicitly authorize states to discriminate against out-of-state producers. *See Wyoming v. Oklahoma*, 502 U.S. 437, 457–58 (1992). There do not appear to be any federal statutes that generally authorize discriminatory treatment of electricity providers by state energy regulators, however. *New Eng. Power Co. v. New Hampshire*, 455 U.S. 331, 340–41 (1982) (holding that the FPA's savings clause allowing state regulation of retail electricity rates did not authorize violations of the Dormant Commerce Clause). If a state energy regulator were implementing adders pursuant to authority granted by the CAA, this might be explicitly allowed by federal statute.

236. *Wyoming*, 502 U.S. 437 (holding that an Oklahoma statute requiring coal-fired power plants in the state to use Oklahoma coal for at least 10% of their fuel supply violated the Dormant Commerce Clause).

237. *Bacchus Imports Ltd. v. Dias*, 468 U.S. 263 (1984).

238. Whether an adder is intentionally designed by a state to discriminate against out-of-state producers will be a factual question determined in each circumstance. But it seems fairly likely that most adder schemes will not have such discriminatory purposes aimed at out-of-state interests. *But see Rocky Mountain Farmers Union v. Goldstene*, 843 F. Supp. 2d 1071 (E.D. Cal. 2011) (Order on NPRA Plaintiff's Summary Adjudication Motion) (finding that a California Low Carbon Fuel Standard that used nominally neutral criteria to reduce GHG emissions from transportation fuels consumed in California was actually designed to impermissibly favor California fuel producers over out-of-state producers and was therefore facially discriminatory).

Where [a] statute regulates even-handedly to effectuate a legitimate local public interest, and its effects on interstate commerce are only incidental, it will be upheld unless the burden imposed on such commerce is clearly excessive in relation to the putative local benefits. If a legitimate local purpose is found, then the question becomes one of degree. And the extent of the burden that will be tolerated will of course depend on the nature of the local interest involved, and on whether it could be promoted as well with a lesser impact on interstate activities.<sup>239</sup>

In general, the balancing test is very deferential to neutral state statutes, since almost any market regulation could conceivably result in some sort of discriminatory effect on an out-of-state producer.<sup>240</sup> A state has a number of potentially valid local interests in limiting GHG emissions resulting from electricity sold within its borders. A state may view its GHG policy as a small piece of a bottom-up global solution to mitigating the effects of climate change, which may have a variety of adverse effects in that state.<sup>241</sup> A state GHG policy may be a manner of fairly accounting for the true cost of an externality caused by consumption within its borders. A state may also consider adders as a prudent risk management measure for protecting its residents from costs imposed by future national or international climate regulations or taxes. All of these rationales are justifiable local interests.

Opponents of adders may try to claim that addressing global climate change is not a valid “local” interest.<sup>242</sup> This argument is ultimately not likely to be persuasive.<sup>243</sup> Respect for state sovereignty should counsel federal courts to defer to state governments regarding what constitutes a “local” interest. If a state wants to pursue a goal it cannot achieve without the cooperation of other states and countries, that decision should be re-

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239. *Pike v. Bruce Church, Inc.*, 397 U.S. 137, 142 (1970) (citations omitted).

240. Robert Sedler, *The Constitution and the American Federal System*, 55 WAYNE L. REV. 1487, 1496–1506 (2009); *United Haulers Ass'n, Inc. v. O'Neida Herkimer Solid Waste Mgmt. Auth.*, 550 U.S. 330, 347 (2007) (noting that applying strict scrutiny to a state's police power authority harkened back to Lochnerian jurisprudence and warning against this “judicial supremacy”).

241. In *Massachusetts v. EPA*, for example, the Supreme Court recognized in its standing analysis that a state may have a valid interest in reducing the risk of rising sea levels and other climate change impacts. 549 U.S. 1438, 1455–56 (2009).

242. Memorandum in Support of Motion for Summary Judgment, *Rocky Mountain Farmers Union v. Goldstene*, 843 F. Supp. 2d 1071 (E.D. Cal. 2011) (No. 09-02234), 2010 WL 5882459.

243. See *Rocky Mountain Farmers Union v. Goldstene*, 843 F. Supp. 2d 1071, 1093 (E.D. Cal. 2011) (Order on NPRA Plaintiff's Summary Adjudication Motion) (finding that addressing global climate change is a valid local purpose under the Dormant Commerce Clause analysis).

spected and not discounted as a “non-local” interest.<sup>244</sup> The thrust of the Dormant Commerce Clause balancing test comes in the balancing between the state’s interest and the effect on commerce. The test should not be read to foreclose the validity of state interests prior to that balancing.

State GHG policies may be portrayed as ineffective measures to achieve the state’s local interest, however.<sup>245</sup> No single state’s adder program will completely mitigate the risk of climate change. Therefore, the discriminatory effect on interstate commerce might arguably outweigh the state’s interest in maintaining the regulation. A reviewing court may look for alternative, less discriminatory means to address the issue. In the case of GHG mitigation, GHG adders are generally a neutral and fair means to reduce GHG emissions, but they are by no means perfect. A national or international price on carbon would be more efficient than a state adder policy, but that policy is beyond the state’s control.

The Supreme Court recently noted that courts should be “particularly hesitant” to use the Dormant Commerce Clause to strike down regulation that is traditionally deemed to be a local function.<sup>246</sup> The regulation of electricity generation choices by public utilities has traditionally been a state matter.<sup>247</sup>

In addition, the Supreme Court recently noted that when “the most palpable harm imposed by the ordinances” is an increase in price for the services born by the citizens of the jurisdiction enacting the regulation, intervention by courts through the Dormant Commerce Clause is less justified.<sup>248</sup> To the extent that GHG adders increase prices for electricity, those price increases will be primarily felt by the consumers in the state using the adders. If that is the outcome chosen by the political process in that state, there should be, as the Supreme Court suggests, “no reason to step in.”<sup>249</sup>

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244. As the Supreme Court noted in *Massachusetts v. EPA*, just because a state’s interest addressing climate change is “widely shared” should not minimize it as an interest. 549 U.S. at 522 (citing *Fed. Election Comm’n v. Akins*, 524 U.S. 11, 24 (1998)).

245. The plaintiffs challenging the Minnesota statute tried to argue that the law would not effectively achieve its objectives, characterizing the statute as “at best, a purely symbolic gesture” which “will not have any meaningful effect on global warming.” Complaint for Declaratory and Injunctive Relief at para. 58, *North Dakota v. Swanson*, No. 11-03232, 2011 WL 5223597 (D. Minn. filed Nov. 2, 2011).

246. *United Haulers Ass’n, Inc. v. O’Neida Herkimer Solid Waste Mgmt. Auth.*, 550 U.S. 330, 344 (2007) (rejecting a challenge to a law regulating the traditionally local function of trash collection).

247. Davies, *supra* note 1, at 494–95.

248. *United Haulers Ass’n, Inc.*, 550 U.S. at 345.

249. *Id.*

## CONCLUSION

The significant risk of global climate change demands proactive mitigation measures. The pervasive nature of the various sources of GHGs throughout various sectors of the world economy demands an all-hands-on-deck approach to mitigation, particularly as the world struggles to reach consensus on broad international mitigation agreements. In the next decade, the United States will likely invest significantly in new electric generating capacity. GHG risks should be thoughtfully considered in these investment decisions. In the United States, state energy regulators are well positioned to assist in this consideration—either by requiring regulated utilities to implement GHG adders or by assisting state environmental regulators in the CAA permitting process. States might also consider a more dramatic role for their energy regulators—direct affirmative selection of energy generating technologies. All of these roles for state energy regulators have drawbacks, and they may be subject to potential constitutional challenges. But given the need to build new, long-term power plants, the nature of the threat of climate change, and the insufficiency of the world's and the United States' response to date, the time has come for energy regulators to become more involved in climate change mitigation efforts.