

# A Change in Climate? How State Regulators Are Making Decisions in Response to Global Warming

*While the federal government has been slow to respond to the challenges of global warming, states have stepped up to take actions aimed at mitigating anthropogenic climate change. A statistical analysis suggests that states with a statutory obligation to consider environmental matters showed a statistically significant average slower increase in the amount of carbon dioxide emitted than those without such an obligation.*

---

**John A. Sautter** graduated cum laude from New York University, and received his M.A. and Ph.D. from the University of Nebraska.

John A. Sautter and Christina Switzer

---

**Christina Switzer** graduated cum laude from Austin College with a B.A. in history.

*The authors both attend Vermont Law School in South Royalton and are research associates at the Vermont Institute for Energy and the Environment. The authors may be contacted at [jsautter@vermontlaw.edu](mailto:jsautter@vermontlaw.edu).*

---

## I. Introduction

In October 2007 the Kansas State Department of Health and the Environment denied an air quality permit to Sunflower Electric Power for the creation of two new 700-MW coal-fired generation plants in Southwest Kansas.<sup>1</sup> This decision is a high-water mark in state action on climate change. In part, the Kansas permit rejection was

possible because of the landmark April 2007 Supreme Court decision *Massachusetts v. EPA*. In that case, the Court declared that the “[Environmental Protection Agency] has statutory authority to regulate the emission of [greenhouse] gases . . .”<sup>2</sup> While the Court remanded the decision to the EPA, there is little doubt that the EPA will now regulate carbon emissions from point source pollution in the future.<sup>3</sup>

Utilities around the country are beginning to re-think investments in new coal-fired power plants because of the uncertainty of when and how greenhouse gases will be regulated. During the last year, utilities in states ranging from Texas to Florida withdrew their applications for a combined total of 16 planned coal-fired power plants.<sup>4</sup> Although there are several reasons for the withdrawals, one recurring element is that the pricetag on new plants includes a much higher permitting cost. These “permitting costs” include compliance costs, legal costs, and actual capital investments. Indeed, some estimates place the average *increase* during the last decade in the cost of permitting a new coal-fired power plant at over \$1,600 per kW of generation capacity.<sup>5</sup> The Kansas decision underscores how the “new” costs of permitting in the construction of coal-fired plants makes it more difficult to obtain permits.<sup>6</sup> It is unlikely that the state agency’s denial will be upheld in court; however, Sunflower Electric will still need to expend time, money, and resources fighting the decision. Thus, if a permit is eventually granted, the total price of the two generation units will increase from the already hefty \$3.6 billion price.

While the Kansas decision was unique in that it denied an air permit based on carbon dioxide emissions, many states have other less obvious

approaches to curbing greenhouse gas emissions. This article investigates the manner in which state public service boards may be treating carbon dioxide as a harmful externality under a statutory obligation to protect the environment.<sup>7</sup> Evidence presented here suggests that state laws obligating public service boards to consider environmental matters may be affecting carbon dioxide emissions. In short, public

---

*State laws obligating public service boards to consider environmental matters may be affecting carbon dioxide emissions.*

---

service boards with an environmental obligation may have taken actions that internalized the costs of CO<sub>2</sub> emissions as compared to those states that did not have such an obligation. If past state mandates aimed generally at the environment have been useful in reducing CO<sub>2</sub> emissions, it indicates that future laws and policies aimed at stopping global warming have a significant chance of being effective and should be considered on the state level. Indeed, the Kansas decision may be more of an indication of change in the political climate than actual policy for some states.

## II. Public Service Board Obligations and the Environment

Global climate change poses an enormous economic and environmental challenge for the United States. However, the federal government has been slow to respond to this threat.<sup>8</sup> In contrast, many states are working to promote clean, low-carbon-emitting energy sources with the explicit goal of limiting the impacts of climate change.<sup>9</sup> A recent example of the divergence between state and federal responses to climate change is the EPA’s denial in December of a request by California and 16 other states for permission to set state-wide standards for CO<sub>2</sub> emissions from automobiles.<sup>10</sup> EPA administrator Stephen L. Johnson explained that climate change requires a national response and that the recently signed energy bill fills that need.<sup>11</sup> There are stark differences, however, between California’s regulations and the new energy bill. Most notably, the new energy bill does not address CO<sub>2</sub> emissions, instead focusing solely on fuel economy standards.<sup>12</sup> In contrast, California’s regulations are more comprehensive, requiring a 30 percent reduction in greenhouse gas emissions by 2016.<sup>13</sup>

California is not the only state taking steps to curb greenhouse gases by developing laws that directly pursue reductions in CO<sub>2</sub> emissions. One of the most far-reaching programs has been the Regional Greenhouse Gas

Initiative (RGGI).<sup>14</sup> RGGI is a commitment that several Northeastern states have made to curb greenhouse gas emissions on a regional level.<sup>15</sup> For example, Vermont's commitment to RGGI obligates it to reduce greenhouse gas emissions by 10 percent at the close of 2018.<sup>16</sup>

Far before any state passed a more focused law aimed at CO<sub>2</sub> reduction, some states included a general obligation for the public service board (PSB) to consider environmental matters when issuing a regulatory ruling.<sup>17</sup> In each state, a PSB acts as a quasi-judicial regulatory body that oversees all aspects of utility operations, including siting matters, rate-making and general compliance with state law.<sup>18</sup> Sixteen PSBs have statutes either granting authority, or an obligation, to consider environmental matters.<sup>19</sup>

Statutory environmental obligations for state PSBs take various forms. For example, the Connecticut Public Utility Environmental Standards Act ranks environmental matters as an important part of the state's regulatory mandate.<sup>20</sup> The law states that the purpose of the Connecticut PSB is "to provide for the balancing of the need for adequate and reliable public utility services at the lowest reasonable cost to consumers with the need to protect the *environment and ecology* of the state."<sup>21</sup> Furthermore, Maryland law defines the state's Public Service Commission's role in regulating public service

companies as having to "consider the public safety, the economy of the state, *the conservation of natural resources and the preservation of environmental quality*."<sup>22</sup> Vermont is another example. In defining a state's PSB obligation, Vermont law lists environmental costs before even economic ones.<sup>23</sup> Vermont defines its PSB utility policy as attempting to meet "the public's need for energy services, after safety concerns are

---

*Vermont became  
a national leader  
in energy  
efficiency by  
establishing the  
first-ever efficiency  
utility in 1999.*

---

addressed, at the lowest present value life cycle cost, including *environmental* and economic costs, through a strategy combining investments and expenditures on energy supply, transmission and distribution capacity, transmission and distribution efficiency, and comprehensive energy efficiency programs."<sup>24</sup>

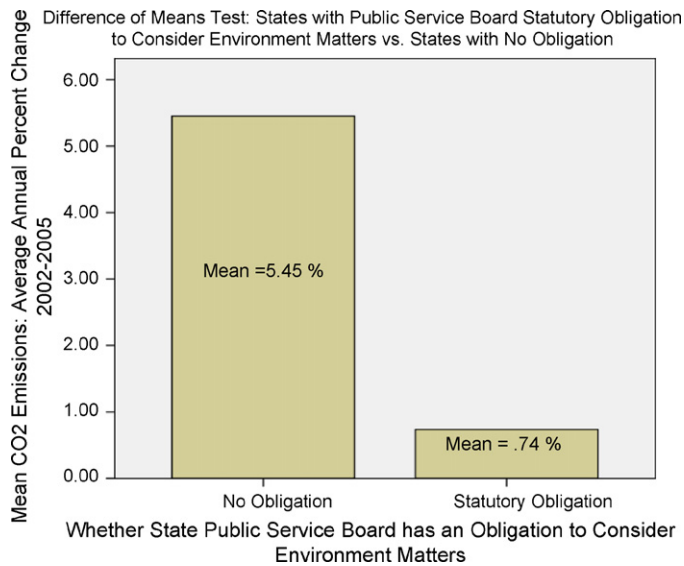
There are many ways that an environmentally conscious PSB could take steps to limit the amount of CO<sub>2</sub> that a state's electric industry emits into the atmosphere. Because a PSB has nearly universal control over the regulatory structure of a state, PSBs can mandate energy

efficiency, the use of low-CO<sub>2</sub>-emitting fuels or the use of renewable energy, all of which are currently more expensive than coal.<sup>25</sup> For example, Vermont is a state that raised electricity prices in a way that effectively lowered CO<sub>2</sub> emissions. Vermont became a national leader in energy efficiency by establishing the first-ever efficiency utility in 1999.<sup>26</sup> Efficiency Vermont took over individual utility efficiency programs and established one corporation focused on state-wide energy efficiency goals.<sup>27</sup> Thus far, Efficiency Vermont states that it has saved Vermont 207 million kWh from 2000–06.<sup>28</sup>

### III. State Differences: An Analysis

Do states with a public service board that have a statutory obligation to consider environmental matters (which we will call "Enviro States") make decisions differently regarding greenhouse gas emissions versus those states with no such statutory obligation (Non-Enviro States)? In order to test this hypothesis, data was gathered from the Energy Information Administration regarding annual CO<sub>2</sub> emissions from each state.<sup>29</sup> The data reflects only the percent change in CO<sub>2</sub> – either increase or decrease – from one year to the next. The data used includes only those emissions deriving from power generation facilities.

A standard difference of means test was used to estimate whether



**Figure 1:** Difference of Means Test. States with Public Service Board Statutory Obligation to Consider Environmental Matters vs. States with No Obligation. States with No Obligation,  $N = 35$ . States with Obligation,  $N = 16$ .  $t = 1.976$ ,  $p < 0.05$

there was a significant difference between Enviro and Non-Enviro States in regard to the amount of CO<sub>2</sub> they release annually. As **Figure 1** shows below, there is a significant difference in the annual percent change in CO<sub>2</sub> emissions from each state. Between 2002 and 2005, the mean annual percentage change for Non-Enviro States increased at 5.45 percent. However, Enviro States only increased their CO<sub>2</sub> emissions at a mean annual rate of 0.74 percent. The relationship is significant at the  $p < .05$  level. This indicates that from 2002–05, Non-Enviro States increased their CO<sub>2</sub> emissions at a rate seven times higher than Enviro States.

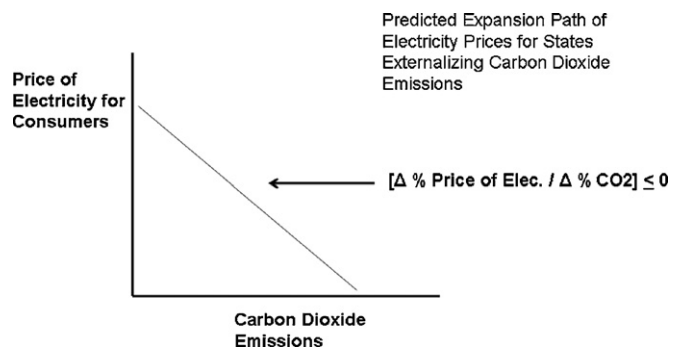
#### IV. Emissions and Externalities

The significant difference in carbon emissions between Enviro States and Non-Enviro States

suggests that Enviro States have begun to internalize the environmental costs of electricity production. CO<sub>2</sub> is a classic case of an externality.<sup>30</sup> The electric industry emits CO<sub>2</sub> as a by-product of burning fossil fuels, such as coal, natural gas, or oil, at power plants to produce electricity. Aside from the dangers of global warming, CO<sub>2</sub> emitted from power plants poses only mild consequences to the environment or public health. Therefore, in the past it has been very easy for power generators

(and PSBs) to continually ignore the amount of CO<sub>2</sub> emitted into the atmosphere. What is more, the cost of creating energy from a non-fossil-fuel source has historically, and presently still is, much higher.<sup>31</sup> Thus, there has been a financial incentive to continually externalize the costs of emitting CO<sub>2</sub> instead of internalizing costs. Indeed, advanced carbon capture technology that cleans coal emissions of CO<sub>2</sub> will likely increase the price of electricity from coal, from 60 to 70 percent.<sup>32</sup> At the core of the recent Kansas Department of Health and Environment decision was that the costs of allowing another environmental externality to go unchecked were too high.<sup>33</sup>

Here, we take a moment to consider one of the possible price effects of “internalizing” CO<sub>2</sub> costs. **Figure 2** displays the predicted expansion path of those states that externalize CO<sub>2</sub> emissions. For these states, as CO<sub>2</sub> emissions increase, the net cost to the consumer decreases. Because these states do not take measures to mitigate CO<sub>2</sub> emissions,



**Figure 2:** Predicted Expansion Path for States Internalizing Carbon Dioxide Emissions: Price of Electricity for Consumers Should Decrease or Stay Constant as CO<sub>2</sub> Emissions Increase

increases in electricity price are inversely related to increases in their CO<sub>2</sub> output. For example, consider the decision to install a coal-burning power plant. Electricity generated from coal requires low fuel costs compared to other alternatives like natural gas. This low-cost source of energy substantially increases CO<sub>2</sub> emissions. However, it would also decrease electricity prices over time in relation to other states that had opted to build a more expensive natural-gas-fired (low-carbon-emitting) power plant. The absence of a state mandate to consider environmental matters when planning electricity generation means that these states must choose between higher CO<sub>2</sub> emissions or higher electricity prices.

**Figure 3** predicts the relationship between CO<sub>2</sub> emissions and electricity prices if states are “internalizing” costs, or adding those costs to the price charged to consumers. Notice in **Figure 3** that as electricity prices increase, so too do CO<sub>2</sub> emissions. Essentially, states with an obligation to consider the

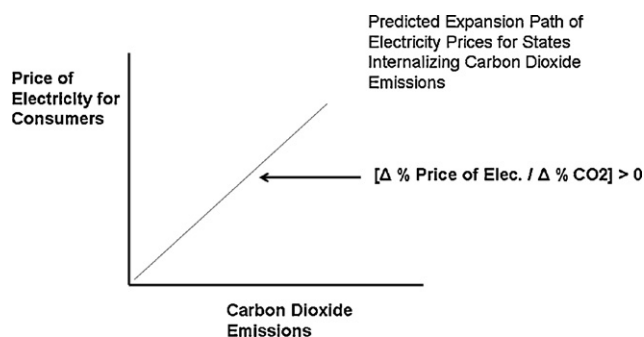
environment can curb emissions by compelling utilities to take actions that reduce CO<sub>2</sub>. PSBs do this by rendering rulings on rate-making orders or by adjudicating matters before the board that result in lower CO<sub>2</sub> emissions. However, these actions do not come without a cost. For example, if a utility installed more expensive wind generation in place of a less expensive coal-fired plant, the increased costs would be passed on to consumers of electricity through higher prices.

The point is that the energy world is shifting to a legal and regulatory regime that implicitly internalizes the costs of CO<sub>2</sub> emissions. As time goes forward, the correlation between CO<sub>2</sub> emissions and electricity costs is likely going to strengthen. Though the U.S. has no federal cap-and-trade carbon system, no carbon tax scheme, nor an international agreement to limit CO<sub>2</sub> emissions, it would seem that state governments are cobbling together their own response to climate change. The combination of a long term planning horizon that potentially extends from 10 to

15 years combined with the capital-intensive nature of energy investments means that utilities must take into account these larger social and political trends when considering their next generation source.

## V. Conclusion

Unfortunately, utilities must now begin reconciling the old way of doing things with the new reality that externalization of CO<sub>2</sub> may be politically untenable and legally difficult to continue. Instead of waiting for Congress to develop and implement a nationwide regulatory scheme aimed at reducing greenhouse gas emissions, states have begun the process of internalizing the environmental costs of CO<sub>2</sub> emitted during electricity production. This article demonstrates that one approach states have taken is to require public service boards to consider the environmental impact of their decisions. However, we also submit the broader view that states have shifted to a new way of thinking about climate change. Utilities interested in meeting future demand need to make an accurate appraisal of new generation options given a state’s political and regulatory climate. While including an obligation to consider environmental matters is not a replacement for legislation aimed directly at reducing greenhouse gas emissions, it could be an important starting point.■



**Figure 3:** Predicted Expansion Path for States Externalizing Carbon Dioxide Emissions: Price of Electricity for Consumers Should Increase in Tandem with CO<sub>2</sub> Emissions



## Endnotes:

1. Press Release, Kansas Dept. of Health & the Environment, *KDHE Denies Sunflower Electric Air Quality Permit*, Oct. 18, 2007, available at [http://www.kdheks.gov/news/web\\_archives/2007/10182007a.htm](http://www.kdheks.gov/news/web_archives/2007/10182007a.htm); see also David Biello, *Coal Friendly Climate Changes in Kansas*, SCI. AM., Oct. 19, 2007, at <http://www.sciam.com/article.cfm?articleID=BA48EB93-9DCD-A060-1C5154F52D5D2D18>.
2. *Massachusetts v. E.P.A.*, 127 S. Ct. 1438, 1462 (2007).
3. *Id.*
4. Biello, *supra* note 1.
5. Richard Munson, *Recycling Energy: How Industry is Leading a Clean-Technology Revolution*, ELEC. J. 79, 79 (2007) (noting that the cost of building a centralized coal-fired power plant has increased from \$800 per kW in the late 1990s to as much as \$2,500 per kW, largely because of new pollution control requirements).
6. Though the Kansas decision is revolutionary in that no state agency has ever denied a coal power plant permit based on the dangers of global climate change, it is likely that the decision will not hold up under judicial review. Scott Rothschild, *Sunflower Electric Petitions to Overturn KDHE's Decision Blocking Coal-Fired Plants*, LAWRENCE J.-WORLD, Nov. 2, 2007, at [http://www2.ljworld.com/news/2007/nov/02/sunflower\\_electric\\_petitions\\_overturn\\_kdhes\\_decisi/](http://www2.ljworld.com/news/2007/nov/02/sunflower_electric_petitions_overturn_kdhes_decisi/) (providing the legal arguments that Sunflower Electric plans to use to fight the KDHE's permit denial).
7. In neo-classical economic theory, externalities are any costs of production that are not taken into account by those who create the costs. Externalities often create a collective action problem because all economic actors contributing to the externality have a financial incentive to continue externalizing their costs with no disincentive to do otherwise. See HAL R. VARIAN, *MICROECONOMIC ANALYSIS* (New York: Norton Publishers, 2003) at 432 (describing an externality as "when the actions of one agent

directly affect the environment of another agent").

8. See Felicity Barringer, *U.S. Court Backs States' Measures to Cut Emission*, N.Y. TIMES, Sept. 13, 2007, at A1 (noting that the U.S. Environmental Protection Agency has not begun regulating carbon dioxide emissions); see also, Mark Clayton, *As Feds Stall on Climate, States Go Forth*, CHRISTIAN SCI. MONITOR, Sept. 14, 2007 (stating that 12 states have adopted, and six are considering, "California Style" emissions control limits for automobiles to curb carbon dioxide emissions).
9. For example, Arkansas recently established a "Governor's Commission on Global Warming." H.R. 2460, 86th Gen. Assem., Reg. Sess. (Ar. 2007). Alaska has developed a Climate Impact Assessment Commission. S.J. Res. 30, 24th Leg., 2nd Sess. (Ak. 2005). California's comprehensive "Global Warming Solutions Act of 2006" established a statewide mandate to reduce carbon dioxide by set deadlines. CAL. HEALTH & SAFETY CODE §§ 38, 500–38, 599 (2007). Connecticut established a "Climate Change Action Plan." CONN. GEN. STAT. ANN. § 22a–200a (West 2005).
10. Press Release, Environmental Protection Agency, *America Receives a National Solution for Vehicle Greenhouse Gas Emissions*, Dec. 19, 2007, at <http://yosemite.epa.gov/opa/admpress.nsf/eebfaebc1afd883d85257355005afd19/41b4663d8d3807c5852573b6008141e5!OpenDocument>.
11. *Id.*
12. Energy Independence and Security Act of 2007, Pub. L. No. 110-140, 121 Stat. 1492.
13. California Environmental Protection Agency, Air Resources Board, Fact Sheet for Climate Change Emission Control Regulations (2004), at [http://www.arb.ca.gov/cc/factsheets/cc\\_newfs.pdf](http://www.arb.ca.gov/cc/factsheets/cc_newfs.pdf).
14. Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Rhode Island, and Vermont have all committed to the Initiative. For more information, see Regional Greenhouse

Gas Initiative's Web site at [www.rggi.org](http://www.rggi.org).

15. *Id.* Western U.S. states have partnered with the Canadian provinces of British Columbia and Manitoba to form their own regional climate change initiative called the Western Climate Initiative. See, Western Climate Initiative, at <http://www.westernclimateinitiative.org/>.
16. Press Release, Vermont Governor's Office, Governor Douglas Leads on Climate Change – Douglas Signs Onto Historic Regional Program to Reduce Greenhouse Gas Emissions (Dec. 20, 2005), at <http://governor.vermont.gov/tools/index.php?topic=GovPressReleases&id=1642&v=Article>.
17. See, Michael Dworkin *et al.*, *Revisiting the Environmental Duties of Public Utility Commissions*, 7 VT. J. ENVTL. L. 1, 2 (2006) (noting that some states fail to recognize the strong link between economic and environmental issues).
18. See, e.g., VT. STAT. ANN. tit. 30 § 248 (2000) (outlining the powers of the Vermont Public Service Board).
19. States that have an obligation or are granted authority to consider environmental matters include: Alaska, Connecticut, Florida, Illinois, Iowa, Maine, Maryland, Mississippi, New Jersey, New York, North Carolina, Rhode Island, Utah, Vermont, West Virginia, and Wisconsin. For a listing see Dworkin *et al.*, *supra* note 14, at 2 n. 4.
20. Public Utility Environmental Standards Act, CONN. GEN. STAT. ANN. §§ 16-50g to 16-50aa (West 2005).
21. *Id.* § 16-50g (emphasis added).
22. MD. CODE ANN., Public Util. Cos. § 2-113 (LexisNexis 2000) (emphasis added).
23. VT. STAT. ANN. tit. 30 § 218c(a) (2000).
24. *Id.* § 218c(a)(1).
25. e.g., CONN. AGENCIES REGS. §§ 16-245a-1 to 16-245a-2 (2006) (adopting regulations for a renewable energy portfolio standard); Wisconsin Public Service Commission Initiative

Midwest Renewable Energy Tracking System, at <http://psc.wi.gov/aboutus/initiatives/mrets.htm>.

26. For background on energy efficiency as a solution to energy needs see PAUL HAWKEN, AMORY LOVINS, AND L. HUNTER LOVINS, *NATURAL CAPITALISM: CREATING THE NEXT INDUSTRIAL REVOLUTION* 48 (Boston: Little Brown & Co., 1999). For a Vermont focus see David Gram, *Douglas Calls for More Energy Efficiency*, *TIMES ARGUS*, Jul. 28, 2006; Vermont Energy Investment Corporation Efficiency Vermont, at <http://www.veic.org/ProjectProfiles/EfficiencyVermont.cfm>.

27. Efficiency Vermont About Us, <http://www.encyvermont.com/pages/Common/AboutUs/>.

28. *Id.*

29. Information from the Energy Information Administration concerning carbon emissions is available at <http://www.eia.doe.gov/environment.html>.

30. See Varian, *supra* note 8, at 432 (describing an externality as “when the actions of one agent directly affect the environment of another agent”); Joni Hersch and Kip Viscusi, *Allocating Responsibility for the Failure of Global Warming Policies*, 155 U. Pa. L. Rev.

1657, 1657 2007) (“[examining] the similarities and differences between lawsuits seeking to recoup the value of financial externalities caused by smoking and lawsuits targeted at the value of environmental damages due to global warming”).

31. *e.g.*, see JOSEPH TOMAIN AND RICHARD CUDAHY, *ENERGY LAW IN A NUTSHELL* (2004), at 223 (describing coal as “abundant and dirty”).

32. Biello, *supra* note 1.

33. Press Release, Kansas Dept. of Health & the Environment, *supra* note 1.



*The US currently has no federal cap-and-trade system.*