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The Role of the States in a Federal Climate Program

Issues and Options

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Abstract

Many states have been in the forefront in implementing programs to reduce carbon dioxide emissions, including regional cap-and-trade programs. A major issue Congress will need to address in any federal climate legislation is the future role of state programs that are already underway. One of the key questions is whether Congress will allow states to have more stringent reduction targets. This paper provides an overview of some of the key issues regarding state–federal roles in a federal climate program and identifies four possible mechanisms that have been suggested for allowing states to set more stringent reduction targets.

Key Words: climate change, cap-and-trade, state–federal roles

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The Role of the States in a Federal Climate Program: Issues and Options

Katherine N. Probst and Sarah Jo Szambelan*

1. Introduction

Climate policy in the United States is at a pivotal juncture. With the election of Barack Obama in November 2008 and the concurrent change in congressional leadership, many observers expect that—in this Congress or the next—the nation will enact legislation to address climate change. This would be a major change from the previous eight years, when state and local governments, filling the federal policy void, were the clear leaders in developing and implementing programs to reduce greenhouse gases (GHGs). That said, given the nation's economic woes and congressional focus on health care, achieving progress on a climate and energy bill during this session may still be out of reach.

At the end of June 2009, the House of Representatives approved the first federal piece of climate legislation, the American Clean Energy and Security Act of 2009, introduced by Reps. Waxman (D-CA) and Markey (D-MA). The locus of activity has now moved to the Senate, where Sens. Kerry (D-MA) and Boxer (D-CA) have introduced a Senate version of national cap-and-trade legislation. Sens. Kerry and Boxer introduced the bill with the goal of having at least some debate on the Senate floor before the international climate policy talks in Copenhagen in December 2009.

In addition to all the activity on Capitol Hill, the U.S. Environmental Protection Agency is taking steps to regulate carbon dioxide under the Clean Air Act. On April 17, 2009, the agency announced its proposed finding that “greenhouse gases contribute to air pollution and may endanger public health”—the first step in this process. On September 30, 2009, EPA Administrator Lisa Jackson announced a proposal to require large sources to hold permits for their emissions of carbon dioxide (CO₂); if implemented, this would be a second major step in the regulatory process. These moves put pressure on legislators, many of whom would prefer to see EPA regulate greenhouse gases under new legislation rather than under the Clean Air Act, to

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avoid a patchwork approach to regulating CO₂.¹ Even as EPA announced this important step, the press release reiterated the agency's "preference for comprehensive legislation to address this issue..." (U.S. EPA 2009a). Which process will be completed first is anybody's guess.

Most of the attention is on the basic architecture of federal climate legislation—the design of a national cap-and-trade program and the policies and funding of the many other initiatives to reduce energy consumption, stimulate cleaner technologies, and address adaptation. However, another issue garnering attention is the role of state governments once a federal climate program is in place. Because many states already have climate programs underway and under consideration, a key question that Congress must grapple with in any climate legislation is how to integrate the current and future climate programs: which elements of climate policy will remain with the states, and how will state and federal programs interact?

It is important to acknowledge the growing activity on state-federal climate issues over the past few years. Many organizations have hosted conferences and discussions about state-federal roles in climate change, including the National Association of Clear Air Agencies, The Pew Center on Climate Change, the Northeast States for Coordinated Air Use Management, the World Resources Institute, the Nicholas Institute at Duke University, and the recently formed Georgetown Law School State-Federal Climate Center. There have also been many thoughtful and interesting papers written on this topic; a list of references is included at the end of this report. This paper builds on this work, although needless to say, any errors are the authors' responsibility.

Resources for the Future hosted a one-day conference on the role of states under federal climate legislation on February 27, 2009, in Washington, D.C.² The purpose of the conference was to bring together a cross-section of players from the full panoply of stakeholders—state and federal agencies, industry, environmental and other nongovernmental organizations, and academics—to discuss the states' role in the major areas of likely federal climate legislation: cap and trade, renewable portfolio standards, and efforts to increase energy efficiency and reduce vehicle miles traveled.

¹ A secondary concern is that regulating greenhouse gases through the Clean Air Act might leave the regulation vulnerable to litigation, much as the EPA's Clean Air Interstate Ruling (CAIR) was contested. The CAIR ruling would have tightened regulations for SO₂ and NO_x but was vacated by the U.S. District Court of Appeals in 2008 and remanded to EPA to fix later that year. Its future remains uncertain.

² For a brief summary of the conference and copies of the agenda and presentations, go to http://www.rff.org/Events/Pages/Role_States_Federal_Climate_Change_Legislation_.aspx.

This paper is an outgrowth of the February conference. Instead of summarizing the presentations and discussions at the RFF conference, however, it provides an overview of some of the challenges of harmonizing state and federal climate programs, paying most attention to one issue—possible mechanisms for allowing state governments to set more stringent targets for greenhouse gas reduction than the federal government, colloquially referred to as “meet or exceed.”

The paper is organized as follows: Section 2 provides background information on state and federal climate policies to date; in Section 3 we discuss the importance of each jurisdiction’s roles in achieving greenhouse gas reductions; and in Section 4 we offer a guide to the possible mechanisms that would allow states to implement more stringent climate policies than a federal climate program might require. Section 5 concludes.

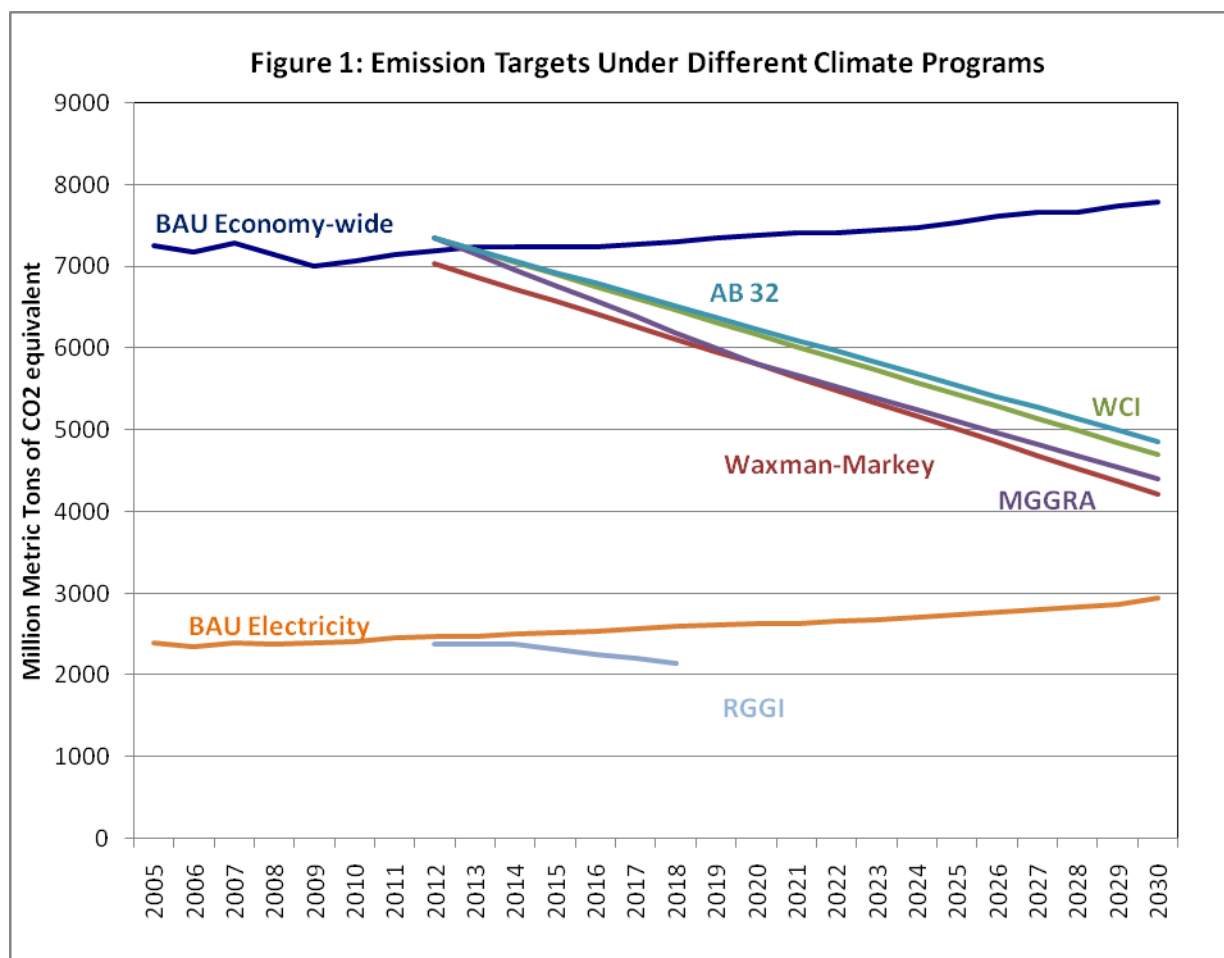
2. Overview of State Climate Programs

States have truly been the leaders in climate policy. The lack of action by the federal government on climate change left a void that many states have filled by implementing their own programs to reduce greenhouse gases. Climate change is inherently a global problem, requiring a solution to global emissions reductions. States were driven to enact their own climate policies by federal inaction; their efforts were intended to provide examples to other states and to the federal government, create precedent, and reap any economic or political benefits from acting early to address climate change (Keeler 2007).

Efforts by states include the first regional cap-and-trade program in the United States for CO₂ emissions from electric utilities, the Regional Greenhouse Gas Initiative, or RGGI. Cap-and-trade programs place an overall limit on total emissions and thereby place a price on each ton of GHG, creating an incentive to reduce the emissions that cause climate change. Because firms can buy and sell CO₂ permits, the reductions that do take place will be the most efficient—that is, the least-cost reductions. Ten states in the Northeast participate in the RGGI cap-and-trade program, which held its first auction of CO₂ allowances in September 2008. Two other regional trading programs, which would include not only the electricity industry but the entire set of CO₂-emitting sources, including industries and households, are in earlier stages of development. These are the Western Climate Initiative (WCI), made up of seven western states and four Canadian provinces, and the Midwest Greenhouse Gas Reduction Accord (MGGRA), composed of six midwestern states and one Canadian province (The Pew Center 2009b).

The rules for the western and midwestern programs are not yet final, but WCI is slated to begin in 2012 and increase coverage in 2015, with the overall aim of reducing greenhouse gases throughout the regional economy to 15 percent below 2005 levels by 2020. WCI, which includes California, was inspired in part by California's Global Warming Solutions Act of 2006, or AB 32, which created a statewide cap-and-trade program scheduled to begin in 2012 as well. The goal of implementing AB 32 is to achieve 1990 emissions levels by 2020, slightly less than WCI (see Figure 1). It is worth noting that AB 32 is the only cap-and-trade program that was created by state law, as opposed to a voluntary agreement among states. As such, AB 32 requires a relatively substantial allocation of resources by the state government to ensure enforcement of the new requirements. The advisory group to the midwestern accord has recommended reducing greenhouse emissions by 20 percent below 2005 levels by 2020, and 80 percent below 2005 levels by 2050. Upon the states' approval of all recommendations, a cap-and-trade program to achieve these targets would begin in 2012. All told, 23 states are members of regional cap-and-trade programs.

Figure 1 compares the rough emissions targets that the major CO₂ reduction programs aim to reach *if each were national* in scope, both with each other and with a business-as-usual (BAU) emissions trajectory—that is, with no emissions abatement program. Note that the stringency of a program is determined not just by the targets and timetables by which emissions must be reduced, but also by the percentage of greenhouse gas emissions it regulates. The more CO₂ sources that are regulated, the greater the stringency. In other words, an economy-wide program that covers greenhouse gas emissions from the electricity sector plus fuel importers, petroleum refiners, natural gas distributors, and other industrial sectors is more stringent than a program that covers the electricity sector only. Because RGGI has not created targets for emission reductions beyond 2018, projected emission targets do not go beyond this year.



Note: Targets for regional programs do not reflect the actual reductions that would be made. These trajectories reflect predicted reductions if each set of targets were adopted and implemented nationally.

Sources: BAU data provided by EIA 2007 Emissions Inventory, published in 2008. RGGI data: RGGI Memorandum of Understanding, 2005. AB 32 data: targets in AB 32. Waxman-Markey data: targets in H.R. 2454. MGGRA data: Final Draft Recommendations, 2009. WCI data: Design Recommendations for the WCI Regional Cap and Trade Program, 2008.

In addition to those current, developing, and potential cap-and-trade programs, states have enacted a suite of other measures to reduce greenhouse gases. Most of these programs fall into the following major categories.

Climate action plans generally take a comprehensive view of each state’s emissions inventory and outline opportunities for reductions within the state. These plans are voluntarily adopted by states to provide a roadmap for reducing greenhouse gas emissions. In addition, some of the state plans include strategies for adapting to climate change. Most states have advisory boards to help implement the plans. As of September 2009, 32 states had completed their climate action plans, and 6 states were in the process of finalizing them (U.S. EPA 2009b).

Statewide emissions targets have been adopted by many states in their climate action plans and vary greatly by state, in terms of both the targets and the timetables. Some of the statewide emissions targets are stated as goals; others are written into state law and are thus legally binding.

Renewable portfolio standards (RPS) require that a certain percentage of electricity be generated from renewable sources, such as solar, wind, or geothermal power. The targets, timetables, and definitions of “renewable” vary across state programs.

Net metering allows consumers who generate their own electricity (e.g., with the use of solar panels) to sell any excess electricity back to the grid.

Green pricing allows consumers to pay a small premium on their electric bill for electricity generation from renewable sources.

Energy efficiency resource standards (EERS) establish targets for minimum energy savings for electricity generation and, in some cases, for heating fuels. These standards encourage the adoption and use of cleaner, more efficient equipment and appliances. Instead of having a separate EERS, some states count energy efficiency toward meeting an RPS.

Building energy codes are established by states for both residential and commercial buildings. They stipulate design specifications for building materials and practices that have the potential to reduce energy consumption. The codes vary greatly by state.

Transportation plans to reduce vehicle miles traveled are typically made by metropolitan planning organizations, which are made up of local government and transportation authorities. Vehicle miles traveled (VMT) refers to the total number of miles driven during a specified period of time, such as one year. Plans to reduce VMT can include land-use planning that situates new residences closer to places of work, improved public transportation, and parking and rideshare policies. California’s approach is worth noting: it has enacted legislation, SB 375, that establishes land use–related GHG goals and provides incentives for developers and local governments to achieve them.

Table 1 shows the number of states that have adopted each of these types of policies.

Table 1. State GHG Policies

| <i>Policy</i> | <i>Implementation</i> |
|---|---------------------------------|
| Climate action plans | 36 states (in various stages) |
| Statewide emissions targets | 22 states |
| Renewable portfolio standards | 29 states, District of Columbia |
| Statewide net metering | 18 states |
| Green pricing | 44 states |
| Energy efficiency resource standards | 19 states |
| Building energy codes | Most states |
| Transportation plans to reduce vehicle miles traveled | Many metropolitan areas |

Sources: The Pew Center on Global Climate Change, "Climate Change 101: State Action," January 2009; U.S. Department of Energy, Building Energy Codes Program website: http://www.energycodes.gov/implement/state_codes/.

As noted above, states have been actively addressing greenhouse gas emissions in various capacities. Most of the major bills that have been introduced in the 111th Congress include a host of provisions similar to state efforts. Specifically, a cap-and-trade program for CO₂ emissions, national building energy codes, and renewable portfolio standards are all being considered at the federal level. Each is included in the bill introduced by Reps. Waxman and Markey (H.R. 2454) and passed by the House of Representatives. In the Waxman-Markey bill, all state and regional cap-and-trade programs would be preempted from 2012 to 2017^{3,4}. The Senate version of the climate bill drafted by Sens. Kerry (D-MA) and Boxer (D-CA) would also preempt state programs. The only difference in this bill from Waxman-Markey is that the moratorium on state or regional cap-and-trade programs would begin either in 2012 or nine months after the first federal auction—whichever comes first—and would continue through 2017. This small amount of flexibility is designed to let states keep their programs running in the event that a federal cap-and-trade program is delayed. In addition, some of the other provisions in Waxman-Markey would directly overlap with the building energy codes most states have already adopted and the mandatory RPS programs operating in 29 states (The Pew Center 2009a; 2009b).

⁴ See Section 861 of H.R. 2454.

How best to integrate state and federal climate policies is a difficult question. To harmonize building energy codes, the Waxman-Markey bill would require EPA to choose between existing state and federal codes, depending on which would result in the most cost-effective energy savings⁵ There are also provisions to equate different state RPS programs with the RPS in the Waxman-Markey bill; governors could petition for more stringent RPS targets and states would be able to control the rates charged for renewable electricity, as they do now through green pricing policies.⁶ One concern is the high transaction costs associated with comparing state and federal policies and verifying and enforcing the overarching federal provisions. Adopting an RPS at the federal level has generated another concern as well: because states are naturally endowed with different sources of renewable energy in different amounts, it might make logistic and economic sense to allow states to choose whether to adopt RPS programs and to set the targets and timetables on a state-by-state basis (Apt et al. 2008).

3. Benefits of Federal and State Climate Programs

Overlapping federal and state cap-and-trade programs will, in some cases, be redundant and burdensome for both regulators and the regulated entities. However, there are benefits associated with regulating greenhouse gas emissions at both levels. In this section we offer suggestions for how to harness the benefits of both.

Regulating greenhouse gases at the federal level carries definite advantages. In the most basic sense, setting a federal target gives the United States a unified emissions reduction goal around which political efforts can rally both within the nation and in the international community. Many have argued that in international negotiations on climate change, a binding U.S. target may be helpful in encouraging developing countries to commit to legally binding targets of their own (Aldy and Stavins 2007).

More than other emissions that have been addressed through trading programs—such as sulfur dioxide (SO₂) and nitrogen oxides (NO_x)—greenhouse gases are especially well suited for a national cap-and-trade program because they mix uniformly in the atmosphere and have the same environmental effect regardless of their source and location. To address climate change, it is only the *aggregate* amount and timing of reductions that matter. Thus, on any given day, an

⁵ See Section 304(b)(1)(B) of H.R. 2454.

⁶ See Section 610(b)(4) and Section 102 of H.R. 2454, respectively.

identical amount of reductions made by cutting vehicle emissions in Los Angeles or through reduced electricity emissions in Pittsburgh imply identical climate change outcomes.

Federal legislation also creates a level playing field, where emissions in all states are subject to similar requirements. This could limit “leakage,” the movement of heavily emitting industries from states with regulation to states without controls. In addition, industries that provide emissions reduction technology would benefit from one predictable climate policy as opposed to meeting the demands of a patchwork of state climate policies. This desire for a consistent national policy was clearly exemplified by the auto industry’s fight against California’s Pavely Bill (AB 1493), which would have required more stringent standards for CO₂ emissions (as allowed under the waiver provision of the Clean Air Act) for automobiles sold in California beginning in 2012. The industry’s main argument was that it would be too expensive and difficult to design and manufacture vehicles to meet the different specifications of two markets (i.e., California and the 14 states⁷ that adopted the California standard, and the rest of the country operating under a federal standard). If there are redundant or overlapping state and federal climate programs, litigation is likely to ensue.

If subfederal cap-and-trade programs are less stringent than an eventual federal program, then federal law would have the ultimate say. As seen in Figure 1, as rules and laws are finalized, the targets and coverage of many of the regional programs would be less stringent than the Waxman-Markey bill, and thus preempted. If the preemption (or harmonization) of state cap-and-trade programs is not explicitly addressed in federal legislation, any ensuing court cases to resolve overlapping programs could delay climate policy implementation and chip away at the political will to address climate change in the near term. It is worth noting that this issue is addressed in both Waxman-Markey, where subnational cap-and-trade programs are explicitly preempted, and Kerry-Boxer, although in this latter proposal, states would be allowed to continue running their own cap-and-trade programs if a federal program is delayed. In either case, it is generally agreed that bringing down greenhouse gas concentrations becomes more expensive and difficult as more time passes and emissions continue to climb, as in the business-as-usual scenario (see Figure 1).

⁷ This figure does not include the three states (Montana, Colorado, and Utah) that are in the process of adopting the California standard. See http://www.pewclimate.org/what_s_being_done/in_the_states/vehicle_ghg_standard.cfm.

Additional benefits of federal legislation are specific to cap and trade. That is, according to economic theory, the greater the heterogeneity in the costs of emissions reductions among sources—which usually occurs with a larger number of sources—the lower the costs of reducing CO₂ emissions to any set level. Because the regulated sources have different costs, there are more opportunities for trading with sources that can reduce emissions at a lower cost. In comparison, under multiple state or regional programs the costs of reducing CO₂ to a set level would likely be higher than under a federal system.⁸

Although some have argued that “all you need” to reduce emissions of greenhouse gases is cap and trade, there is growing recognition that achieving reductions in a timely manner requires both cap and trade (or some mechanism for putting a price on carbon) and direct regulatory programs. State regulatory programs aimed at reducing energy use can produce emissions reductions while Congress hashes out agreement on a specific national target for emission reductions. During this time of transition, direct regulatory programs—whether at the state or federal level—can take direct aim at opportunities for reducing greenhouse gases. In addition, regulatory programs are likely to be more effective at achieving reductions that require the adoption of energy-saving behaviors or energy-efficient technologies (Andreen et al. 2008; Doremus and Hanemann 2008; Samaras et al. 2009). Behavioral and some technological changes are often less responsive to market signals (especially in the near term) imposed by an emissions cap, for various reasons, such as missing market information and misaligned incentives due to subsidies or inefficient policies.⁹ This means that in particular cases, the price signal in the market might fail to encourage energy conservation or efficiency, or would only do so if emission allowances reached an extraordinarily high price—which is unlikely.

State and local governments have more direct knowledge and a natural advantage over the federal government in administering complementary measures like local land-use and building codes. Also, states can tailor their programs and implementation to state-specific opportunities to reduce emissions. There is a great deal of variation among states in GHG sources and, as a result, in the strategies adopted to ensure reductions. It is, in fact, the variation in both their emissions profiles and the opportunities for reductions that makes the states “laboratories of innovation.”

⁸ See, for example, Keeler (2007), McGuinness and Ellerman (2008), Litz and Zyla (2008), and Point Carbon (2008).

⁹ For an overview of perspectives and evidence of the extent to which market failures and barriers prevent the adoption of energy efficient technology, see Newell et al. (1999).

Indiana and Illinois offer one example. Even though they are neighboring states, the emissions profiles of their electricity sectors are strikingly different. Indiana's per capita greenhouse gas emissions are the highest in the Midwest, while Illinois (along with Michigan) has the lowest. Although population plays a role, it is the reliance on coal in Indiana and nuclear power in Illinois that drives this difference. Illinois has the greatest percentage of electricity produced by nuclear fuel of any U.S. state. In 2005 in Indiana, 95 percent of electricity was generated from coal; in the same year in Illinois, coal fueled only about 50 percent of electricity generation and nuclear power generated most of the rest (Larsen et al. 2007).

California may have a unique opportunity to achieve greenhouse gas reductions. Statewide, treating and conveying drinking water and disposing of wastewater take, on average, an estimated 19 percent of the power generated by the state's electricity sources, 30 percent of its nonelectric natural gas, and 88 billion gallons of diesel gas—making water the most energy-intensive sector in the state (Navigant Consulting 2006; Krebs 2007). Thus there is a large potential in California to decrease energy use and associated greenhouse gas emissions through limiting the consumption of water in parts of the state. Some have argued that the decision of whether to pursue this kind of opportunity is most appropriate at the state, not the federal, level (Doremus and Hanemann 2008),

Some have suggested that strategies that focus on land use, building codes, and energy efficiency, often referred to as complementary measures, could achieve as much as half the reductions needed to meet the targets set in proposed federal cap-and-trade legislation (Andreen et al. 2008). In addition, some federal officials have noted that because the emissions reductions achieved through state and local complementary measures are likely to be some of the most cost-effective, they will be implemented first, and the more expensive compliance strategies will take place only after these avenues for reducing emissions have been fully exhausted.

Because both federal control of greenhouse gas policy and state-level emissions reductions are clearly advantageous, we discuss in the next section how a unified federal policy could allow and encourage states to continue making much-needed greenhouse gas emission reductions.

4. Options for More Stringent State Programs

State representatives have repeatedly said that their goal in crafting their own climate programs is to offer a model for a federal program, and that the adoption of a federal CO₂ trading program is, in fact, their main objective. That said, some state officials have voiced the desire to

“preserve and enhance state and local authority to continue implementing innovative measures and programs that further reduce greenhouse gas emissions within their jurisdictions” in the event of federal climate legislation (Office of the Governors 2009).

One of the questions that Congress will need to address in any climate bill is whether the new federal program will give states the flexibility to attempt more ambitious reductions in CO₂ and other greenhouse gases than those set forth in the federal legislation. Several states would like the same flexibility they have under most environmental laws—to be allowed to exceed federal standards.¹⁰ In addition, some states want to preserve their authority to regulate greenhouse gases in the future. Despite the new optimism that there will be a federal climate program soon, there is still concern that should the federal government falter, the states must be able to again take the lead.

In addition, as the locus of activity moves to the federal government, state representatives want their work to be recognized and rewarded and seek federal funds to continue (and expand) their climate programs, in the form of either allowances or grants. And, for sources under RGGI, a critical issue is whether the allowance auction revenues they have been receiving will be replaced and whether any “banked” allowances will retain their value under a future federal cap. Waxman-Markey would respect the value of those emissions allowances in a dollar-for-dollar (not ton-for-ton) exchange.

Several recent papers include specific suggestions for approaches that would allow states the flexibility to implement a more stringent climate program than the federal government.¹¹ We have surveyed the existing literature and grouped the various suggestions into four basic approaches that could be employed to allow states to go beyond the federal program:

1. States retire federal allowances.
2. States require sources within their borders to submit a premium amount of CO₂ allowance for each ton emitted.
3. States implement their own cap-and-trade programs in lieu of the federal program; these programs are called carve-outs.

¹⁰ For example, under the Clean Air Act Amendments of 1990, each state must submit to EPA an implementation plan to meet national ambient air quality standards. The state can choose to meet either national standards or those set by leader states in air policy, namely California, which are relatively more stringent.

¹¹ For an interesting article that identifies a different but overlapping set of policy options, see Bianco et al. (2009).

4. States regulate sources of greenhouse gases not addressed in the federal program.

After describing each approach, we discuss its strengths and weaknesses in terms of their effect on the total cost of the cap-and-trade program and the potential to accelerate or significantly increase emissions reductions in the United States.

1. States go beyond the cap by retiring federal allowances.

One way that a state could achieve more stringent greenhouse gas emission reductions than called for under federal legislation would be through the retirement of federal allowances. Retirement of allowances effectively lowers the federal cap because it reduces the total number of allowances that are available for use and, therefore, the total amount of CO₂ emissions allowed. States could retire allowances in one of two ways: state agencies could purchase and retire federally auctioned allowances, or they could retire a portion of CO₂ allowances allocated directly to them under federal legislation.

Whether allowances originate from federal or state pools, the option to retire national allowances decreases the total number of allowances available nationally and therefore is likely to increase the price of the remaining allowances. Whether a state buys allowances on the open market or retires allowances allocated directly to them, it is giving up or forgoing revenues. This can be a very real cost to the states. If allowances are retired or purchased, the revenues lost will mean less money in state coffers—money that could have been used to balance state budgets, provide services, or finance complementary programs to reduce greenhouse gas emissions. If the economic recession continues, however, forgone revenues will be greatly decreased.

Concern that allowing states to retire federal allowances could lead to a much more stringent target or higher allowance prices has led to two suggested variations on this approach. In a draft proposal published by the World Resources Institute and the Nicholas Institute, titled “Allowing States to Retire Allowances without Affecting National Allowance Prices: A Straw Proposal,” Bianco et al. (2009) suggest that states be able to retire federal allowances only if they can show that state programs have led to reductions *in addition* to those that would have occurred under the federal program. A major drawback of this approach is that it would require some mechanism for ensuring that states have achieved “additional” reductions. This would increase administrative and transaction costs and heighten uncertainty about actual reductions.

Another approach, taken in the federal climate bill by Waxman and Markey, is to expressly limit the amount of federal allowances states would be allowed to retire. This allows a

state to implement a more stringent policy but limits the effect on the cap and on allowance prices.

2. States go beyond the cap by requiring sources within their borders to submit a premium amount of reductions for each CO₂ allowance.

Some analysts have proposed that states be allowed to require that sources within their jurisdictions submit a premium number of federal allowances for every ton of CO₂ emitted. For example, states could decide that 1.1 federal allowances would satisfy compliance for every 1 ton of CO₂ emitted by in-state sources, thus effectively lowering the cap. As in option 1 above, where states retire federal allowances, this approach would effectively reduce the total number of federal allowances and their associated emissions. By requiring a premium amount of CO₂ reduction for each federal allowance, it would allow states to implement a more stringent cap without simply making additional emissions available to those outside their borders.

To the same end, some have suggested that states be given authority to impose restrictions on the sale of allowances. For example, states could restrict the sale of allowances to dirtier sources outside their borders. They could also require facilities that shut down to surrender any allowance holdings without selling them on the market (Litz and Zyla 2008). Both policies would limit the number of available allowances and tighten the federal cap. However, such an option could restrict interstate trade and thus violate the Interstate Commerce Clause. In fact, precedent has been set against such an option by the Second Circuit of the U.S. Court of Appeals, which in 2003 overturned a New York state law that would have restricted the sale of Title IV SO₂ allowances.¹²

If allowed, however, the ability to restrict the use and sale of allowances by states would have similar effects to allowing states to retire federal allowances: there are effectively fewer allowances, which would raise the price of allowances. At least in theory, this could lead to the migration of industries and their associated emissions to less stringently regulated areas of the country. In addition, this approach also tightens the national market for allowances and thus raises the marginal cost of compliance, which affects the allowance price seen by all sources.

¹² For the complete decision, see *Clean Air Markets Group v. Pataki et al.* (available at <http://openjurist.org/338/f3d/82/clean-air-markets-group-v-e-pataki-j-d-a-n>). New York had been concerned that if upwind sources bought emissions allowances and surrendered these in lieu of emissions abatement, their emissions would be deposited as acid rain in New York. The court ruled that because it was a federal law, the Clean Air Act preempted New York's law; the sale of New York's SO₂ allowances was therefore permitted.

The extent to which these negative consequences materialize depends largely on the scale of the effect—that is, the amount of additional allowances required.

3. States are allowed complete jurisdiction over their own cap-and-trade programs (carve-out).

Another option is to allow states to carve out their own more stringent programs in lieu of the federal program—though as yet no state has indicated that it wants to implement this approach. A state that maintained the authority to implement its own separate cap-and-trade program could set the stringency of the cap for the state: sources would be subject only to the targets of the state cap, and no one source would be covered under more than one cap, thus the state would be “carved out” of the federal program.

Carve-outs could take one of two forms. They could be granted to state and regional cap-and-trade programs (such as those discussed in Section II) that are fully operational when a federal cap-and-trade program becomes law; states that did not have their own programs or were not already members of a regional cap-and-trade program would then be covered under the federal program. Or the option to carve out of the federal program could be made available to states that establish or join existing cap-and-trade programs after a federal program is enacted.

This scenario mirrors the Clean Air Act regulations, whereby states can choose to implement the ambient air emissions regulations set federally or, as California has done, adopt more stringent regulations.¹³ In either case, however, multiple cap-and-trade programs operating within the United States could increase the costs of reducing CO₂ and complicate compliance for regulated sources. Some experts conclude that a carve-out for state or regional trading programs is not feasible or efficient, while others discuss the mechanisms necessary to help achieve such a policy. The most pressing design issue centers on the question of whether to allow sources covered under separate caps to trade emissions allowance credits with one another. The argument for trading is economic efficiency. In general, the broader the scope of the trading program and the greater the differences in the cost of abating CO₂ across sources, the greater the opportunity to flush out least-cost abatement. This opportunity also hinges on equating the marginal cost of abatement across the swath of covered sources. Equating this across multiple cap-and-trade

¹³ This is commonly referred to as cooperative federalism. For a review of applying the cooperative federalism framework to cap and trade in the state and federal context, see Doremus and Hanemann (2008).

programs is much more difficult than under a uniform cap because the implicit price put on emissions will differ with the stringency, coverage, and ease of abatement under each cap. The mixed market signals could result in a lack of transparency and even a reluctance of covered entities to make trades across caps (Burtraw et al. 2005).

There are additional concerns about the implications of carve-outs. Since smaller markets tend to be more sensitive to external conditions (such as changes in weather that could increase electricity and natural gas demand for heating and cooling in homes), another potential downfall of carve-outs could be the increased price volatility within each cap-and-trade program (Ellerman and McGuinness 2008; Point Carbon 2008). Moreover, the overall emissions reductions achieved would be less easily predicted and calculated. Although this might be merely frustrating domestically, it could have profound effects during international negotiations in which the United States negotiates with other countries to set their own transparent emissions reduction targets.

Carve-outs could even create opportunities for gaming the system and create relative winners and losers. Those sources in states with relatively low-cost abatement opportunities would reap large financial benefits if they participated in a cap-and-trade program with sources in states with high abatement costs. And if trading across programs were not institutionalized and different trading schemes had different reduction targets, large differences in compliance costs could arise. Such differences could encourage sources to migrate to states with less stringent targets. The resulting leakage of sources and their emissions would make it difficult—if not impossible—to ensure a specified level of emissions reductions.¹⁴

It is worth remembering, however, that no state has yet indicated that it would like to implement its own or a regional cap-and-trade program either in lieu of a federal program or alongside one. It is also worth noting that if carve-outs are allowed, it is likely that—as with other environmental programs—a state program would have to be at least as stringent as the federal program.

¹⁴ For additional discussion of the potential distributional effects imposed by carve-outs, see McGuinness and Ellerman (2008).

4. States go beyond the federal program by addressing sources of emissions that are outside the federal cap.

The stringency of a cap-and-trade program depends on the targets and timetables for emissions reductions and on the percentage of greenhouse gas sources it covers (Keeler 2007). To the extent that the eventual federal program does not require reductions for all sources of greenhouse gases, a state could implement a more stringent program by addressing sources not included in the federal program. This approach would mirror the flexibility given to states under the Resource Conservation and Recovery Act and other major environmental statutes that allow states to regulate substances not addressed in the federal program.

The climate bill passed by the U.S. House of Representatives would require an “economy-wide” cap (as opposed to a cap only on the electricity sector, as is the case in RGGI) that would cover 85 percent of all greenhouse gas emissions. This percentage includes almost all sources of CO₂: electric power plants, large manufacturing facilities, and importers and distributors of natural gas and transportation fuels. It also includes a separate cap-and-trade system for hydrofluorocarbons, particularly potent greenhouse gases that are substitutes for ozone-depleting chlorofluorocarbons. Sources that emit less than 25,000 tonnes of CO₂ are exempted under the proposed bill. Also not included are fugitive emissions, which are emissions that cannot easily be monitored or counted because they leak undetected during industrial processes.

The remaining 15 percent of greenhouse gas emissions includes methane, which escapes invisibly from agricultural activities and landfills; nitrogen dioxide, also emitted from agricultural processes; and fluorinated gases (F-gases) from industrial processes. Any such sources not addressed in federal climate legislation would be candidates for state regulation, which would result in more stringent state climate programs.

The Waxman-Markey bill passed by the House not only includes an economy-wide CO₂ cap but also offers opportunities for the reduction of non-CO₂ emissions through its “offsets” provisions. Offsets allow emitters regulated under the cap to buy emission reductions from unregulated, typically non-CO₂ sources. Under the offsets provision in Waxman-Markey, for example, an electricity generator could choose to buy emissions reductions from a source outside the cap (say a farmer who has decreased methane emissions). Thus, the CO₂ emissions from the electricity generator would exceed its compliance obligation but would be offset by the methane reductions made by the farmer. If the final federal law is similar to the Waxman-Markey bill, few

if any greenhouse gas emissions would not be covered either directly or, through offset provisions, indirectly.

Even if a future federal bill were economy-wide and included extensive offset provisions, however, the states would still have opportunity to regulate non-CO₂ gases. After all, though offset provisions target these gases, they are not binding requirements for reductions; they simply provide an alternative and voluntary compliance method to regulated firms. A state could require specific reductions in non-CO₂ greenhouse gases to ensure that these emissions are reduced. For example, a state could mandate and enforce methane capture at all landfills.

If states do regulate emissions outside the federal program, they would be imposing additional costs on local entities beyond those incurred in complying with the federal program. These costs could eventually encourage some types of firms to migrate to a state with less stringent and costly regulations and cause emissions leakage; the projected emissions reductions would not be met. In addition, if a federal bill sought to encourage non-CO₂ greenhouse gas reductions, sources within a state that mandated reductions in these other gases would have to forgo the opportunity to receive valuable offset credits. Thus, these more expansive state programs could reduce opportunities for the rest of the nation to achieve least-cost emission reductions through offsets.

5. Concluding Thoughts

States with aggressive climate programs have pointed the way for federal climate policy. By showing the political will to tackle a complex and expensive problem of far-reaching importance, they have created an impetus for federal action. As federal policymakers work out a national approach, however, harmonizing existing state and future federal policies will be critical to ensuring an effective approach to reducing greenhouse gases. In this paper we have tried to shed light on the economic, legal, and political implications of integrating state and federal policies, and we have explored some potential ways states could continue to serve as leaders even under a national program to address climate change.

References

- Aldy, Joseph, and Robert Stavins. 2007. *Architectures for Agreement: Addressing Global Climate Change in the Post-Kyoto World*. Carnegie Mellon Press.
- Andreen, William, Robert Glicksman, Nina Mendelson, and Rena Steinzor. 2008. "Cooperative Federalism and Climate Change: Why Federal, State, and Local Governments Must Continue to Partner." White Paper 803. Center for Progressive Reform.
- Apt, Jay, Lester Lave, and S. Pattanaiyankool. 2008. "A National Renewable Portfolio Standard? Not Practical." *Issues in Science and Technology*. September. Available at <http://www.issues.org/25.1/apt.html>.
- Bianco, Nicholas; Jonas Monast, Tim Profeta, and Franz Litz. 2009. "Allowing States to Retire Allowances without Affecting National Allowance Prices: A Straw Proposal." World Resources Institute, Duke University.
- Burtraw, Dallas, Karen Palmer, and Danny Kahn. 2009. "A Symmetric Safety Valve." Discussion Paper 09-06. Washington, DC: Resources for the Future.
- Doremus, Holly, and Michael Hanemann. 2008. "Of Babies and Bathwater: Why the Clean Air Act's Cooperative Federalism Framework Is Useful for Addressing Climate Change." UC Davis Legal Studies Research Paper Series no. 144.
- Keeler, Andrew. 2007. "State GHG Policies: A Move in the Right Direction?" *Policy Sciences* 40(4): 353.
- Krebs, Martha. 2007. "Water-Related Energy Use in California." Testimony presented to the Assembly Committee on Water, Parks, and Wildlife, February 20. Available at <http://www.energy.ca.gov/2007publications/CEC-999-2007-008/CEC-999-2007-008.PDF>.
- Larsen, John, Thomas Damassa, and Ryan Levinson. 2007. "Charting the Midwest: An Inventory and Analysis of Greenhouse Gas Emission in America's Heartland." Washington, DC: World Resources Institute.
- Litz, Franz, and Kathryn Zyla. 2008. "Federalism in the Greenhouse: Defining a Role for States in a Federal Cap and Trade Program." Climate and Energy Policy Series. September. Washington, DC: World Resources Institute.

- McGuiness, Meghan, and Denny Ellerman. 2008. "The Effects of Interactions between Federal and State Climate Policies." 08-004. MIT Center for Energy and Environmental Policy Research.
- Navigant Consulting, Inc. 2006. Refining Estimates of Water-Related Energy Use in California, Report to the California Energy Commission 5. December.
- Newell, Richard, Adam Jaffe, and Robert Stavins. 1999. "The Induced Innovation Hypothesis and Energy-Saving Technological Change." *Quarterly Journal of Economics* 114(3): 941–75.
- Office of the Governors. 2009. Letter from Twelve State Governors to President Obama, January 29, 2009. Available at http://www.governor.wa.gov/news/20090129_climate.pdf.
- Point Carbon. 2008. "Preemptive Strike: The Future of Regional Trading Programs in the US."
- Samaras, Costa, Jay Apt, Ines Azevedo, Lester Lave, Granger Morgan, and Ed Rubin. 2009. "Cap and Trade Is Not Enough." Memo. Carnegie Melon University.
- The Pew Center on Global Climate Change. 2009a. "Climate Change 101: State Action." January. Available at <http://www.pewcenteronthestates.org/uploadedFiles/Climate%20Change%20101,%20State%20Action.pdf>.
- . 2009b. Website on regional initiatives. http://www.pewclimate.org/what_s_being_done/in_the_states/regional_initiatives.cfm. Accessed May 2009.
- U.S. Environmental Protection Agency (EPA). 2009a. Press Release: "EPA Finds Greenhouse Gases Pose Threat to Public Health, Welfare/Proposed Finding Comes in Response to 2007 Supreme Court Ruling." April 17. Available at <http://yosemite.epa.gov/opa/admpress.nsf/0/0EF7DF675805295D8525759B00566924>.
- . 2009b. Website on climate change and state and local governments. http://epa.gov/climatechange/wycd/stateandlocalgov/state_planning.html#four.
- U.S. House of Representatives. 2009. H.R. 2454, "American Clean Energy and Security Act of 2009" (As Placed on Calendar in Senate). http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=111_cong_bills&docid=f:h2454pcs.txt.pdf. Accessed June 2009.

Further Reading

- Adelman, David, and Kirsten Engel. 2008. "Reorienting State Climate Change Policies to Induce Technological Change." *Arizona Law Review* 50(3): 835.
- Andreen, William. 2008. "Federal Climate Change Legislation and Preemption." *Environmental & Energy Law & Policy Journal* 3: 261.
- Aulisi, Andrew, Jonathan Pershing, and Alexander Farrell. 2005. "GHG Emission Trading in the US: Observations and Lessons from the OTC NOX Budget Program." White Paper. Washington, DC: World Resources Institute.
- Aulisi, Andrew, John Larsen, Jonathan Pershing, and Paul Posner. 2007. "Climate Policy in the State Laboratory: How States Influence Federal Regulation and the Implications for Climate Change Policy in the United States." White Paper. Washington, DC: World Resources Institute.
- Bianco, Nicholas, and Franz Litz. 2009. "Keeping the Lights on in the State Laboratory: Enabling U.S. States to Achieve Greenhouse Gas Emissions Reductions through Retirement of Federal Cap-and-Trade Allowances." WRI Issue Brief. Washington, DC: World Resources Institute. October.
- Burtraw, Dallas, David Evans, Alan Krupnick, Karen Palmer, and Russell Toth. 2005. "Economics of Pollution Trading for SO₂ and NO_x." Discussion Paper 05-05. Washington, DC: Resources for the Future.
- Burtraw, Dallas, and William Shobe. 2007. "Local Options on Global Stocks: How the States Are Affecting the U.S. Debate on Climate Policy." Working Paper 2007-02. Princeton Center on Regional Studies.
- Committee on Energy and Commerce Staff. 2008. "Climate Change Legislation Design White Paper: Appropriate Roles for Different Levels of Government." February.
- Dernbach, John, Thomas Peterson, and Robert McKinstry Jr. 2007. "Developing a Comprehensive Approach to Climate Change." *Virginia Environmental Law Journal* 26.
- Farber, Daniel. 2008. "Climate Change, Federalism, and the Constitution." Public Law Research Paper .1081664. University of California–Berkeley.
- Gaynor, Kevin, and Mara Zimmerman. 2008. "Federal Approaches to Climate Change: Federal Preemption of State Climate Change Laws." ALI-ABA Course of Study paper.

- Huffman, Robert, and Jonathan Weisgall. 2008. "Climate Change and the States: Constitutional Issues Arising from State Climate Protection Leadership." *Sustainable Development Law and Policy* 8(2).
- Kaswan, Alice. 2008. "A Cooperative Federalism Proposal for Climate Change Legislation: The Value of State Autonomy in a Federal System." *Denver University Law Review* 85(4).
- Litz, Franz. 2008. "Toward a Constructive Dialogue on Federal and State Roles in U.S. Climate Change Policy." White Paper. Washington, DC: World Resources Institute.
- Lutsey, Nicholas, and Daniel Sperling. 2008. "America's Bottom-Up Climate Change Mitigation Policy." *Energy Policy* 36: 673.
- McCarthy, James, and Robert Meltz. 2007. "California's Waiver Request to Control Greenhouse Gases under the CAA." RL34099. Congressional Research Service.
- McKinstry, Robert, John Dernbach, and Thomas Peterson. 2008. "Federal Climate Change Legislation as If the States Matter." *Natural Resources and the Environment* 22(3).
- Monast, Jonas. 2008. "Integrating State, Regional and Federal Greenhouse Gas Markets: Options and Tradeoffs." Duke Environmental Law and Policy Forum (forthcoming).
- National Association of Clean Air Agencies. 2008. "Defining the Role of States and Localities in Federal Global Warming Legislation: Conference Materials." Arlington, VA, February 12–13.
- Northrop, Michael, David Sassoon, and Ken Colburn. 2008. "Governors on the March." *Environmental Finance* (June): 30.
- Rabe, Barry. 2005. "Business Influence in State Level Environmental Policy." Paper Prepared for Delivery at the Annual Meeting of the American Political Science Association, Washington, DC, September 1–4.
- . 2006. "Race to the Top: The Expanding Role of U.S. State Renewable Portfolio Standards." Prepared for the Pew Center on Global Climate Change.
- . 2006. "Second Generation Climate Policies in the American States: Proliferation, Diffusion and Regionalization." *Issues in Governance Studies* 6 (August).
- . 2007. "Beyond Kyoto: Climate Change Policy in Multilevel Governance Systems." *Governance* 20(3): 423.

- . 2008. “The Complexities of Carbon Cap-and-Trade Policies: Early Lessons from the States.” Governance Studies Paper. October.
- . 2008. “Regionalism and Global Climate Change Policy.” Annual Meeting of the Midwest Political Science Association. April.
- . 2008. “States on Steroids: The Intergovernmental Odyssey of American Climate Policy.” *Review of Policy Research* 25(2): 105.
- Regional Greenhouse Gas Initiative. 2007. “Agency Heads from RGGI Participating States Outline Recommendations for the Design of Federal Greenhouse Gas Cap-and-Trade Program.” Available at http://www.rggi.org/docs/rggi_letter_10_31_07.pdf.
- Stewart, Richard. 2008. “States and Cities as Actors in Global Climate Regulation: Unitary vs. Plural Architectures.” *Arizona Law Review* 50(3): 681.
- Vogel, David, Michael Toffel, and Diahanna Post. 2003. “Environmental Federalism in the EU and US.” Prepared for Globalization and National Environmental Policy conference. Veldhover, Netherlands, September.
- Weiner, Jonathan. 2007. “Think Globally, Act Globally: The Limits of Local Climate Policies.” *University of Pennsylvania Law Review* 155: 101.
- Yacobucci, Brent. 2008. “Regulation of Vehicle Greenhouse Gas Emissions.” Congressional Research Reports for the People. January.