

State and Local Climate Policy under a National Emissions Floor

Dallas Burtraw
Resources for the Future

Bill Shobe
University of Virginia

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1. Introduction

Climate change is a global problem and its solution will require international cooperation and coordination. That would seem to make climate change a problem that is particularly well suited for policy at the national level. However, in the U.S. and in some other nations including Australia and Canada, state or provincial and local governments have been very active in developing policy. Seemingly the manifest level of concern by state and local governments would contribute to achieving a policy outcome, but it also amplifies the challenges associated with cooperation and coordination.

In a federal system, the state or provincial levels of government are subsidiary to national government, and similarly local governments are subsidiary to state governments, although specific authority and responsibility are often reserved for each entity. In the U.S., the constitution and its subsequent interpretation allow for the national government to preempt activities by state and local government. However, lower levels of government also play an important role in determining environmental outcomes through their planning and permitting functions. The likely advent of a federal climate policy has engendered an intense policy debate over the role of the states. Given the federal structure of the U.S. government, and indeed of most governments around the world, national climate policies must take into account the division of roles and responsibilities between different levels of government. Therefore an important question in addressing climate change is the determination of the ability of state and local governments to contribute to policy solutions, as well as the incentive for them to do so.

The leading approach to climate policy in the U.S. and in much of the world is emissions cap and trade. This approach would limit the total quantity of emissions that would be allowable during each compliance period, but would allow flexibility as to where and when those emissions would occur. A limit on the total quantity of emissions would introduce a scarcity value on the ability to emit, and that value would be reflected in the market price of tradable emissions allowances.

Two concerns immediately arise pertaining to the role of state and local governments. First, if the national government introduces a market for emissions allowances, then activities of lower levels of government such as restrictions on emissions could interfere with that market. This concern may lead policy makers to want to limit the options of state and local governments. A second concern is that an emissions cap effectively is an emissions floor. That is, by specifying a quantity at a higher-level jurisdiction and making it tradable the emissions cap specifies not just the maximum, but also the minimum amount of emissions that can occur. Under an emissions constraint, reductions in emissions by one party make possible additional emissions by another party. The existence of an emission floor may undermine the incentive for state and local governments to adopt measures that may contribute to local emissions reductions because leakage of emissions to other jurisdictions covered under the cap would be 100 percent.

One might rightfully ask why the states should have any role in achieving a social optimum under a federal greenhouse gas (GHG) policy. An obvious consideration is that controlling GHG emissions is very close to a pure global public good. Although attempts to reduce GHG emissions appear to have originated with local and state governments, but once the federal government has acted and adopted comprehensive policy that arguably balances benefits and costs from the national perspective, is there any virtue in enabling lower-level jurisdictions to adopt additional measures affecting the policy outcome? It might seem that enabling them to do so would inefficiently raise the overall cost of the policy and upset the balancing at the national level. Furthermore, in the eyes of some, limitations on state and local action may enhance climate policy by reducing transaction costs and contributing to ease of compliance by firms engaged in economic activity that reaches across state and local boundaries.

Reaction from a state perspective might be that the federal government cannot be assumed to achieve a proper balancing of benefits and costs or to be able to adjust to new information, and lower-level jurisdictions may provide important impetus to do so. Perhaps a more profound perspective is to recognize the compound layers of agency that exist between national-level policy and local decision makers. Information asymmetries result from these layers of agency, meaning that a cost-effective outcome is dependent on decentralized policies and behavior. The compound agency between national and local policy may seriously erode incentives that flow from national policy, including market-based policies. The possibility that a national cap and trade program may erode the ability or the incentive for state and local action is of concern because their activities are important to achieving overall emissions reductions at least cost.

This paper describes the nature of inter-jurisdictional relations, as they may exist under a federal cap-and-trade program. Second, the paper provides background on the current climate-related activities by state and local governments, with a special focus on the U.S. setting. State and local governments are uniquely positioned to implement many aspects of an overall climate strategy, and an important question is whether the price signal from a cap and trade program (or a tax) would be a sufficient incentive to do so. Third, the paper examines alternative types of relationships between different levels of government when an agency problem exists, wherein information or incentives for action are not perfectly aligned.

In brief, we conclude that an emissions cap, serving also as an emissions floor, may preempt many of the type of activities by state and local government that would otherwise help the national level government achieve climate-related goals. Economic analyses almost uniformly argue that technological innovation is the key to achieving greenhouse gas emissions, but most commentators have focused almost exclusively on engineering advances at the point of combustion of fossil fuels. Innovation also may be required in providing the infrastructure that governs a variety of ways that people live and interact. This kind of innovation occurs at the state and local government level and incentives to pursue such innovative measures may be weakened importantly under a national emissions floor. Finally, we describe some architectural features of cap-and-trade policy that can help to enhance the ability and incentive for state and local governments to innovate under a national emissions cap and trade program.

2. National Climate-Policy Federalism under a Quantity-Based Emissions Target

Section 8 of Article I of the U.S. Constitution, the “commerce clause” gives the federal government the right to regulate trade with other nations, with Indian tribes and among the states. On its face, this language gives the federal government the power to actively control commerce between a state and any other jurisdiction. The first implication of this language is that the federal government has broad, plenary power to regulate commerce. As it has been interpreted, this clause implicitly grants the federal government the power to control matters that, while internal to a state, may affect commerce between a state and other states, countries or Indian tribes. In addition, the “supremacy clause” in Article VI, clause 2, provides that federal law overrides any state law that is in conflict with valid federal legislation. Congress may specifically preempt state authority in matters within its plenary power, or preemption is implied if state laws are in actual conflict with federal action under the commerce clause (Nowak et al. 1978).

The introduction of a quantity constraint for emissions may introduce another type of preemption by effectively undermining the ability of state or local governments to affect the outcome to affect the emissions outcome. The basic architecture of a national emissions cap and trade program is to establish a national emissions floor. That is, by enabling a specific quantity of emissions, it specifies the minimum as well as the maximum emissions. For a state with citizen preferences favoring a stricter cap, spending more for emission reductions would provide an opportunity for increased emissions in another locality. Only retiring allowances would lower aggregate emissions. But efforts by some states to retire additional allowances would raise the marginal cost of emission reductions for the entire country and would be fought by other jurisdictions that would see their costs rise.

State-level activities may be affected by a national emissions floor in two ways. First, the potential redundancy of programs can have profound legal and economic effects, and second, duplicative programs may blur responsibility for myriad regulatory activities that are the traditional domain of state and local governments. We discuss each of these perspectives in turn.

The Fate of State Emissions Cap-and-Trade Programs

McGuinness and Ellerman (2007) and Stavins (2007) have worked through the cases in which state imposed emissions caps might interact with a national cap-and-trade program. Two factors that affect the outcome are the relative stringency of the two programs and their scope of coverage. If a state program is less stringent than a federal program for the set of sources that it regulates, the shadow value (allowance price) of the emissions constraint in the state would be zero and the state program would have no effect on behavior. In fact, RGGI anticipates such an outcome explicitly in its memorandum of understanding.¹

¹ “When a federal program is proposed, the Signatory States will advocate for a federal program that rewards states that are first movers. If such a federal program is adopted, and it is determined to be comparable to this Program, the Signatory States will transition into the federal program.”

If the state program is more stringent, it will impose additional costs on sources in the state and will lead to lower emissions in the state, but there will be no change in emissions at the national level. If the state program has a broader scope of coverage than the national program, then the outcome will depend on the relative marginal costs of covered sources.

There are also ways that the national and state programs might interact with respect to the timing of emissions. The value of banking under a state program would be affected by the expectation of how a bank might be treated in the future. Congressional discussions (and awareness of the 20 senatorial votes representing the RGGI region) suggest that the intent of the proposed Lieberman-Warner legislation in 2008 would have provided credit for early reductions equivalent to the value of allowances in the RGGI bank. In contrast, as noted below, there is to be no early reduction credit for state-level reductions under caps under a federal program in Australia. In that case, compliance entities have a reduced incentive to make reductions in the near term that might contribute to the allowance bank.

Federalism under Price-Based Emissions Policy

The same issues do not arise under a national tax on emissions. A jurisdiction with a greater willingness to pay for emission reductions than the level at which the tax is set could pay something more than the tax by establishing local policies more stringent than those implied by the current tax rate. In this case, unlike under a quantity constraint, net reductions in emissions can be achieved without raising compliance costs in other jurisdictions. In an economic framework, one should note that if the tax were set at a social optimum from the national perspective, such a policy would result in a loss of social surplus since the value of the resources used for the additional GHG reductions would be more than the social value of the incremental reduction in GHG emissions.

The establishment and enforcement of a national floor on greenhouse gas emissions does not itself require additional state or local mandates or special state prerogatives to lower the cap. The implementation of a cost-effective emission reduction plan, and hence the speed with which we are *willing* to reduce emissions, *does* depend on carefully chosen supplemental policies at the federal, state and local levels. A quantity instrument (cap) has different incentives for state and local governments than a price instrument (tax). The cap may preserve many motivations for state and local action to reduce emissions, and the introduction of a price on emissions will introduce a new motivation for states to implement many cost-reducing strategies, but the emissions cap erodes the ability and the incentive for state and local government to directly affect the emissions outcome.

Agency Relationships Affect Efficiency of Market Signals in Traditional Areas of State and Local Authority

State and local governments conduct a variety of functions that contribute to environmental outcomes. More specifically, local authorities will make decisions with profound environmental consequences that federal authorities could not possibly make based on their available information. For example, local authorities will decide whether streets are aligned so that houses achieve maximum solar gain, and eaves are designed so

that at specific latitudes they let in maximum light in the winter and shade in the summer. They will decide building standards that determine whether glazing is optimized, and landscaping organized to buffer against winds. They decide about ordinances or covenants that may disallow outdoor clotheslines. As they did in ancient Rome, local governments also decide about protection of solar access. They decide whether asphalt surfaces are minimized to lessen heat gain, and importantly, where people live in relation to their work. The sum of these activities will determine the infrastructure of communities for the next century, and the influence on the global climate, in the aggregate, is profound.

The planners and policy makers in local jurisdictions who determine the outcome of these issues are insulated from the incentives of price signals stemming from the national emissions quantity constraint. Consider the example of a housing developer who ignores both energy cost and consumption of proposed residential units because of the likelihood that potential homebuyers do not consider these in home purchase decisions. While the price signal from the national policy is likely to be ignored by the developer, local policy makers can invoke stronger policies to govern their behavior.

A cost-effective GHG reduction policy based on a federal cap will require a balancing of interests between levels of government. State and local policies may unduly interfere with the performance of the national market, or they may be the source of cost-reducing innovations in the provision of infrastructure that governs the way that people live.²

3. Background on What States Are Doing

State, provincial and local governments have adopted a variety of climate policies to fill the vacuum created at the federal level. Below we outline the targets and timeframes of these policies, as well as any significant mechanisms for cost containment, allowance distribution, or coordination between sub-national and national governments.

Beginning outside the U.S., British Columbia instituted a broad-based tax on combustion of fossil fuels that begins at \$10 (Canadian) per metric ton CO₂ in 2008 and grows to \$30 in 2012. Revenue is fully recycled back to consumers in income tax reductions, progressively scaled for various income levels, and rising over time from a 2 percent reduction in personal income taxes in 2008 to 5 percent in 2009 on the first \$70,000 in earnings. Low-income families earn an additional annual (escalating) dividend that began at \$100 per adult and \$30 per child.

In Australia, the federal government's GHG policy follows state initiatives. The government white paper (December 2008) provided guidelines for a program would cap covering roughly 75% of Australia's GHG emissions. Under these guidelines, states would be encouraged to discontinue any market-based programs and would receive no

² A forum where innovations in local regulatory policy aimed at transit, energy, water, agriculture and building sectors are explored is the Applied Solutions Workshop, a proceeding involving representatives from nongovernmental agencies and local level agencies sharing experience with policies aimed at reducing GHG emissions.

early action credits for their efforts.³The national program aims to cut emissions by 60 percent from 2000 levels by 2050, as well as to set interim emission reduction goals starting for year 2011. If implemented as suggested, cost containment and assistance would be provided.

There are widespread GHG reductions efforts by local and state governments across the U.S. At the local level, over 916 Mayors have voluntarily committed their cities to emission reductions outlined in the Kyoto Protocol (7 percent below 1990 levels by 2012). This effort began in 2005 when the U.S. mayors Climate Protection Agreement was passed unanimously by the Conference of Mayors. In this agreement Mayors also agree to urge state and federal policy makers to enact broader climate legislation.

In addition, a number of states have passed legislation varying from commitments of intent to reduce emissions to state laws that will precipitate specific regulations; some of which are pending. For example, the Florida legislature is considering legislation that could establish as early as 2010, an electricity sector cap and trade program, to reduce emissions to 2000 levels by 2017, to 1990 levels by 2025, and to 80 percent below 1990 levels by 2050. Also, proposed legislation supported by the governor in Maryland would require the state to reduce greenhouse gas emissions by 25 percent from 2006 levels by 2020.

The most active state jurisdiction has been California, a member of the WCI. The most visible legislation was the Global Warming Solutions Act, which requires the state to reduce aggregate greenhouse gas (GHG) emissions to 1990 levels by 2020. Although the Act was nearly silent on the mechanism by which the emissions reductions are to be achieved, this is a familiar procedure for regulatory policy in California, where sweeping authority traditionally has been given to state agencies to decide regulations to achieve the state's environmental goals. At the end of 2008, the Air Resources Board (ARB) adopted a scoping plan that includes an extensive list of standards and measures to be implemented in the state. In addition, the state is moving forward with the development of a cap-and-trade program that tentatively is scheduled to take effect in 2012.

California has also passed other high-profile regulations and legislation. It has leading energy efficiency standards for buildings, appliance efficiency standards, and a requirement to consider efficiency first in the loading order of electricity supply. In 2005, the California Public Utilities Commission adopted a rule requiring investor-owned utilities to use a greenhouse gas "adder" for long-term planning and resource procurement. Senate Bill 1368 sets a greenhouse gas performance standard to ensure that new long-term financial commitments in baseload power plants by electric load-serving entities that applies whether the power is generated within state borders or imported from plants in other states.

In 2002, California adopted vehicle emission standards under Assembly Bill 1493 that requires a 30 percent reduction in GHG emissions from new vehicles by 2016. Thirteen other states have since committed to adopting this standard. To implement the law, California requires a waiver from the federal Environmental Protection Agency,

³ For example, the Victorian government has capped emissions at one electricity generator and offered support for low emissions technology. The state of Western Australia has also set its own GHG targets and plans for developing additional GHG reduction policies.

which is still pending. In addition the state has moved forward with development of a cradle-to-grave low-carbon fuel standard for transportation fuels sold in California, with the goal of reducing the carbon content of passenger-vehicle fuels in the state at least 10 percent by 2020.

California also has been active in developing guidelines for land use changes. Signed into law in late September, 2008, SB 375 mandates that the California ARB develop regional greenhouse gas emission reductions from passenger and light truck vehicles for the years 2020 and 2035. Metropolitan planning organizations throughout California are required to submit a “sustainable communities strategy” demonstrating a plan to reduce vehicle miles traveled in their region and achieve state targets. The ARB can accept or reject each region’s plan for achieving its target, and incentives are attached to some provisions, for example, some transportation planning and programming activities planned in 2012 or after must be consistent with the SCS in order to obtain funding. Also, builders with projects consistent with SCS will not be subject to environmental reviews under the California Environmental Quality Act.

California is also a member of the Western Climate Initiative (WCI). Established in 2007, it currently comprises seven U.S. states (Arizona, California, New Mexico, Oregon and Washington, Utah and Montana) and four Canadian Provinces (British Columbia, Manitoba, Ontario, and Quebec). The WCI plans for implementation in 2012, covering about 90% of the regions GHG emissions, and aims to bring total emissions to 15 percent below 2005 levels by 2020. The WCI Work Plan for 2009-10 outlines proposed regulatory design elements to be developed including unlimited banking, offset and early action credits. Each partner state would distribute their own allowances, and some from each partner will be set aside for strategic energy initiatives and adaptation.

Also signed in 2007 was the Midwest Greenhouse Gas Reduction Accord, involving six Midwestern states and the Manitoba Province in Canada, with the intent of launching a regional cap-and-trade program.⁴ Each member state and province is responsible for developing complimentary policies to help meet targets to be identified and will participate in a formal emissions registry, agreeing in principle to the potential implementation of a regional cap-and-trade program.⁵ A draft final rule outlining target timeframes and policy mechanisms is expected in September this year.

The most advanced regional effort is the Regional Greenhouse Gas Initiative (RGGI), which was the first mandatory, market-based effort in the U.S. The initiative took effect in January 2009 involving ten Northeastern and Mid-Atlantic states. It aims to reduce CO₂ emissions from power generation 10% by 2018. Although the emissions target is modest, the initiative has had substantial influence in its design. Allocation decisions rest at the state level. Roughly 85 percent of emissions allowances are to be auctioned and two auctions have already taken place. At least 25 percent of allowance value is to be dedicated to strategic energy initiatives at the state level.

⁴ On November 15, 2007, the agreement was signed by governors of Illinois, Iowa, Kansas, Michigan, Minnesota, and Wisconsin, and by the Premier of Manitoba. Governors of Indiana, Ohio and South Dakota sign on as observers, and were joined later the Province of Ontario.

⁵ Draft recommendations include suggested reduction targets of 15, 20, and 25 percent below 2005 levels by 2020, and 60 to 80% below 2005 levels by 2050.

4. The actions by sub-federal governments are not insignificant in number, scope, and possibly, in their abilities to reduce GHG emissions. The next section discusses the issues that arise when we question how to incorporate these players and their actions into a national climate policy. Several Historic Perspectives on the Role of States

The roles and responsibilities of state and local government are determined, among other things, by legal institutions, tradition, the availability of special knowledge and expertise, variations in preferences, and by the incentives for action implicit under any federal policy. There is virtue to national policy and potential inefficiency in decentralized policy. However, many types of decisions are the traditional domain of state and local government, due in part to the origins of common law and due to their ability to take advantage of differences in local conditions. The introduction of emissions cap and trade has potentially profound implications for the evolution of authority for environmental policy between the federal and state levels of government in the U.S.

Potential Virtues of National Policy

A widely recognized justification for national policy is that it reconciles differences among states and can thereby lower the costs of commerce that crosses state lines. In addition, national-level policies and agencies are expected to have better information and resources to develop and implement policy than do state governments. Lastly, a national cap might help answer questions about the enforceability of many sub-national caps that would otherwise have to rely on civil law of contracts for enforcement, especially in the face of any interstate commerce issues and without the ability to engage in international negotiations.

Local Experiments Follow Local Interests

It is also widely recognized that national policy makers can benefit from policy innovation among the states. By testing many independently developed policies, a system of decentralized policy development might quicken the development of new, cost-reducing policies. Unfortunately, using states as policy laboratories is not without its difficulties. Competition among the states may lead states to choose policies that undermine, rather than support, the goal of cost-effective emission reductions at the national level.

Local policies on climate change will often be driven in part by local interests not necessarily related to climate change. For example, states may be tempted to subsidize the cost of GHG emissions if the net economic benefits of doing so are less than the cost of the subsidy. This action by states reduces the marginal incentive for reducing emissions by emitters and will generally be associated with increased overall cost of meeting a federal cap. In an oddly perverse example, the state of Tennessee recently lured a German manufacturer of polycrystalline silicon, used in producing solar cells, to locate its manufacturing facility in the state by promising to cover the cost of any future federal programs that would raise the cost of GHG emissions. This policy eliminates the exposure of the manufacturer to the incentives to reduce GHG emissions provided by the

federal program in return for investment in the state. In general, one would expect to observe differences in state policies that reflect differences in the expected *local* gains, the *local* distribution of those gains, and the relative influence of various interests at the *local* level.

Policy Experiments Create Entitlements that Are Hard to Eliminate

It naturally follows that once a local policy has been established it will likely be hard to change because those receiving the benefits of the current policy will be willing to pay through rent-preserving behavior to retain the benefit. Their willingness to pay will be directly related to the size of the benefit received. This implies that policy experiments have a natural stickiness or inertia; they are hard to eliminate once they are in place. Policy inertia arises from the tendency of beneficiaries to view the benefits from the policy as an entitlement: every public policy is an entitlement to someone. This policy inertia creates yet another divergence between the ideal laboratory model and actual policy development by the states. Policy inertia and policy capture by interested groups has been amply demonstrated in many areas of regulatory policy (Posner 1974; Stigler 1971).

Experimentation Implies Learning from Mistakes

“Follow-the-leader” policy development occurs frequently, where one state or a few states implement new policies, and these new policies diffuse across other states often before a careful evaluation can be made of the true impact of the new policies. Policy is infrequently evaluated *ex post* and this is true especially at the local level, where the significant resources needed for policy evaluation may not be available and patience may be lacking. Unfortunately, without undertaking analysis, state policy makers cannot be in a position to make a fully informed decision about whether a policy experiment has promoted the intended goal and, if so, whether it has been worth the cost.

Motivations for State and Local Leadership Persist Even under an Emissions Cap

There are a variety of motivations for state and local governments to continue to play an active role in achieving climate goals even under a national emissions floor. One motivation is simply to “get one’s house in order.” Many citizens active at the local level view climate policy in an ethical context, and local political action provides a way to do one’s part to help address the problem.

A second motivation is simply to serve one’s constituents by helping to reduce the cost and to help gain an advantageous position for one’s jurisdiction under the national policy. The price of an emissions allowance will trickle into the costs of doing business in a local jurisdiction and the extent to which that cost can be reduced provides the possibility of greater discretionary spending for the community. Furthermore, many climate-friendly policies also convey environmental amenities that can improve the quality of life. In a variety of ways, the decisions of state and local governments can help get their communities ready for the carbon-constrained age.

Third, one can assume the perspective of a long time horizon in advocating for policies at the state and local level. Policy innovations may reduce the costs of achieving

emissions reductions at the national level, enabling a dynamic process that might reduce the emissions cap over time. Measures to promote new technologies like a million solar roofs in California would perhaps lower average production costs and ultimately make it easier for the nation to achieve its emissions goals, or to lower the emissions floor in future decades.

A question, to which we return, is whether these incentives are sufficient to achieve the kind of activity at the state and local level that satisfy national objectives.

Cautionary Tales: Federal Action on Social and Economic Policy is a Two-Edged Sword

As noted above, many motivations for local action remain under a national emissions constraint and many opportunities to affect local emissions retain their potency, even if the national level of emissions is not affected. However, it remains the case that the national emissions floor effectively preempts the ability of state and local government to implement policies that harvest additional emissions reductions at the national level. Historically, federal preemption in a domain where states have led has been a two-edged sword.

For example, at the time of passage of the Sherman Antitrust Act, there were 17 states enforcing antitrust actions geared in particular at protecting local establishments from the intrusions of national companies. A high school history text would characterize the Act as protecting against large companies, anticompetitive actions and robber barons. But, for two decades after its passage there was little action at the federal level enforcing the Act. Indeed it enabled the trusts that it was ostensibly intended to obstruct, by stripping the states of their ability to enforce their own laws. The Sherman Antitrust Act set the stage for expansive economic growth: a two-edged sword that was especially good for Sears Roebucks, and especially bad for local hardware stores.

Another example would be the Occupational Health and Safety Act. Ostensibly it protects workers, but it is a two-edged sword as it also protects firms. OSHA exonerates a firm from liability for workplace injuries as long as it is not found negligent under OSHA standards. So, workers are stripped of the ability to sue their employer. And to some extent then, workplace standards and worker safety depends on the stringency of enforcement by the federal agency, which has waxed and waned over the years.

History will view current activities about climate change as a social movement, and social movements have a life cycle. A federal emissions constraint that sets an emissions floor may be environmental victory, but it may remove fuel from the local fire for addressing climate change. For those who see local action as an out-of-control prairie fire, this is a good thing. For those who see local action as the potential rejoinder to national indifference or corruption, or perhaps a place for personal redemption, then a federal emissions floor is a difficult compromise. It may be early in the lifecycle of the social movement to weaken or remove the ability or incentive for local action.

The Historic Erosion of State Authority in Environment Policy

For as long as environmental policy was viewed primarily as an issue of what regulations to apply to the use of the air and water, the value of environmental resources

remained implicit and the issue of ownership of resources did not arise. Rather the discussion was in terms of what level of government had the power to establish and enforce regulatory standards.

With the advent of environmental policies such as allowance trading that are based on establishing market-like incentives for users of the air and water, the resources are transformed into an asset with a stream of valuable monetary returns. The power to regulate now implies the power to determine the disposition of the stream of valuable returns on the regulated activity. The issue of control is now also an issue of income.

Although no one seemed to remark on it at the time, the 1990 Clean Air Act Amendments transferred a valuable ownership interest from the states to the federal government by transferring the right to allocate the economic value of sulfur dioxide (SO₂) emissions from sources covered by the law. Previously states had the authority through permitting, etc. to determine the assignment of the implicit value. The 1990 Amendments created an asset with substantial market value and gave the asset to the regulated firms free-of-charge. An asset that had been held in trust by state government, for all intents and purposes, became the property of the federal government.

The SO₂ program is the only example to date of a cap and trade program where this value has been usurped by the federal government. In the NO_x SIP Call, or in RGGI, or in the EU ETS or in the many local trading programs the allocation decision remains with the state or member state.

Secondly, traditional conservatives, who believe in the devolution of regulatory authority to the local level where possible, should take special note of this point in history. Local planning authority draws on the law of public nuisance with its roots all the way back in common law. In the last two decades, some commentators have advocated further devolution of parts of federal environmental law to the state level.⁶ The introduction of a federal emissions quantity could effectively elevate authority for many otherwise traditionally local regulatory activities to the federal level. For example, area emission sources from agriculture, forestry and land use planning may offer low cost emission reductions that are unlikely to be directly covered under the cap. These activities may qualify as valuable offsets. Qualification for offsets may involve certification of specific practices within a regulatory process that is elevated to the federal level in an unprecedented manner. Hence, the institution of a federal emission floor, with federal guidelines and processes to certify offsets and incentives to local governments to implement approved measures may suggest the opening of influence into what has for centuries been in the local domain.

5. Remedies to the Incentive Problem under “Floor and Trade”

For state and local governments to play a strong role in helping the nation to achieve its climate goals they need both the ability and the incentive to affect the emissions outcome. The ability to affect the emissions outcome is tied directly to the ability for state actions to meet or exceed the outcome that would occur under business as

⁶ Hecht 2004.

usual. Whether these governments act forcefully to innovate in their domains of influence will depend on the incentives they have to do so.

The *Ability* of States to Meet or Exceed

In principle, state and local policy is susceptible to regulatory capture in a symmetric way. They could be persuaded to adopt policies that promote local commercial interests that undermine the overarching national goal, or that reinforce it. However, the principle of meet or exceed is not symmetric. The federal commitment to climate change is not intended to be the sum of local commitments. Federal climate policy will attempt to overcome the current inertia in the economy by reducing emissions. State and local policies can help reduce the cost of achieving that outcome where they provide innovated solutions that are not attainable directly by the federal government.

For over forty years, Congress has generally utilized “floor preemption” in environmental policy, meaning that a federal minimum standard is set but states may exceed this minimum (Andreen et al. 2008). Federal minimums are useful in the case of transboundary pollution, but more stringent state regulations are in no way detrimental to this effort. Also the concept of meet or exceed allows for flexibility in the face of various sources of state-by-state heterogeneity. Such heterogeneity is a primary justification for cap and trade programs. Specifically, they allow heterogeneous state and local governments to adopt supplemental policies that are not covered under the uniform emissions allowance price. There may be architectural fixes to a national emissions trading policy to allow for meet or exceed policies at the state and local level. One suggestion is to allow states to require the surrender of an additional fraction of a federal allowance for emissions in that state. This ultimately allows for a stricter state target integrated into a federal program. However, it would deny the state any possible value stream from the auctioning of allowances because those revenues would accrue to the federal government. In addition, state efforts may be anticipated and it is not clear whether that would lead to a tighter or looser cap at the national level.

An approach mentioned by Stavins would be a carve out for states that choose not to join the federal program, as long as those states adopt policies that meet or exceed the federal policy. Moreover, in that case a state or group of states would be able to retain authority to assign the economic value created by introducing scarcity on CO₂ through the allocation of emission allowances and the permitting of related activity.

The *Incentive* to Meet or Exceed

How can the federal government provide incentives for state and local governments to innovate in their traditional domains? One approach that was embodied in the Lieberman-Warner proposal in 2008 (S.2191) would directly provide incentives for innovation in land use, transportation and energy efficiency through the award of allowances to the leader states where such value has traditionally resided.

The ultimate draft of the proposal introduced a political compromise that illustrates what may be a Faustian bargain for state and local governments. The “substitute amendment” to the Boxer-Lieberman-Warner proposal (S.3036) would not give out allowances to leader states if they institute a cap-and-trade program independent of the federal program.

Several authors have suggested “cooperative federalism” that would set standards federally but allow the states to develop implementing policies.⁷ These examples fall outside the emissions-trading program, except to the extent that they might be used to govern the apportionment of allowances or allowance value to the states. An example is the mechanism of state implementation plans; however, these plans are not known for their tendency to reward innovation. Generally federal approval of the plans hinges on the use of pre-approved measures and standards.

The criteria for the award of allowances to leader states are a list of specific measures that govern the behavior of the state and local governments rather than focus on the outcome of their actions. In this way, the award embodies a criteria-driven kind of command-and-control thinking that might seem contrary to incentive-based orientation of the cap-and-trade approach.

A hybrid approach involving specific incentives for a broad set of policies and standards has been used in transportation policy under three major federal transportation bills in 1991, 1998 and 2003. For example, the “value pricing pilot program” in 1998 provided up-front funding to support implementation of road pricing. The 2003 legislation established a ridership-based “performance incentive program.” It specified that in order to receive funds, a state must have a process in place to analyze highway safety problems and must produce a list of projects to be funded.

A different approach to provide incentives for meet or exceed that rewards outcomes rather than actions might be to associate to states an expected annual rate of progress devolved from the national annual rate of progress represented in the national emissions goals. The annual rate of progress denominated in emissions per capita or emissions per unit of economic activity would provide an outcome-oriented incentive while preserving for state and local governments the greatest possible decision-making authority.

The concept of annual rate of progress is a familiar one under Section 171 the Clean Air Act. “Reasonable further progress” is used to measure progress in areas that are out of attainment with the National Ambient Air Quality Standards. If a jurisdiction fails to meet an annual rate of progress (for example, a 3 percent reduction in the difference between air quality and the national standards) it would trigger additional sanctions from the federal government, such as freezing of federal highway funds.

Failing to meet an assigned annual rate of progress under federal climate policy could result in a reduction in the award of allowances to the state, implying a reduction of revenues associated with the sale of allowances or value associated with their allocation. In contrast, an incentive for exceptional performance might allow for expanded awards to states that exceed their annual rate of progress.

⁷ McKinstry, Dernbach and Peterson (2007), and Andreen et al. (2008). Kaswan (2008), Doremus and Hanemann (2008). Litz (2008) suggests this approach especially for mobile sources.

6. Conclusion: Towards Global Climate Federalism

Democratic governments have their disadvantages. The expression of ideas contrary to national policy can undermine or raise the cost of the policy. Multiple layers of government within a democratic system can amplify this effect because it provides multiple points of entry for competing ideas and moreover it provides decentralized policy handles that can be affected by local constituencies.

A familiar feature of national policy within a federalist system of government is preemption of actions by lower levels of government that may contradict or interfere with the policy at the national level. Emissions cap and trade introduces an unfamiliar type of effective preemption by rendering less effective many of the types of policies that are the traditional domain of state and local government, to the extent that these policies can have no direct affect on the environmental outcome.

This paper argues that the activities of state and local government are important to achieving policies aiming to reduce greenhouse gas emissions and especially to reducing the cost of achieving national-level goals. These actors are uniquely situated to affect the outcome because each has access to unique information that is not available at the national level. Moreover, whereas economists typically argue that innovation is essential to helping society achieve emissions reductions, state and local governments provide the venue for innovation in policy that will determine most directly the way that people interact with their environment and the associated use of energy. Therefore, it seems essential for climate policy to be cost effective, and to maximize the opportunity and incentive for innovation in the activities of state and local governments so that they can contribute to overall emissions reductions.

The resolution of environmental federalism within national governments may presage that for national governments in international climate negotiations. A major question facing the international community is whether international institutions should define specific actions of national governments in the effort to arrest climate change. Conversely, to what extent can commitments be tied to outcomes and performance rather than specific actions? Shall actions be governed by specific language of multinational agreements? Or, can bilateral agreements outside the multinational framework be the basis for achieving emissions reduction outcomes. The national level decisions about the relationships between different levels of government offer a microcosm of the issues that are likely to face the international community in the next decades.

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