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# TOWARD A CONSTRUCTIVE DIALOGUE ON FEDERAL AND STATE ROLES IN U.S. CLIMATE CHANGE POLICY

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WORLD RESOURCES INSTITUTE

PEW CENTER ON Global CLIMATE CHANGE

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## Executive Summary

In the United States to date, states have taken most of the significant actions to address climate change. Yet enactment of a nationwide program requiring reductions across the entire United States is both necessary and increasingly likely. This prospect raises a number of questions as to the appropriate division of responsibilities between state and federal governments across the many areas where climate change action is needed. The key question is not whether responsibility for climate change action should rest exclusively with the federal government or the states, but rather how and to what degree the federal government and the states should share responsibility for tackling the problem.

A number of arguments exist to support state-level action on climate change. States have historically played a role as effective first-movers on important environmental issues, functioning as policy innovators, testing policies that have later been adopted at the federal level. States also bring an understanding of the unique circumstances within their boundaries and a familiarity with their stakeholders. States drive federal action, sometimes insisting that policies be strengthened even after the federal government has acted.

There are also numerous arguments in favor of a strong federal role in climate policy. A federal program would bring every state into the climate change effort and tend to level the playing field for businesses in all 50 states. Federal action offers a platform for engaging with other nations in forging an international emissions reduction agreement. A national GHG cap-and-trade program would keep costs manageable and drive climate-friendly technological innovation, and could link with other markets around the world.

Given the strong reasons for both state and federal action on climate change, it is perhaps not surprising that historically state and federal governments have chosen to share authority over most areas where climate change action is needed. This is true across most air pollution control, energy supply, energy efficiency, transportation, forestry and agricultural policy areas. Rather than asking whether federal or state government is best able to address climate change, the more relevant question is which level of government should tackle which parts of the challenge.

Precisely how to delineate state and federal roles in a comprehensive nationwide climate change program should be the focus of a constructive national dialogue. This paper evaluates several possible approaches along a continuum from heavy reliance on federal action to heavy reliance on state action. The scenarios examined differ in the degree to which responsibility for reductions is shared between federal and state governments, but each recognizes that some action will be required at both levels.

Federal action on climate change is needed to achieve the significant reductions science demands and to establish a minimum level of uniformity across the U.S. economy. This federal action can preserve room for states to continue in their important roles as policy innovators, on-the-ground implementers, and policy drivers, and to capitalize on the significant experience in the states across the many aspects of climate change action. A federal climate change program will be most successful if it is designed with the relative strengths of each level of government in mind.

## I. Introduction

In the United States to date, most of the first genuine steps toward addressing the challenge of climate change have taken place at the state level.[1] Many states have proceeded in a meaningful, comprehensive fashion while the federal government struggles to take its first significant step toward legislative or regulatory action. Yet it is clear that these state actions, even when taken together, are not enough to put the United States on a course to reduce greenhouse gas (GHG) emissions to the level deemed necessary by the science. Nationwide action requiring reductions in all 50 states will be necessary. Assuming the federal government will eventually put such a comprehensive program in place, however, a number of questions arise as to the appropriate division of responsibilities between state and federal governments across the many areas where climate change action is needed.

Given the relative historical competencies of state and federal governments, it is neither desirable nor likely that the federal government will step in comprehensively to eliminate any state role in tackling climate change. Indeed, some areas central to climate change policy, such as smart growth and land use planning, fall within the near-exclusive purview of state and local governments. At the other extreme are international climate change negotiations leading to international agreements, which is a matter for exclusive federal control. Most areas relevant to climate change policy, however, fall between these two extremes and have historically been shared by both state and federal governments.

Against the current and historical jurisdictional backdrop, the key question is not whether responsibility for climate change action should rest exclusively with the federal government or the states, but rather how the federal government and the states should share responsibility for tackling the problem. It is difficult to imagine the federal government stepping in to assume exclusive and broad authority over all activities in the United States that contribute to climate change. Because legal authority is already shared in many of these areas, the appropriate questions relate to the degree to which state and federal governments will continue to share responsibility. Will the path forward rely most heavily on the states to tackle the problem, with the federal government stepping in to make sure all states are acting with comparable vigor? Or will future climate change policy place the federal government in the dual role of both devising and implementing policy from Washington, D.C., perhaps with the states acting as local enforcers? Or will Congress devise an approach that places certain key responsibilities with federal agencies while vesting other key responsibilities with the states?

This paper aims to further a constructive dialogue on the appropriate roles for state and federal government in meeting the challenge of climate change in the United States. Section II includes a brief overview of the climate change actions taken by states, a review of the common issues that have arisen in the debate over state action, and a brief exposition of the relevant historical areas of federal and state authority. Section III summarizes the law of federal preemption to provide a basic understanding of the various ways state policy can be affected by federal action. Section IV briefly explores the state and federal partnership established under the federal Clean Air Act for reducing air pollution, noting some key experiences with the Clean Air Act as it relates to the division of federal and state responsibility. Section V examines three possible approaches to comprehensive nationwide climate change action, taking into account the challenges and benefits associated with each option. Section VI sets out some key conclusions, questions, and principles for a continuing dialogue on these issues.

## II. Background

Any constructive dialogue about delineating state and federal responsibilities for climate change action requires a basic understanding of the significant actions already taken by states, both individually and in groups, to advance responsible policies in the areas of greenhouse gas reductions, pollution control, energy efficiency, clean and renewable energy, transportation, agriculture, forestry and waste reduction. These actions reflect a broad field of existing state jurisdiction, exercised in an environment where the federal government has been unwilling or unable to act in the name of climate change mitigation. In considering whether and how federal climate change action should affect these state actions underway, it is also important to review the arguments put forward for preserving state authority to act, and to understand how federal preemption of state authority can occur.

### A. State Actions to Address Climate Change: A Brief Overview

State actions taken to date to address climate change are both varied and comprehensive. Although a complete review of state actions is beyond the scope of this paper, a brief and general overview of state actions by subject area follows a short discussion of the global—and local—nature of the climate change problem.[2]

#### *1. Climate Change is Global; Politics are Local*

It is often said that climate change mitigation is a global problem. And indeed, the *science* of climate change makes clear that mitigation at the global level is needed. A ton of carbon dioxide ($CO_2$) emitted from a power plant in the United States is the scientific equivalent of a ton emitted from a power plant in Australia. To avoid increasing global atmospheric concentrations of greenhouse gases, therefore, emission reductions must occur globally. This scientific reality compels an international solution.

The sum of all significant actions taken on climate change in the United States however, reflects another axiom: all politics are local. Environmental action in the United States has historically started at the local and state levels, and climate change action is no exception. And so while the science demands effective leadership at the global level, politically effective leadership in the United States has begun at the local and state levels.

In considering how best to design an effective national climate change policy, it may be helpful to keep both the scientific and political axioms in mind. While the science demands a global response, the politics may favor movement at the ground level.

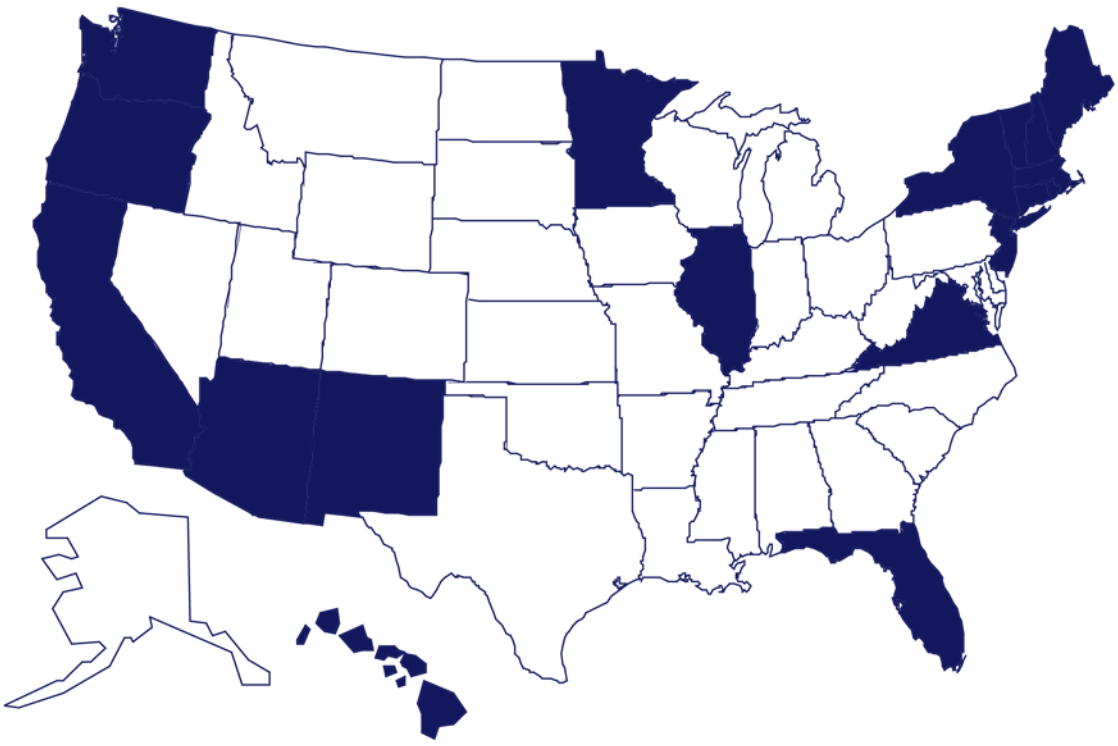
*2. Economy-Wide Mandatory State Caps on Greenhouse Gas Emissions*

State governments are moving to enact legislation that requires enforceable economy-wide reductions in greenhouse gas (GHG) emissions. California was the first to enact such a comprehensive statute in 2006, when Republican Governor Arnold Schwarzenegger signed the Global Warming Solutions Act of 2006, also known as AB 32. Since that time, other state legislatures and governors have followed suit: Hawaii, Minnesota, New Jersey, Oregon, and Washington have all established GHG emissions targets through similar legislation.

While a handful of states have passed legislation requiring the reduction of GHG emissions across the economy, governors in many other states have issued executive orders or plans setting statewide, economy-wide GHG reduction targets. Although for the most part these orders and plans do not have the full force of state law, they provide impetus for significant action to reduce emissions. The accompanying map (see Figure 1) shows states adopting economy-wide targets through legislation, executive order, agreement and/or state climate change action plan.

**Figure 1**

**States with Greenhouse Gas Emissions Targets**



**Source: Pew Center on Global Climate Change, www.pewclimate.org**

Whether through statute or executive action, most of these economy-wide measures recognize that reaching long-term reduction goals will require action in every sector of a state's economy. Some of these economy-wide targets have paved the way to, or were developed from, comprehensive state climate action plans that detail very specifically how a state will achieve its goals.

### *3. GHG Emissions Control Policies*

Among the specific policy measures taken by states in the climate change area, significant progress has been made in the direct control of GHG emissions from vehicles and major stationary sources. From the so-called "Pavley" vehicle tailpipe standards begun in California, to the regional cap-and trade efforts in the Northeast, West, and Midwest, states have moved to significantly reduce GHG emissions through direct regulation.

**Greenhouse Gas Vehicle Tailpipe Standards.** In 2002, California enacted AB 1493, a law requiring the California Air Resources Board (CARB) to adopt standards to control the emissions of greenhouse gases from the tailpipes of light-duty vehicles. CARB has since issued those standards, which will apply to the 2009 new model year forward if CARB receives a waiver from the U.S. Environmental Protection Agency (EPA). The tailpipe standards are expected to reduce GHG emissions from all new light-duty vehicles in the state by 30 percent by 2016. Sixteen other states have adopted or have announced their intention to follow California's lead and adopt the tailpipe standards.[3]

Under the federal Clean Air Act, states may adopt the vehicle tailpipe regulations adopted in California.[4] Effectively, this has meant that two sets of regulations apply to new vehicles in the United States—the California standards and those adopted by the federal EPA. After more than a dozen states adopted the new California GHG tailpipe standards, the automobile manufacturers challenged the standards in federal courts in California and Vermont. At the trial level, both legal challenges were resolved in favor of the California program, and are currently on appeal.[5]

The Act requires that California seek and obtain a waiver from the federal EPA when adopting new vehicle tailpipe standards. California sought such a waiver and after a two-and-a-half-year delay EPA denied the waiver—the first such denial in the history of the Clean Air Act. California, joined by many of the other states seeking to adopt the standards, has filed suit to compel EPA to grant the waiver.[6] The outcome of that legal challenge is pending as of this writing.

**Regional Cap-and-Trade Programs.** In late 2005, a group of Northeastern and Mid-Atlantic states announced their agreement on the basic structure for a regional cap-and-trade program to reduce $CO_2$ emissions from power plants in the region. The effort, called the Northeast Regional Greenhouse Gas Initiative (RGGI), includes the six New England states, New York, New Jersey, Maryland and Delaware. Compliance

in the regional market begins in 2009. By 2019, RGGI will reduce emissions from the power sector across the Northeast by approximately 10 percent from average 2000 to 2003 levels, or 35 percent below where emissions from the sector would be in the absence of the program.[7]

Another group of states and provinces in the North American West have also set about designing a regional cap-and-trade program. The Western Climate Initiative (WCI) includes Arizona, California, Montana, New Mexico, Oregon, Utah, Washington, British Columbia, Quebec and Manitoba, as well as several observer states and provinces. WCI aims to reduce emissions with a multi-sector cap-and-trade program, as well as certain other measures, such as the California vehicle tailpipe standards. Initial design of the program is slated to be complete in 2008.

Lastly, in November 2007 a group of governors in the American Midwest announced plans to work together to design a regional cap-and-trade program. The participating jurisdictions include Illinois, Iowa, Kansas, Michigan, Minnesota and Wisconsin, as well as the Canadian province of Manitoba. Indiana, Ohio and South Dakota will observe the process. These states, which include a number of coal-dependent economies, aim to complete their design in 12 months and launch a program in 30 months.

*4. Energy Efficiency Policies*

Many states and localities are implementing policies to actively promote energy efficiency. Approximately half of U.S. states have established "public benefit funds" that are financed through a charge on retail electricity bills and that directly invest in projects that increase energy efficiency in the states. A number of states have implemented policies to allow end-use electric energy efficiency to compete with more traditional electricity resources. These measures include removal of traditional state regulatory barriers that tie utility revenues to the amount of power delivered, i.e. "decoupling." Some states have adopted energy efficiency portfolio or resource standards that require new electricity demand be reduced through increased energy efficiency. Further progress has been made through updating building energy codes and appliance standards.

*5. Clean Energy Policies*

Reducing the carbon associated with the consumption of electricity and fossil fuels has been the focus of another set of state-level policies. Some state public benefit funds are directed not only at energy efficiency, but also at renewable energy projects. In addition, more than half of the states have implemented renewable portfolio standards to increase the share of electricity delivered that comes from renewable sources. States have also actively updated energy regulations that previously prevented electricity consumers from relying on distributed renewable electricity generation. For example, many states have reduced stand-by charges for being attached to the grid while self-generating,[8] and are allowing net metering, whereby the electricity consumer can sell excess electricity generated to the grid.

New types of carbon performance standards have also aimed directly at improving the carbon profile of energy consumed in the state. California, for example, is adopting a low-carbon fuel standard that will reduce the carbon content of fuels used in transportation, a policy that a number of other states are contemplating. Oregon requires any new power plant to offset a portion of its $CO_2$ emissions. Washington, Montana and California have also established GHG emissions standards for electricity generation that prevent new coal-fired power without carbon capture and storage from entering the supply mix.

### *6. Transportation and Land-Use Policies*

States have long been on the front lines when it comes to transportation and land-use policies. In addition to the very significant step of reducing emissions from vehicles—something seventeen states are accomplishing through adoption of the low-GHG tailpipe emissions standards—state and local governments seek to increase the efficiency and decrease the environmental impact of transportation through a variety of other measures. Examples include increasing the extent and use of public transit services, pursuing smart growth strategies, preserving open space, and trying innovative urban forestry and "green roof" initiatives. State and local governments are also directly engaged in programs to reduce vehicle miles traveled, a major challenge in the area of transportation emissions.

### *7. Agriculture and Forestry*

States are also active in promoting agricultural practices that are climate-friendly. Ten states have renewable fuel mandates that will spur agricultural production of crops for biofuels production.[9] More than 35 states have instituted tax incentives or grant programs to spur production and/or use of biofuels. States have also sought to ensure that biofuels policies are also low-carbon policies—as evidenced by the recent interest in low-carbon fuel standards. It also bears noting that many of the state-run programs that seek to protect the local environment are also climate-friendly policies. For example, policies that seek proper manure management and soil conservation to protect water quality also tend to reduce GHG emissions and promote soil sequestration.

### *8. Waste Reduction and Management*

Most waste prevention programs occur at the state and local level in the United States. Cities, with the aid of states, are implementing advanced recycling and waste reduction programs. Curbside recycling occurs at the local level as well. The re-use and recycling of resources can significantly reduce the need to consume fossil fuels. In addition, waste that is reused or recycled rather than landfilled or burned in an incinerator avoids the release of methane and $CO_2$ emissions. Source reduction programs aimed at reducing the amount of waste associated with the production, packaging and shipment of goods can also have significant impacts.

## B. State Action, Federal Action, or Federal and State Action?

The debate over whether federal or state government is best suited to govern a particular issue is a debate as old as the United States itself. A thoughtful treatment of how best to allocate responsibility for climate change policies warrants consideration of the centuries-old arguments on each side of the federalism discussion. This section explores why some view state-level policies as a beautiful patchwork quilt, while others seek uniformity in policies across all states. It also poses, given the arguments on each side of the debate, the question of whether a framework for shared responsibility most effectively accomplishes the goal. Shared responsibility allows for significant federal action and also a significant ongoing role for states.

### *1. The Arguments for State Action*

**States as First Movers.** The long list of measures adopted at the state level to address climate change stands as clear evidence that states can be effective first movers on issues of local, national and international importance. This is surely not a new phenomenon in environmental policy. Indeed, states and cities were the first to pass laws to regulate air pollution in the name of public health, well before the U.S. Congress passed the Clean Air Act. Similarly, it was a state—New Jersey—that enacted the first comprehensive toxic waste site cleanup legislation, before Congress moved to enact the federal superfund law.

**States as Policy Innovators.** In the environmental policy arena, states have long been "laboratories of democracy" seeking solutions to problems new and old.[10] After being tested in the "laboratory," many of these policies have been adopted on the federal level. Because a number of the 50 states may attempt different approaches to similar problems, lessons may be drawn about what policy instruments are effective for use on the national level.

Examples where state approaches were emulated on the federal level abound. Wisconsin, Michigan, North Carolina and Minnesota were among the states to take action on sulfur dioxide emissions from power plants.[11] Arizona, Florida and Kansas were the three states to follow California in adopting state appliance energy efficiency standards in the 1980s.[12] California moved to reduce pollution from automobile tailpipes before there was a federal Clean Air Act, and has been pushing the boundaries of clean vehicle policy ever since. The Northeast states' approach to reducing nitrogen oxide pollution from power plants and industrial sources was expanded by the federal government and today is part of the U.S. EPA's Clean Air Interstate Rule affecting much of the eastern half of the country.[13]

There can be no doubt given this track record that states have played an important role in devising innovative approaches to protecting the environment. This innovation role should be considered in contemplating the climate change policy landscape after the federal government acts.

**States as On-the-Ground Policy Implementers.** In addition to the states' role as first movers and policy laboratories on important issues, states often bring an understanding of the unique circumstances within their boundaries. As on-the-ground implementers, states have greater knowledge of the regulated entities, easier and more frequent contact with facilities, familiarity with information sources, and experience with forcing compliance. A recognition that a one-size federal solution may not always fit is perhaps the underlying rationale for many federal environmental statutes. The federal Clean Air and Clean Water Acts put state governments in the role of primary implementer under federal oversight by the U.S. EPA. These comprehensive federal statutes and programs set national minimum standards for action but make states front-line implementers of the programs. These federal programs also allow states to address issues not covered by the federal program, and in some cases to enact more stringent state requirements. Federal highway programs and federal agricultural programs also give the primary responsibility for implementation to the states. Granting states a similar implementing role in a future federal climate change program warrants consideration.

**States as Drivers of Federal Action.** Just as some states have been the first to move on many environmental issues, they have also been among the first to insist that policies be strengthened even after the federal government has acted. The acid rain issue presents such an example. Although Congress acted to adopt the 1990 Amendments to the Clean Air Act, which established the Title IV Acid Rain cap-and-trade program, it was not long before it became clear to many of the states in the Northeast that the reductions required under the Amendments were not sufficient to adequately reduce acid rain in their region. New York proceeded to adopt a statewide cap-and-trade program that dramatically reduced sulfur emissions from power plants in the state. New York's program demonstrated that much more dramatic reductions were not only possible, but affordable. The federal EPA later implemented similar reductions in sulfur emissions under its Clean Air Interstate Rule. In considering how the states' roles in climate change policy should be shaped after the federal government acts, therefore, it is important to consider whether and how to preserve the states' ability to continue serving as drivers of more stringent federal policy.[14]

**States as Experienced Regulators.** States have the regulatory institutions and experience to carry out climate change programs in those areas where they have been the primary or sole regulators. Thus, in areas such as land use and smart growth, electricity resource planning, and building codes, states have more regulatory experience than the federal government. In deciding which level of government should occupy these areas in a future federal climate change policy, this experience is clearly relevant.

### *2. The Arguments for Federal Action*

There are, of course, reasons some climate change policies might be better effectuated at the federal level, notwithstanding the states' important roles as first movers, policy innovators and on-the-ground implementers. Among the reasons are the broader coverage of a federal program, the ability to level the

competitive playing field for citizens and businesses, and the ultimate need for coherent and comprehensive national and international action. Indeed, many state leaders have themselves made these arguments to advocate—and sometimes even to sue the federal government to compel—national action.

**The Challenge Demands All 50 States.** A federal program guarantees coverage across all 50 states. In contrast, an approach that relies solely on state actions leaves substantial gaps in program coverage. Not all states have acted to meaningfully tackle climate change. Even among those states that have acted, there are differences in the scope and stringency of their policies. A federal program would bring all 50 states into the climate change effort.

**Federal Action Levels the Playing Field.** A federal program would tend to level the playing field for businesses in all 50 states. Although the state laboratories of democracy produce useful policy products, they also present a more difficult environment for companies doing business in multiple states. Those companies must contend with different rules and regulations, which presents competitiveness issues. In addition, the potential for emissions "leakage"—the result of shifts in production from areas with stringent policies to areas without policies—is greater in an environment where some states act and some do not.

**Federal Action as Platform for International Engagement.** Even a large number of states enacting comprehensive climate change action plans cannot alone solve the global climate change problem. Ultimately, the challenge will be to effect change throughout the United States, as well as cooperative action from the major emitting countries of the world. A comprehensive federal climate action program would put the United States in a position to engage the rest of the world in negotiations to ensure effective international climate action. Absent federal action, successful international negotiations resulting in significant and sustained emissions reductions are unlikely.

**The Challenge Demands as Broad a Greenhouse Gas Trading Market as Possible.** Solving the climate change problem will require a fundamental economic transformation. It will require sustained action over long time periods all over the world. Numerous studies indicate that a market-based approach to reducing GHG emissions is essential to keeping costs manageable and driving climate-friendly technological innovation. Greenhouse gases are emitted from thousands of different kinds of sources around the world, and can be reduced using thousands of different solutions. A national GHG cap-and-trade program is the best vehicle to link with other markets around the world to create a market broad enough to drive the necessary reductions.

### *3. The Argument for Shared Responsibility*

Just as the arguments on each side of the state and federal debate have been made since the early days of the republic, so too have the compromises that give both the federal government and states shared responsibility for tackling complex problems. A policy framework that makes room for federal and state

action can seek to capitalize on the benefits of both. For example, a federal environmental program that allows states to enact more stringent policies ensures a minimum level of uniformity across all 50 states, while simultaneously leaving some room for states to innovate, to address local interests, and to achieve new policy outcomes.

There are many persuasive arguments for preserving the states' role in climate change policy. There are likewise many strong arguments for a uniform federal response to the climate change problem. The argument for shared responsibility rests on the belief that a federal program can ensure nationwide uniformity while reserving for states enough authority to achieve the benefits they are in a better position to provide. Indeed, the history of environmental policy teaches us that, although the federal government may be persuaded to act, if that action proves insufficient, allowing states to exercise authority to drive more stringent policy can result in better policies in the long run.

## C. Exploring Areas of Federal, State and Shared Authority

In considering how best to allocate responsibilities for climate change action between the federal and state governments, it is helpful to examine generally the areas where federal and state governments have exercised authority in policy areas where climate-friendly action is needed. A review of these areas reveals that while some have been reserved to near-exclusive state jurisdiction and others to near-exclusive federal jurisdiction, most of those relating to climate change action are areas of shared federal and state authority. These shared competencies suggest that any comprehensive nationwide approach to climate change mitigation will most likely rely in some significant part on state action.

### *1. Air Pollution Control Policies and Agencies*

In general, responsibility for controlling air pollution has been shared between the federal and state governments. The federal Clean Air Act establishes national ambient air quality standards, but largely relies on states to develop and implement plans to meet those standards. At the same time, the federal government has enacted certain nationwide regulations that apply uniformly across all states, such as the federal acid rain cap-and-trade program. In short, certain policies affecting clean air have been implemented at the federal level while other policies have been left largely to the discretion of the states. Consistent with this division of responsibility, both the federal and state governments have established environmental agencies with considerable expertise to design and implement air pollution policies.

**Table 1** below, and the tables in the sections that follow, provide a quick glance at the authority exercised by state and federal governments in various areas that may be affected by climate change policy. These tables demonstrate the substantial overlap that exists in the authority of the federal and state governments, across diverse areas, but the tables do not delve below this surface. An in-depth review of the underlying makeup of

this authority is beyond the scope of this paper. Where the tables show that state authority has been exercised in a specific area, it should be noted that in some cases only a small number of "first-mover" states have acted, while a large number of other states have not. The focus in the table is whether any state has exercised its authority to act in a particular area.

**Table 1**

**Pollution Control Policies**

| Policy Mechanism | Area of Exercised Federal Authority? | Area of Exercised State Authority? | Can Federal and State Programs Exist Side-by-Side? |
|---|---|---|---|
| Emissions cap-and-trade programs[15] | Yes | Yes | Yes |
| Vehicle tailpipe standards[16] | Yes | Yes | Yes |
| Emissions performance standards or minimum technology standards for pollution control[17] | Yes | Yes | Yes |
| Carbon tax[18] | Yes | Yes | Yes |
| Mandatory emissions reporting for major sources of pollution[19] | Yes | Yes | Yes |

### *2. Energy Supply Policies*

Unlike pollution control policies, energy supply policies have generally been the province of state government, with some exceptions that relate to the interstate transmission of energy as well as the siting of nuclear and hydropower generating facilities. **Table 2** provides a quick snapshot of these policy areas. Each state has a regulatory agency—often called the public utility commission or public service commission—that is dedicated to regulating the supply and transmission of electricity, and the retail delivery of electricity and

**Table 2**

**Energy Supply Policies**

| Policy Mechanism | Area of Exercised Federal Authority? | Area of Exercised State Authority? | Can Federal and State Programs Exist Side-by-Side? |
|---|---|---|---|
| Siting and construction of electric-generating facilities other than nuclear and hydroelectric facilities | No | Yes | Yes |
| Siting and construction of nuclear and hydroelectric generating facilities | Yes | No[20] | Yes |
| Resource planning to meet electricity demand, including renewable portfolio standard and/or energy efficiency as a resource | No | Yes | Yes[21] |
| Interstate pipelines | Yes | No | No |
| Interstate transmission lines | Yes | Yes | Yes |
| Fuel standards | Yes | Yes | Yes |

natural gas. These agencies have in many cases developed extensive expertise in renewable energy and energy efficiency. Given this institutional expertise and experience on the state level, any future federal program governing the supply and retail delivery of electricity or natural gas would need to rely at least in part on state-level implementation.

### *3. Energy Efficiency Policies*

In the area of energy efficiency policies, while states like Minnesota, California and New York have been standout leaders, both the federal and state governments have been active. It is important to note that the same state energy regulatory bodies that regulate the supply and delivery of electricity and natural gas have also accumulated decades of experience implementing energy efficiency policies, either directly or working with the utility companies in the states. **Table 3** identifies specific policy mechanisms and notes which governmental level has exercised its jurisdiction to carry out the policy under existing law.

**Table 3**

**Energy Efficiency Policies**

| Policy Mechanism | Area of Exercised Federal Authority? | Area of Exercised State Authority? | Can Federal and State Programs Exist Side-by-Side? |
|---|---|---|---|
| Energy-efficiency funds and/or tax credits | Yes[22] | Yes[23] | Yes |
| Appliance and equipment standards[24] | Yes | Yes | Yes |
| Building energy codes[25] | No | Yes | Yes |
| Vehicle fuel efficiency (Corporate Average Fuel Economy)[26] | Yes | No | No |

### *4. Transportation and Land Use Policies*

Transportation and land use policy presents another area where states are either exclusively in control, or the federal and state governments share control. It bears noting that even in areas where states have the discretion for planning decisions, federal funding is often highly persuasive in these decisions. **Table 4** again provides a snapshot view of federal and state authority in this area.

**Table 4**

**Transportation and Land Use Policies**

| Policy Mechanism | Area of Exercised Federal Authority? | Area of Exercised State Authority? | Can Federal and State Programs Exist Side-by-Side? |
|---|---|---|---|
| Smart growth planning[27] | Yes | Yes | Yes |
| Transit-oriented development[28] | Yes | Yes | Yes |
| Environmental Impact Review | Yes | Yes | Yes |
| Open space preservation | Yes | Yes | Yes |
| Insurance policies, including pay-as-you-drive insurance | No | Yes | Yes |
| Vehicle feebates[29] | No | Yes | Yes |
| Tax incentives[30] | Yes | Yes | Yes |

### *5. Agriculture & Forestry*

Agricultural and forest policy in the United States presents a balance of federal and state authorities. In general, as **Table 5** shows, the federal and state governments have shared responsibility for agricultural policies as they relate to climate change actions.

**Table 5**

**Agriculture & Forestry**

| Policy Mechanism | Area of Exercised Federal Authority? | Area of Exercised State Authority? | Can Federal and State Programs Exist Side-by-Side? |
|---|---|---|---|
| Manure management requirements | Yes | Yes | Yes |
| Soil management | Yes | Yes | Yes |
| Sustainable biomass production for biofuels | Yes | Yes | Yes |
| Biomass to electricity through renewable portfolio standard | No | Yes | Yes |
| Forest preservation, management and land to forest | Yes | Yes | Yes |
| Urban forestry[31] | Yes | Yes | Yes |
| Renewable Fuel Mandate | Yes | Yes | Yes |

### *6. Waste Prevention, Reduction and Management*

In contrast with most of the other policy areas detailed above, waste prevention, reduction and management has largely been a matter for state and local authorities. The federal government has established regulations for the design and operation of landfills, but has otherwise limited its activities to providing technical assistance to states and municipalities.[32] The federal government could exercise a larger role within the climate change area to require, for example, source waste reductions through packaging standards implemented across the national economy.

**Table 6**

**Waste Prevention,** Reduction and Management

| Policy Mechanism | Area of Exercised Federal Authority? | Area of Exercised State Authority? | Can Federal and State Programs Exist Side-by-Side? |
|---|---|---|---|
| Advanced recycling[33] | No | Yes | Yes |
| Advanced composting | No | Yes | Yes |
| Landfill gas recovery | Yes | Yes | Yes |

### *7. Conclusions Against a Backdrop of Shared Authority*

As this review of specific areas of involvement demonstrates, very few subject areas have been reserved to one or the other level of government. For the most part, jurisdiction for solving complex problems such as climate change has been shared by the federal and state governments. In devising a comprehensive national climate change program, this history of overlapping and shared competencies sets an important foundation. Rather than asking whether the federal or state governments are best able to address climate change, the more relevant question will be which level of government should tackle which part of the challenge. What is the appropriate balance between achieving the important goals of national action and a reasonable level of uniformity against the important goals of allowing states to address local concerns, to innovate, and drive policy when the federal government is slow to act?

## III. Federal Preemption

In considering the appropriate delineation of state and federal responsibilities to tackle climate change, it is important to have a basic understanding of federal preemption law. "Preemption" occurs when a federal law conflicts with a state law. The Supremacy Clause of the U.S. Constitution provides that federal law will govern in the case of such a conflict.[34]

Preemption of state law can occur in at least three distinct circumstances. First, through what is termed "express preemption" a federal law will preempt a state law when the federal statute contains language declaring that the states may not regulate in a particular area. In general, when faced with an express preemption question, courts will determine whether the challenged state law or regulation is of the type that Congress intended to preempt. This is a relatively straightforward inquiry when the statute is clearly drafted.

Second, through what is referred to as "implied preemption," a state law may be deemed preempted by federal law if the state law directly conflicts with or frustrates the federal law. Preemption by conflict occurs even if the federal statute contains no express language on preemption. In such a case, the Supremacy Clause operates to render the federal law supreme.

Third, implied preemption may also occur if a court determines that Congress has so pervasively regulated a field that there is no room left for state action. This is referred to as "occupying the field." This circumstance may arise despite no express statutory language on the subject of preemption.

Because implied preemption occurs in the absence of specific statutory preemption language, it is important to consider the potential that a proposed federal statute will directly conflict with existing or proposed state actions. If preemption is not intended, an express reservation of states' right in the federal statute preserves the states' ability to continue acting even after the federal measure is implemented. An important example of this kind of express reservation of state authority is found in the Clean Air Act.

The table on the next page depicts a range of possible preemption outcomes in a federal statute as it relates to the states' ability to act on climate change mitigation.

**Table 7**

**Potential Preemption Outcomes** Under Federal Legislation

| | LESS STATE FLEXIBILITY ← | | | → MORE STATE FLEXIBILITY |
|---|---|---|---|---|
| **On Legal Preemption** | States expressly and broadly preempted from any program to reduce emissions of greenhouse gases. | States expressly preempted from imposing state requirements to reduce direct emissions from sources covered by the federal program. | Federal bill silent on preemption and no evidence of intent to "occupy the field": states reserve all authority that does not conflict with federal program. | States expressly permitted to impose more stringent state requirements in areas not covered by the federal statute. | States expressly permitted to impose more stringent state requirements, including areas covered by the federal statute. |

## IV. The U.S. Clean Air Act Example: An Evolving Federal–State Partnership

In considering the appropriate division of climate change responsibilities between the federal and state governments, it is useful to examine the federal Clean Air Act (CAA) model. The federal Clean Air Act gives certain authority to the federal government, exercised primarily by the U.S. EPA. For example, EPA oversees the acid rain trading program under Title IV. The CAA places substantial authority for improving air quality with the states and local air quality authorities, reserving a federal oversight role to approve or seek changes in state air quality planning. States are free under the Clean Air Act to be more protective than the minimum standards set by the federal government, with very few exceptions.

While the structure and history of the Clean Air Act presents some very important lessons for the design of a comprehensive climate change program in the United States, this paper does not argue that the Clean Air Act should be the vehicle for addressing climate change. Indeed, while climate change is in part an air pollution problem, it also raises important questions about energy policies and large-scale technological transformation that the Clean Air Act may be ill fit to tackle on its own. Also, whereas air quality is often a local or regional problem, climate change is a global problem. Nevertheless, the Clean Air Act importantly stands for the proposition that complex problems can effectively be tackled through a state and federal partnership, that jurisdiction to tackle these problems need not be reserved exclusively for one level of government, and that a healthy push and pull between different levels of government can result in better policies.

### A. The Role of the Federal Government under the Clean Air Act

The Clean Air Act requires the federal EPA to establish and periodically revise National Ambient Air Quality Standards (NAAQS) that all areas of the country must attain or work to attain.[35] EPA oversees the development of so-called State Implementation Plans (SIPs), and reserves the right to disapprove of a SIP that does not adequately maintain or improve air quality in accordance with the Act. Where states fail or choose not to act on a particular clean air issue, EPA may impose its own requirements and administer its own program in a state through a federal implementation plan.

In addition to its oversight role, EPA is required to prescribe emission limits to protect the public from air toxics, although earlier federal requirements were slow to get the reductions needed so states moved to fill this gap. EPA also maintains a primary, though non-exclusive, role in the regulation of emissions from on-road and off-road mobile sources, and the formulation of fuels, both conventional and alternative. It also carries out

a stratospheric ozone program and is charged with monitoring and compiling inventories of GHG emissions. As mentioned above, EPA also oversees the acid rain trading program under the Act.

## B. The Role of the States in U.S. Clean Air Policy

Through the State Implementation Plan process, states retain a great deal of discretion over how to meet the NAAQS within their territories.[36] SIP planning is a comprehensive exercise that considers nearly every possible measure for maintaining or attaining the air quality standards in a state. As a result, a SIP will often include a wide variety of specific measures. These measures range from the direct control of air pollution from stationary sources, to the regulation of consumer products such as paint and deodorants, to the regulation of transportation with measures such as high occupancy vehicle lanes and restrictions on parking in urban areas.

Importantly for the climate change issue, states have maintained the ability to impose more stringent requirements on stationary sources within their boundaries than required by federal law. Many states have also adopted the more stringent California vehicle tailpipe emissions standards covering conventional air pollutants as well as greenhouse gases. In addition, states have implemented state-level fuel requirements in cooperation with the federal government.[37]

## C. Limitation on State Authority under the Clean Air Act

While the Clean Air Act creates a federal and state partnership for improving air quality and allows states to be more stringent than the federal government, the Act is not without its limits on state authority. Three examples illustrate limitations that are important to consider in determining appropriate federal and state roles for climate policy going forward.

### *1. Mobile Sources Regulation and California*

The federal Clean Air Act generally prevents states from regulating pollution from new vehicles, reserving such regulation to the federal EPA, with one exception. Section 209 of the Clean Air Act preserves California's state authority to regulate motor vehicle emissions because California began regulating motor vehicle emissions before the federal government. States other than California may adopt California's standards, or opt instead to have the less stringent EPA regulations apply. Sixteen other states have adopted or have announced their intention to adopt the California car standards in their states. The result is that in the United States today there are two sets of vehicle standards: the federal tailpipe standards, and the more stringent California tailpipe standards.

By allowing one state to devise vehicle tailpipe regulations that are different from those established by EPA, the Clean Air Act forges a compromise between the arguments for state action and those for federal preemption. Rather than subject automobile manufacturers to 50 different sets of tailpipe standards in 50 states, the Act limits the potential differences to two: the federal standards and California's. This preserves

California's ability to be a first mover and experiment with more aggressive pollution control policies. Overall, pollution control policy in the United States benefits because California is permitted to demonstrate new initiatives that the federal government may choose to adopt for all states or reject.

California's GHG tailpipe standards have thus far survived court challenge in two separate venues, though the trial court decisions are currently on appeal. The standards also require a waiver from the U.S. EPA, a waiver that EPA denied (California has sought to have the decision overturned). Whatever the outcome of these pending matters, the balance struck by Congress in the Clean Air Act on the control of pollution from new vehicles warrants serious consideration in the design of a federal climate change program.

It bears noting that the federal Congress has enacted the Energy Independence and Security Act of 2007. The Act will improve the Corporate Average Fuel Economy (CAFE) requirements for motor vehicles to 35 miles per gallon by 2020 for cars and trucks combined, from a current level of 27.5 miles per gallon for cars and 22.2 miles per gallon for light trucks. Comparing the California and federal standards is not straightforward. According to the timelines in the California and federal statutes, the new federal standards accomplish reductions similar to the California program, but later. In addition, California already plans to increase the stringency of its tailpipe regulations. As a result, the California Air Resources Board expects the long-term reductions from the CAFE standards to be smaller than from the California car program.[38]

### *2. The Federal Acid Rain Program and New York*

The 1990 Amendments to the Clean Air Act created the Title IV Acid Rain Program (ARP), a federal cap-and-trade program to reduce sulfur dioxide emissions from power plants. The program, administered by EPA, was launched in 1995 and has generally been considered a great success at significantly reducing emissions at a lower cost than had been anticipated at the outset of the program. Although the ARP successfully achieved significant reductions in sulfur dioxide, the reductions have proved insufficient to fully address the acid rain problem in Northeast states like New York. The New York legislature aimed to help correct what they perceived as a problem in the ARP.

A brief description of how the ARP cap-and-trade program works is necessary to understand New York's action. The ARP caps the total number of tons of sulfur dioxide that may come from large power plants in the United States. Under the Program, EPA issues one "allowance" for each ton permitted under the cap. Allowances are allocated to sources under the program. Sources must monitor their emissions and report them to the EPA. At the end of each compliance period, a source must hold enough allowances to cover all of its emissions in that period. The allowances are freely tradable, so that sources that reduce their emissions may sell their excess allowances to other sources. Although the system effectively caps overall emissions from the sector, it does not prevent a source in a "downwind" state like New York from reducing its emissions and selling the allowances to a plant in an "upwind" state in the Midwest—thereby exacerbating the acid rain program in the downwind state.

New York sought to prevent New York plants from selling excess federal allowances to sources upwind of hard hit areas of the state where acid rain continues to be a problem. It enacted the New York Air Pollution Mitigation Law, which provided that sources in New York could not sell their allowances to sources in a specified area upwind of New York. On a challenge to the law, the federal courts determined that the New York law was preempted by the federal Clean Air Act because it directly conflicted with the ARP program.[39]

It is important to note that Title IV of the Clean Air Act does not expressly preempt states from enacting programs more stringent than the ARP. Indeed, as mentioned above, the Act expressly permits states to enact more stringent programs. Nevertheless, the federal courts held that a state law or regulation cannot directly conflict or frustrate the federal cap-and-trade program by interfering with the allowance trading called for by the program. This lesson is important for a federal greenhouse gas cap-and-trade program: the states' role should be clearly defined in the statute.

### *3. Federal Cap-and-Trade and State Cap-and-Trade on the Same Sources?*

Although a state cannot directly impede the workings of the ARP cap-and-trade program, the Clean Air Act does allow a state to impose more stringent requirements on the plants subject to the ARP program. A state may, in fact, implement a statewide cap-and-trade program that requires reductions more stringent than the federal ARP from the same sources. The State of New York chose to implement an aggressive statewide cap-and-trade program to reduce sulfur dioxide emissions from power plants in the state—from the very same plants subject to the federal program.[40]

Although the New York program certainly reduces emissions from within the state, the federal cap-and-trade program works to frustrate the state program's goals. Any reductions that a state chooses to require from power plants subject to the Acid Rain Program will free up a federal allowance that can be sold to another source and used to cover its emissions. New York's program is effective, therefore, at demonstrating that significant reductions are viable, even affordable, from power plants, but it cannot prevent the sale of federal allowances to sources in other states. In effect, a more stringent state policy covering plants subject to a federal cap-and-trade program will simply free up allowances for use outside the state.

A federal program could of course provide for greater state control over the emissions allowances allocated to the state. The federal program could, for example, allow states to allocate, auction or retire a certain share of the federal allowances. If a state wanted to implement a more stringent state cap on emissions, the state would simply impose the state cap and retire allowances equal to the difference between the federal allocation and the new more stringent state cap. It bears noting, however, that such an approach would effectively permit one or more states to tighten the overall federal cap. Whether this makes sense would depend on a variety of factors, including the stringency of the federal program.

## V. Future U.S. Climate Policies: Settling on Federal and State Roles

Given the broad range of policies that will be necessary to tackle the climate change challenge, any future national climate action framework will require some action from both the federal government and states. This is in part due to the recognition that an economy-wide cap-and-trade program, although necessary, will not be sufficient to change behavior in certain areas of the economy where market barriers or inelasticity of demand prevent such transformation. In such areas, complementary policies will be required. Many of these complementary measures will take place in areas of traditional state authority, while others will take place in subject areas where federal and state governments have shared responsibility for accomplishing policy goals.

Precisely how to apply past lessons of state and federal cooperation to future climate change policy proposals is and will continue to be a subject of much debate. How much of each specific policy objective should the federal government assume, and how much should be met by the states? To what extent should states be allowed to experiment with innovative approaches to accomplishing goals set at a federal level? Will states be permitted to maintain a "first mover" role in climate policy even after the federal government has acted? In short, how can a U.S. climate change policy achieve uniform and substantial reductions across all states without stamping out the states' ability to innovate, to address specific concerns unique to their stakeholders and territory, and capitalize on the jurisdictions' unique strengths?

The remainder of this paper is dedicated to outlining three possible approaches to comprehensive nationwide climate change action. All three approaches require the federal government to establish mandatory nationwide GHG reduction targets. Otherwise, the three approaches are described as follows:

- The first hypothetical approach, the "Heavy State Role" scenario, would reserve most decisions about how to achieve the reduction targets to the states through federally mandated comprehensive climate change action plans.

- In the second scenario, the "Heavy Federal Role," the federal government would bear responsibility for achieving nationwide reductions through federal programs. The exception to this might be those programs that relate to areas over which states largely have exclusive control, such as land use decisions.

- The third, the "Federal-State Partnership" approach, calls for the federal government to enact certain key "anchor" policies that would be implemented nationwide. States would be given roles in the

implementation of the federal anchor programs to the extent those roles effectively capitalize on state jurisdictional strengths. States would be also required to develop comprehensive climate change action plans to achieve reductions beyond the federal anchor programs.

The three different approaches are outlined in Table 8. The pros and cons of the approaches are discussed below.

## A. Mandatory National Greenhouse Gas Reduction Targets

For purposes of discussing the various options for dividing federal and state responsibility on climate change action, all three approaches assume that the federal government would adopt short-, medium- and long-term GHG reduction targets consistent with what scientists state are needed to adequately address

**Table 8**

**Three Approaches to a Nationwide Climate Change Mitigation Policy**

| | Heavy State Role | State-Federal Partnership | Heavy Federal Role |
|---|---|---|---|
| | Nationwide GHG Reduction Targets | Nationwide GHG Reduction Targets | Nationwide GHG Reduction Targets |
| **Federal Role** | Federal government would require each state to develop, implement and periodically revise a comprehensive climate action plan to achieve the state's share of the nationwide reduction target. | Implement federal "anchor" programs (e.g.):<br>• Federal cap-and-trade program;<br>• Federal vehicle tailpipe standards<br>• Federal vehicle fuel efficiency standards<br>• Federal renewable portfolio standard<br>• Energy efficiency standards for appliances and equipment<br>• Energy efficiency fund or tax credits<br>• Low carbon fuel standard<br>• Other?<br>Federal "anchor" programs would result in significant reductions in each state. | Responsibility for meeting targets through federal programs, e.g., the programs listed as "anchor" programs in the middle column. |
| | Federal technical and financial assistance to states | Federal technical and financial assistance to states | |
| **State Role** | Develop, implement and periodically revise comprehensive state climate change action plan, including portfolio of state-appropriate measures, to achieve state's share of the federal reduction target. | To accomplish remainder of reductions, states must develop, implement and periodically revise comprehensive state climate change action plan, including portfolio of state-appropriate measures, to fill the "gap" left by the federal anchor programs in the state. | Comply with federal programs only as they relate to state functions. |

human-induced climate change. This means a steadily declining GHG emissions target that ultimately achieves a level of emissions 60 to 80 percent below current levels by 2050. To achieve these goals, comprehensive planning will be required at either the federal or state level, or at both levels.

In addition to the assumption that nationwide targets would be set, all three options assume some federal action on climate change. The approaches differ only in the extent to which states are given responsibility for achieving the nationwide reduction targets.

## B. Exploring the Benefits and Challenges Presented in Three Possible Approaches

Having explored the actions taken to date by the states, reviewed the arguments for and against action at the different levels of government, and examined the Clean Air Act approach to clean air regulation, this section aims to apply those lessons to the three hypothetical approaches to a nationwide climate change program outlined in the previous section. With each hypothetical option, the question presented is whether the approach maximizes the benefits to be derived from federal and/or state action, and minimizes the challenges.

### *1. Heavy State Role Approach*

Under the "Heavy State Role" approach, the federal government would enact mandatory nationwide reduction targets and require every state to develop, implement and periodically revise a comprehensive state climate action plan. The contents of the plan would be largely up to the individual states, but each state would be responsible for achieving its share of the national reduction target. The federal government would offer states technical and financial assistance to develop and implement state plans.

The Heavy State Role option presents some advantages. The federal action would deliver two key benefits: there would be clear national reduction targets and all states would have to contribute their share to the effort. Beyond these benefits, all 50 states would be allowed to experiment with individual state approaches to reduce emissions, much as many states have done to date. This would tend to be positive for those policy mechanisms that are best tailored to specific state circumstances. The approach would also engender a potentially productive competition among states to develop policies that best achieve the results while meeting other state goals.

For those policy mechanisms that benefit from wide-scale deployment, however, such as cap-and-trade programs, the Heavy State Role approach would be much less helpful. Regional efforts like the Regional Greenhouse Gas Initiative would proliferate in an attempt to offset this disadvantage, as they have in the absence of federal action. Linking regional and state programs may go further to offset the disadvantage, but differences across emissions markets would on balance be counterproductive and more costly.

The Heavy State Role approach would present additional challenges beyond the differences across states and regions. Although every state would be required to make reductions, experience to date suggests that many high-emitting states are very reluctant to impose emissions limitations. Delays would accompany federal attempts to bring unwilling states along. While different policies from state to state would yield innovative results in some states, other state attempts may fail to get reductions, while differences would bring inefficiencies as compared to uniform national programs. There is also the potential for uneven regulation across state lines.

### *2. The Heavy Federal Role Approach*

In contrast with the Heavy State Role scenario, the Heavy Federal Role approach places responsibility for reaching nationwide goals on the federal government. The only exceptions would be the areas that are simply not practical to regulate at the federal level, such as local land use policies. Key policies under this approach might be a broad nationwide cap-and-trade program, along with other policies such as a renewable portfolio standard and a low-carbon fuel standard.

The greater reliance on federal control in all areas would maximize the uniformity of policies across all states, and create a predictable business environment. For those programs that are most effectively implemented on a national level—like a cap-and-trade program—the overall cost of the programs will be minimized, allowing for more significant reductions overall. A few potential policies are outlined below before a discussion of the benefits and challenges of the Heavy Federal Role Approach.

**National Cap-and-Trade Program.** In general, a cap-and-trade program presents the classic example of a policy measure that is more effectively deployed at a national level than at the state or regional level. This is true because the more sources covered by a cap, the greater the possibility for inexpensive reductions across the system as a whole, and in turn, the greater the overall reduction practically achievable. Larger cap-and-trade programs also send more robust market signals to investors who seek larger markets for new technologies to address GHG emissions. A federal program also tends to level the playing field for sources as compared to state or regional emissions trading regimes.

If implemented like the Acid Rain Program described above, a federal cap-and-trade program generally leaves little room for states to achieve deeper reductions from covered sources. A federal cap-and-trade program sets the maximum amount of emissions that may come from a set of sources—typically sources such as electric generators and industrial facilities. The federal cap establishes the total reductions regardless of more stringent state programs that affect sources in a particular state, because a reduction in one state by definition frees up allowances in the system to be used in another state. A Heavy Federal Approach would presumably not seek to change this dynamic.

**National Vehicle Efficiency Standards.** Another key federal program is the national Corporate Average Fuel Economy standards.[41] Under the Energy Independence and Security Act of 2007, the national fuel economy standard for the combined fleet of cars and trucks was increased to 35 miles per gallon by 2020. The standard for passenger cars had not increased since 1985, when it was raised to 27.5 miles per gallon.[42] Less was required for light trucks, which had to meet standards of 20.5 miles per gallon in 1987, increasing to 22.2 miles per gallon for model years 2007 and beyond. The new CAFE standards will lead to GHG emissions reductions in the transportation sector across the entire United States. Under current federal law, only the federal government may regulate vehicle fuel efficiency.[43] This ensures that automobile manufacturers need only comply with one set of efficiency regulations rather than a patchwork of state regulations.

**National Renewable or Low-Carbon Portfolio Standard.** A national renewable or low-carbon portfolio standard could be enacted to increase the share of electricity generated from renewable and other low-carbon energy sources. A national renewable portfolio standard would have the advantage of driving renewable energy across the country, and not just in states that have adopted their own renewable energy portfolio standards. A national standard could also provide more flexibility concerning the location of renewable energy generating facilities: solar and wind installations could be sited in areas best able to capitalize on these natural resources.

As discussed above, however, electric generation resource planning has long been the province of state governments, with the exception of matters that affect interstate commerce or interstate resources. A federal renewable portfolio standard would either require a new federal authority and associated bureaucracy, or it would have to rely on state regulatory bodies for its implementation.

A Heavy Federal Role, therefore, presents the advantages that have been recited for federal action: uniform national application of requirements; involvement of all states, not just those willing to act on their own; and a level playing field for businesses operating nationwide. While it maximizes the benefits of federal action, however, the heavy federal approach does not enable states to do what they do best.

In leaving states largely out, the heavy federal scenario creates significant challenges. Because states would not be devising climate action plans, the opportunities to identify creative local solutions to problems would be substantially diminished. The federal government would be less able to address local stakeholders and other interests. Areas that were previously the state's charge, like electricity and natural gas delivery, would necessarily come under increasingly federalized control. As in the Corporate Average Fuel Economy context, states would not be in a position to drive improvements when the federal government is slow to act.

*3. Federal and State Partnership Approach*

While the heavy state and federal approaches take advantage of the strengths of the state or federal governments, respectively, a Federal and State Partnership Approach aims to draw on the strengths of both levels of government. Under this approach, the federal government would set nationwide greenhouse gas reduction targets and implement key national "anchor" programs that are aimed at obtaining significant uniform reductions across all 50 states. At the same time, the states would be tapped to achieve additional reductions through those policies and programs that benefit from state and local design and implementation. In developing the federal anchor programs, furthermore, states would serve as on-the-ground implementers where appropriate, and opportunities to allow states to continue to serve as "first movers" would be preserved to the extent that the benefits of national implementation are not unduly compromised.

It is important here to consider the potential need for both federal anchor programs as well as complementary policies that are designed to adjust for market failures or local circumstances. For example, much attention has been paid to the need for a national cap-and-trade program to reduce emissions across multiple sectors of the economy. Some of the federal proposals to date seek to cover transportation fuels to reduce emissions from the transportation sector. Yet while broad coverage has advantages, consumer behavior is generally not very responsive in the short term to incremental increases in the price of transportation fuels.[44] As a result, tackling transportation emissions is likely to require more than cap-and-trade. States may be in a better position to design complementary measures designed to encourage consumers to both buy more energy-efficient vehicles and travel fewer miles. Indeed, the traditionally state and local areas of transportation and land-use planning could play a significant role in this complementary effort.

Because of the potential need to achieve emissions reductions beyond those that can be accomplished through federal anchor programs, the shared approach aims to divide roles to reach the best policy outcome. Below, the federal anchor programs are revisited together with a brief discussion of how states might play constructive roles in these programs.

**Potential State Roles in a Federal Cap-and-Trade Program.** Recall that federal cap-and-trade programs tend to discourage action at the state level because any reductions achieved from sources covered by the federal cap simply free up federal allowances to be used outside the state. It may nonetheless be possible to provide states with the flexibility to achieve deeper reductions. If under a federal cap-and-trade program some allowances are allocated first to states for distribution to sources, and if states were permitted to unilaterally retire a portion of the allowances allocated to the state, the state could effectively impose a more stringent requirement on its own sources without enabling additional emissions at a location outside the state.

In addition, any federal cap-and-trade program could allow states to determine the appropriate method of distributing some allowances to sources in the states. Some would argue that allowance allocation is appropriately accomplished at the state level given the state's familiarity with its industries and stakeholders. Should a state decide to auction the allowances, it may invest the allowance revenue in a way that accomplishes complementary aims that are more easily achieved at the state level, such as increased investment in energy efficiency. Others would argue that treating the same industries differently in different states raises interstate competitiveness issues, and that the federal government may be in the best position to stimulate technological innovation through allocation policy.

Federal climate policy must also address how to best interact with the three regional cap-and-trade systems already under development. The federal government will need to assess whether and how to provide a transitional existence to such programs. Depending on the timing of enactment of federal policy, some state programs will have already begun trading and/or auctioning of allowances.

**National and State Greenhouse Gas Vehicle Tailpipe Standards.** The Clean Air Act struck a compromise between the two extremes on vehicle tailpipe standards. Vesting exclusive authority in the federal government to regulate tailpipe emissions could lead to unresponsive policies. On the other hand, allowing all 50 states to regulate tailpipe emissions would result in tremendous inefficiencies for automobile manufacturers and consumers. By limiting to two the number of different regulatory standards the automakers must meet, Congress struck a balance between state and federal authority. The outcome is a policy that preserved the ability for states to innovate and spur federal action.

By enacting certain key national anchor programs that preserve the states' ability to enact policies more stringent than the federal programs, the federal government will be achieving significant reductions through policies that make sense at a federal level. The remaining policies in other areas are then left for states to develop as appropriate. Through the state climate change mitigation planning process, states could assemble a portfolio of policies and measures across all areas, including energy efficiency, low-carbon and renewable fuels, transportation and land use policies, agriculture, forestry, and waste reduction measures.

## VI. Conclusion

A great number of states, both alone and in combination, have taken meaningful initiative to fight climate change. It is clear, however, that state and regional action alone will not be enough to achieve the reductions science dictates. A federal program is required to ensure the United States achieves its share of the necessary reductions. Such a federal program is also a necessary foundation for productive participation in ongoing international negotiations to secure adequate worldwide reductions.

A comprehensive national climate change policy should be a federal and state partnership, taking into account the appropriate division and sharing of responsibility between the federal and state governments. Those measures that are most effectively implemented on a federal level should be implemented as federal policies. These may include a federal cap-and-trade program applied consistently nationwide across a substantial part of the U.S. economy to achieve maximum reductions at the lowest cost. But these federal programs will not encompass all potential reductions, and there are good reasons to provide states some role in a federal cap-and-trade program.

A national climate change policy should recognize that states have developed a great deal of valuable experience in many areas where climate change action is needed, areas where federal action may be less effective. These areas include intrastate energy resource planning to spur development of renewable energy, investment in energy efficiency, and smart land use and transportation policies. While some national mandate may be called for in these areas, states may be in the best position to design and implement policies best tailored to their jurisdictions. A national mandate might come in the form of a requirement for each state to develop climate change mitigation plans for those sectors or source categories not covered by the federal cap-and-trade program.

Even in those areas best suited for federal action, opportunities and challenges associated with state involvement should be considered. An example of such an opportunity would be allocating some of the emissions allowances to the states under a federal cap-and-trade program, an approach embraced by a leading Senate bill.[45] States could be permitted to retire a portion of their share of the federal allowance pool in order to effect a state cap that is more stringent than the federal cap. The challenge presented by these two options lies in differences they would create across states, and in allowing one state to change the stringency of the federal program. The implications would have to be carefully considered, but these are the kind of mechanisms a federal program might consider to enable states to have a more proactive role in future climate policy.

Federal climate policy must also address how best to best interact with the regional cap-and-trade systems already under development.

In the course of this debate, it is useful to remember that historically, very few areas have been vested in the exclusive control of the federal or state governments. Instead, most are areas of overlapping or shared competence. A federal climate change program will be most successful if it is designed with the relative strengths of each level of government in mind.

## Endnotes

1. Most of the remaining significant actions have been taken by cities and municipalities. See "Climate Change 101: Understanding and Responding to Global Climate Change, Local Action" (2006). Of course, those steps taken to further international negotiations have all been taken by the federal government through the President.

2. For a more complete review, please see "Climate Change 101: State Action", published by the Pew Center on Global Climate Change and the Pew Center on the States, 2006; see also http://www.pewclimate.org/what_s_being_done/in_the_states/.

3. These states include Arizona, Colorado, Connecticut, Florida, Maine, Maryland, Massachusetts, New Jersey, New Mexico, New York, Oregon, Pennsylvania, Rhode Island, Utah, Vermont, and Washington. http://www.pewclimate.org/node/5857 (April 1, 2008).

4. Clean Air Act, §209.

5. *Central Valley Chrysler-Jeep, Inc. v. Goldstone*, No. 04-6663, slip. op. (C.D. Cal. December 11, 2007); *Green Mountain Chrysler-Plymouth Dodge Jeep, Inc. v. Crombie*, No. 2:05-cv-302, slip op. (D.Vt. September 12, 2007).

6. The news release from the California Attorney General, as well as the supporting documentation, can be found at http://ag.ca.gov/newsalerts/release.php?id=1514& (January 20, 2008).

7. For more information about the Northeast Regional Greenhouse Gas Initiative, see http://www.rggi.org (as of January 20, 2008).

8. Stand-by charges are sometimes imposed on utility customers that self-generate and are intended to compensate the utility for standing by in the event the customer must reconnect to the grid when on-site generation is unavailable. The stand-by charges thereby increase the cost of going off-grid for periods of time to use on-site electricity such as wind or solar.

9. For an up-to-date depiction of states with various clean energy policies, see http://www.pewclimate.org/what_s_being_done/in_the_states/state_action_maps.cfm (as of January 20, 2008).

10. The idea that states can serve as "laboratories of democracy" was first put forth by Supreme Court Justice Louis Brandeis in the dissenting opinion to *New State Ice Co. vs. Liebmann*, 285 U.S. 262 (1932). While federal courts at the time generally opposed state attempts to regulate business, Brandeis agreed with the lower courts that a state should be free to reasonably impose restrictions on public utilities, noting: "It is one of the happy incidents of the federal system that a single courageous State may, if its citizens choose, serve as a laboratory; and try novel social and economic experiments without risk to the rest of the country."

11. *Climate Policy in the State Laboratory: How States Influence Federal Policy and the Implications for Climate Policy on the United States*, by Andrew Aulisi, John Larsen et al. (2007), p. 27.

12. Ibid., p. 29.

13. It bears noting that the NOx Budget emissions trading program was designed to help the states meet the federal ambient air quality standard, reflecting the sharing of jurisdiction under the Clean Air Act.

14. See Aulisi, A., Pershing, J., et al., "Greenhouse Gas Emissions Trading in the U.S. States: Observations and Lessons from the OTC NOx Budget Program", World Resources Institute, 2005.

15. See the discussion below relating to the U.S. Acid Rain cap-and-trade program and the State of New York's state-wide cap-and-trade program, in Section IV.C.3.

16. Seventeen states representing approximately 50% of the U.S. population have adopted or will adopt the California greenhouse gas tailpipe standards. The Clean Air Act ensures that only two sets of standards exist: the federal requirements and the California requirements. See discussion of this dynamic above in Section II.A.3.

17. Section 116 of Title I of the Clean Air Act reserves a state's authority to regulate air pollution sources so long as that regulation does not conflict with requirements of the Act, and is at least as stringent as the federal requirements. 42 U.S.C. § 7416.

18. Although no state or federal carbon tax currently exists in the United States, both state governments and the federal government have the authority to tax. Some local jurisdictions have enacted such policies.

19. Some examples of mandatory greenhouse gas reporting include: (a) at the federal level, under Title IV of the Clean Air Act power generating facilities must report carbon dioxide emissions pursuant to 40 CFR Part 75; (b) in New Mexico, certain emissions sources must report pursuant to regulations at 20.2.87 NM Admin. Code, adopted in January 2008, http://www.nmenv.state.nm.us/aqb/GHG/ghgrr_index.html; (c) in New Jersey, reporting is required for methane and carbon dioxide, see http://www.state.nj.us/dep/aqm/ESadoption.wpd.

20. In some cases, state authority under the Section 401 of the Clean Water Act is implicated in the siting of such facilities, giving states at least one jurisdictional "hook" in an otherwise federal proceeding.

21. Given that state energy regulatory bodies currently regulate the delivery of renewable power resources within the state, any federal renewable portfolio standard is likely to rely in part on implementation at the state level.

22. For information on the Federal Energy Management Program, see http://www1.eere.energy.gov/femp/about/index.html (as of January 20, 2008). For information on federal tax incentives for energy efficiency that are part of the 2005 Energy Policy Act, see http://www.aceee.org/energy/national/legsttus.htm (as of January 20, 2008).

23. For a summary of state energy efficiency funds and demand response programs, see http://www1.eere.energy.gov/femp/program/utility/utilityman_energymanage.html (as of January 20, 2008).

24. In general, states are permitted to cover appliances and equipment not covered by the federal standards. For information on the history of appliance standards at the federal level, see http://www.aceee.org/energy/applstnd.htm (as of January 20, 2008). For a state counterpart program, see http://www.energy.ca.gov/efficiency/appliances/ (as of January 20, 2008);

25. Although the approach varies from state to state, building codes are generally enforced at the local level.

26. As part of the Energy Independence and Security Act of 2007, Congress increased the federal Corporate Average Fuel Economy (CAFE) standards for cars and trucks. These standards are expected to be less effective at stimulating fuel efficiency than the California greenhouse gas tailpipe standards, which are aimed at reducing emissions from vehicles.

27. Land use policies have been a part of state implementation planning under the federal Clean Air Act for decades. In addition, it is clear that federal transportation funding plays a significant role in state transportation decisions.

28. The federal agency responsible for transit policy, including transit-oriented developments, is the Federal Transit Administration, a branch of the U.S. Department of Transportation (http://www.fta.dot.gov/publications.html). In general, like highway funding, transit funding is generally accomplished in cooperation with state and local transit authorities.

29. The District of Columbia may be the only "state" to have enacted a feebate program under The Department of Motor Vehicles Reform Amendment Act of 2004" (A15-704). The Act requires owners of large SUVs to pay a higher excise tax and registration fee, while reducing the tax and fee for owners of hybrid electric and alternative fuel vehicles. At least one federal proposal to allow a tax credit based on fuel efficiency has been proposed. See Senate Bill No. 795 in the 108th Congress.

30. An example of a tax incentive is the federal tax credit for the purchase of a hybrid-electric vehicle, as well as the similar credits available in a number of states.

31. Although generally implemented on the local level, urban forestry initiatives take place at each level of government. See the USDA Forest Service's website at http://www.fs.fed.us/psw/programs/cufr/.

32. See http://www.epa.gov/epaoswer/general/orientat/rom2.pdf.

33. Here, it bears noting that the federal government does have voluntary programs in place and provides technical assistance, while the mandatory recycling laws have been imposed at the state and local levels.

34. The Supremacy Clause reads, "This Constitution, and the Laws of the United States which shall be made in Pursuance thereof; and all Treaties made, or which shall be made, under the authority of the United States, shall be the supreme Law of the land; and the Judges in every State shall be bound thereby, any Thing in the Constitution or Laws of any State to the Contrary notwithstanding."

35. See *The Plain English Guide to the Clean Air Act*, at http://www.epa.gov/air/caa/peg/index.html.

36. Ibid.

37. The imposition of state-level fuel requirements—so-called "boutique" fuel requirements—have proliferated, leading Congress in the Energy Policy Act of 2005 to call for a report on the impacts of the many different types of refined fuels on the U.S. market. The Act also allowed EPA to restrict the number of waivers it would issue under Section 112 of the Clean Air Act. See http://www.epa.gov/OMS/boutique/420r06901.pdf.

38. See California Air Resources Board Enhanced Technical Assessment, "Comparison of Greenhouse Gas Reductions Under U.S. CAFE Standards and California Air Resources Board Greenhouse Gas Regulations," dated February 25, 2008, available at http://www.arb.ca.gov/cc/ccms/reports/pavleycafe_reportfeb25_08.pdf.

39. *Clean Air Markets Group v. Pataki,* 194 F.Supp. 2nd 147 (N.Dist. NY 2002); affirmed, 338 F.3rd 82 (2nd Cir. 2003).

40. The New York program is referred to as the Acid Deposition Reduction Program. Regulations can be found at 6 NYCRR Parts 237 & 238.

41. A summary of the Energy Independence and Security Act is available from the Congressional Research Service at http://assets.opencrs.com/rpts/RL34294_20071221.pdf. (as of January 20, 2008).

42. See Greene, David and Andreas Schafer. *Reducing Greenhouse Gas Emissions From U.S. Transportation*. Pew Center on Global Climate Change, 2003.

43, The Energy Policy and Conservation Act of 1975, 42 USC § 6201, et seq.

44. Hughes, J.E., C.R. Knittel and D. Sperling. "Evidence of a Shift in the Short-run Price Elasticity of Gasoline Demand." *The Energy Journal*, Vol. 29, No. 1, 2008. Available at http://www.econ.ucdavis.edu/faculty/knittel/papers/gas_demand_final.pdf.

45. The proposed Lieberman-Warner Climate Security Act of 2007 (S. 2191) would allocate some emissions allowances to states in Title 3, Subtitle C. The full text is available at http://lieberman.senate.gov/documents/lwcsa.pdf and a summary of the bill is available at http://lieberman.senate.gov/documents/detailedacsa.pdf (as of April 4, 2008).

This paper aims to further a constructive dialogue on the appropriate roles for state and federal government in meeting the challenge of climate change in the United States. The Pew Center on Global Climate Change was established in 1998 in order to bring a cooperative approach to the debate on global climate change. The Pew Center continues to inform the debate by publishing reports in the areas of policy (domestic and international), economics, environment, and solutions.

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