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Symposium - The Business of Climate Change: Challenges and Opportunities for Multinational Business Enterprises: The Implications of the New "Old" Federalism in Climate-Change Legislation: How to Function in a Global Marketplace When States Take the Lead

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SUMMARY:

... There is little doubt that there will be a mandatory federal program to address the problem of global climate change after the Supreme Court's decision in Massachusetts v. EPA, holding that the Clean Air Act provides EPA authority to regulate emissions of greenhouse gases ("GHGs"). ... " During the latter half of the twentieth century, as the federal government adopted many of the experiments of the progressive states and established floors with minimum standards for state programs, the concept of federalism swung back to concepts of states rights, focusing on limitations on federal power. ... This inventory and projection of emissions growth by sector and GHG serves as a reference case that can be used to evaluate the emissions reductions that will be required and that can be achieved through the use of various control measures. ... TRANSPORTATION AND LAND USE Passenger Vehicle GHG Emission Rates Vehicle Technology Tailpipe GHG Emission Standards ZEV/LEV-2 Implementation R&D on Low-GHG Vehicle Technology (e.g., fuel cell) Add-on Technologies (Low Friction Oil, Low-Rolling Resistance Tires) ... The second mechanism that the Clean Air Act employs, the establishment of new source performance standards, is also consistent with regulation of GHGs and could both support existing state planning programs and legislation and benefit from those efforts. ... Consistent with the range of state GHG reduction approaches in place today, the program should include flexibility to use a range of implementation mechanisms for all sectors and sources. ...

TEXT:

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I. Introduction

There is little doubt that there will be a mandatory federal program to address the problem of global climate change

after the Supreme Court's decision in *Massachusetts v. EPA*,ⁿ¹ holding that the Clean Air Act provides EPA authority to regulate emissions of greenhouse gases ("GHGs"). The federal government, however, will be a later-comer. The last decade has witnessed a blossoming of innovative state environmental initiatives to address global problems that the federal government has not addressed with the urgency that much of the world community believes warranted. Often working together, several states, local governments, and non-governmental organizations have developed a wide variety of programs to address the environmental issues that were identified as priorities at the Earth Summit in Rio de Janeiro in 1993. These include the need to promote patterns of sustainable development and the closely related needs to conserve the world's biodiversityⁿ² and to address the causes and impacts of human induced climate change.ⁿ³ Most notably, states have advanced numerous climate change policies and programs related to energy, transportation and natural resources that directly or indirectly reduce GHG emissions. These [*63] programs include a wide array of actions related to energy, transportation, land use, efficiency, waste, industrial processes, forestry and agriculture. They employ an equally wide variety of implementation mechanisms ranging from voluntary agreements and incentive-based approaches to regulatory mechanisms that include both traditional codes and standards and new market-based systems.

In attempting to advance this agenda, these states encounter a range of constraints that can be loosely grouped under the rubric of "federalism." The constraints are similar to those that often frustrated activist states during the Progressive era and differ significantly from the issues of "federalism" more recently faced by states attempting to avoid the floors established under federal environmental laws. This article suggests that a clear distinction should be drawn between the two faces of federalism and that legal tests be formulated that expressly recognize this distinction. After discussing the two faces of federalism in greater detail, this article will examine the formulation of an analytic framework appropriate for addressing the latest wave of the "new old federalism" - the expanding variety of state climate change programs and legislation. After briefly describing the problem posed by climate change, the article will describe the variety of state programs that have emerged to address the problem and the methods that states are using to develop these programs. The article will then consider the advantages and disadvantages of states taking the lead in such efforts in a federal system and the legal issues based on federalism concerns that have been raised with respect to these programs.

This article will conclude with a discussion of legal theories and tests that can be employed to conserve the advantages of state action while minimizing the adverse impacts of a state-led approach. Such a framework must recognize the need to provide judicial deference not only for state innovations but for federal laws that incubate or protect such innovations. One example of a federal law that can be applied to incubate and protect state climate change innovations is the Clean Air Act, which the Supreme Court in *Massachusetts v. EPA*ⁿ⁴ determined applies to the emissions of greenhouse gases that cause climate change.ⁿ⁵ Like many federal environmental laws, the Clean Air Act provides a variety of mechanisms that are designed to support activist state programs. In particular, the Clean Air Act was originally crafted to preserve the earlier California innovations in traditional air pollution control mechanisms that provided a model for many of the Clean Air Act's provisions. These mechanisms for preserving state innovations, if appropriately applied, can also effectively address emissions of greenhouse gases, advance and support the active state climate change initiatives, and maintain the coordination necessary to preserve the advantages of a larger federal system. The mechanisms include the federal development of uniform air quality standards that will become the targets for state-formulated [*64] and federally-reviewed implementation plans, and federal "floors" in the form of technology based standards. Promotion of the notions of federalism underlying our Constitutional system requires that judicial review provide appropriate deference, not only for the state innovations in direct challenges to those innovations, but also deference for regulatory applications of federal statutory law that can protect and advance these state programs in the context of larger national and international markets. These techniques will best serve the regulated business community by bringing a degree of national consistency to goals and standards, while preserving local initiatives in whose design businesses can have a significant role.

II. The New Old Federalism

The emergence of a new wave of state-led innovation is no more evident than in the area of climate change. An ever

growing number of states have developed comprehensive programs to reduce their emissions of GHGs to achieve ambitious targets believed necessary to prevent "dangerous anthropogenic climate change."ⁿ⁶ These programs include a wide array of actions related to energy efficiency and conservation, renewable energy, transportation and land use efficiency, waste reduction and recycling, industrial process improvements, and forestry and agriculture conservation. In each of these action areas, state GHG reduction measures have employed a range of voluntary and mandatory implementation mechanisms, including: traditional codes and standards, new market based systems, funding mechanisms and incentives, technical assistance, negotiated agreements, disclosure and reporting, pilots and demos, and information and education. States with comprehensive climate action plans gather a portfolio of policies under a statewide target and reporting system, often accompanied by a registry to ensure recognition for early actions reducing emissions.

However, some of the more innovative state approaches, such as market based cap and trade programs, limitations on GHG emissions from cars and trucks and emissions taxes, can face a number of practical and legal challenges arising from the states operating in a larger federal system. This is particularly the case where a state seeks to apply standards in markets that transcend state boundaries; markets such as electric power generation and sales. Activist states undertaking unilateral actions may do so at the risk that some in-state emitters might be disadvantaged in comparison to similar companies in other states and, therefore, move their business out of state.ⁿ⁷ Some programs may be limited or [*65] even challenged under a variety of legal theories that limit the states' ability to act. This is particularly the case where, as here, the federal government may actively resist these state efforts. For example, California's attempt to limit greenhouse gas emissions from automobiles and trucks has been challenged on the basis of contentions that the program runs afoul of: (1) the dormant commerce clause restrictions on state action, (2) the exclusive grant of authority to the federal government to control foreign relations, (3) preemption by federal regulation of corporate fuel economy and mobile source emissions, and (4) the Sherman Act.ⁿ⁸ Other state actions may be constrained by the limited ability of states to control activities outside of their borders and fears that a given policy action might be struck down as an arbitrary and capricious deprivation of property under the due process clauses of the Fifth and Fourteenth Amendments.ⁿ⁹

In light of this new state activity and the emerging resistance, one of the authors was excited by the prospect of hearing a panel discussion addressing the new issues in federalism arising under environmental law. It was a great disappointment when the panelists focused their discussion on issues of federalism as understood during the previous two decades. Those issues had focused upon efforts by states bumping down against federal floors (i.e. minimum standards), rather than the issues of the newer federalism that involve bumping up against federal ceilings (i.e. maximum standards) to the states' efforts to innovate.ⁿ¹⁰

Both aspects of federalism focus on problems of the respective limits on state and federal power in a federal system. However, distinctly different legal issues and problems are encountered when considering what the limitations are on a state's power to experiment and take innovative action where the federal government has not acted (bumping up) as opposed to the limitations on the [*66] federal government's ability to establish floors and take action where the state does not do so (bumping down). There is a need for a new terminology that distinguishes between the limits on federal power as opposed to the limits of state power. Because issues relating to limitations on federal power parallel many of the issues of concern encompassed under the rubric of "states rights," it seems most appropriate to use that term when referring to that face of federalism, while reserving the use of the term "federalism" to discussions of state innovation and federal limits on state action.

Historically, the focus of the courts has shifted between the two faces of federalism. These shifts have tended to parallel shifts in the locus of innovation between the federal government and the state governments. When innovators or progressives control the federal government, the federal government will frequently adopt the innovations developed by similarly progressive states, often at their request. Conflicts will then arise with those states that resist the exercise of federal power to establish a federal floor. When those opposing an activist role for government control the federal government, conflicts will arise with the more progressive states, whose activities bump up against a federal ceiling established to conserve a uniform national market.

The early years of the Republic focused on limits to the exercise of federal power against states' right of exclusive control of economic regulation. This was particularly true with slavery, with resistance against federal power culminating in the Civil War. During the Progressive Movement at the end of the nineteenth and beginning of the twentieth centuries, the locus of innovation returned to the states, with at least some branches of the federal government controlled by those wishing to limit innovation. The Supreme Court's reliance on now discredited notions of substantive due process and equal protection to strike down state experiments in economic regulation during this second period motivated Justice Brandeis' famous observation in a dissent that "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."ⁿ¹¹ During the latter half of the twentieth century, as the federal government adopted many of the experiments of the progressive states and established floors with minimum standards for state programs, the concept of federalism swung back to concepts of states rights, focusing on limitations on federal power. The last decade has witnessed a less active federal government, the adoption of a variety of innovative environmental, social and economic programs by the states, and the reemergence of the older concept of federalism from the last turn of the century as the courts examine the limits of state power in the federal system.

[*67] During the first quarter century of modern environmental law, federalism was understood primarily in the "states rights" sense. The suite of environmental laws adopted during the 1970s, the "environmental decade," were often based on state or regional models developed in the "laboratories" of the more progressive states.ⁿ¹² They were often adopted in response to the need to address a pressing problem and to establish a floor that would both prevent the active state programs from being undermined by activities in neighboring, upwind or upstream states and protect the progressive state programs from less responsible commercial interests who might seek out less highly regulated states. By way of example, key provisions of the Clean Air Act were based on California laws regulating air pollution.ⁿ¹³ Many of the strategies incorporated into the Clean Water Actⁿ¹⁴ were first worked out by the states comprising the Delaware River Basin Commission ("DRBC").ⁿ¹⁵ Pennsylvania's efforts to address the problems created by irresponsible mining practices served as the model for the federal Surface Mining Control and Reclamation Act.ⁿ¹⁶ New Jersey's efforts at hazardous site remediation served as a model for the federal Comprehensive Response, Compensation and Liability Act ("CERCLA").ⁿ¹⁷

Federal environmental laws have included numerous mechanisms to protect and to expand the state laws on which they were based. Typically, the laws do not seek to displace the state laws but to protect them by simultaneously creating a federal floor, providing for state primacy in the development of standards and implementation, and providing monetary assistance to state programs. Thus, most federal environmental permitting programs allow the state program to operate in lieu of the federal program so long as it is equivalent to the floor in the federal program.ⁿ¹⁸ States are often authorized to develop plans or standards in the first [*68] instance.ⁿ¹⁹ In most cases, states are specifically authorized to adopt standards more stringent than the federal floor.ⁿ²⁰ Under these laws, states are left free to enforce their programs, but the federal government may step in where it appears that state inaction may be compromising the federal floor.ⁿ²¹ These laws are thus designed to promote federalism by fostering state innovation and protecting this innovation with a floor.

Nevertheless, the term "federalism" was most often used during the first quarter century of the modern era in environmental law to describe "states rights" issues that arose from state resistance to the federal floors. The case law and scholarship, therefore, dealt primarily with the limits to federal power where states or private entities bumped down against the floor. For example, some cases involved efforts to resist federal enforcement or "overfiling."ⁿ²² Most such cases were resolved on the basis of statutory interpretation. However, these cases are informed by the Constitutional limits on federal power. The cases have therefore explored: (1) the limitations on the principal sources of federal power contained in the spending clauseⁿ²³ and the commerce clause,ⁿ²⁴ (2) the reservation of state powers contained in the Tenthⁿ²⁵ and Eleventhⁿ²⁶ Amendments to the Constitution, and (3) the limitations on state or federal power created under the due process clauses of the Fifth and Fourteenth Amendments to the Constitution and the equal protection clause of the Fourteenth Amendment.ⁿ²⁷

[*69] When states take an activist role where the federal government is inactive or hostile, as occurred during the

Progressive era and is occurring again today, a different suite of provisions are directed to the question of the limitations on state power. In some cases, these provisions are addressed to the same question as presented in challenges to federal floors. In other cases, the issue presented is the mirror image of the issue presented when considering "states rights" type federalism. In others, altogether different limitations are at issue. Thus, the due process and equal protection clauses impose essentially the same limitations on state as on federal power. The preservation of state powers under the Tenth and Eleventh Amendments and the limitations on state power created by the "dormant" commerce clauseⁿ²⁸ present issues that are the mirror image of those presented when considering limitations on federal power. Finally, state power is frequently constrained by federal preemption under the supremacy clauseⁿ²⁹ of the Constitution, and states' ability to function cooperatively or internationally may be limited by the compacts clause.ⁿ³⁰

This article examines the expanding variety of state climate change programs and legislation as a model for developing a conceptual framework appropriate for considering the application of concepts of federalism to both innovative state programs and supportive federal legislation. After describing state programs, the article will examine how these programs can be supported and advanced through mechanisms provided under the federal Clean Air Act. The article will conclude with a discussion of legal theories and tests that can be employed in the review of both federal and state laws to conserve the advantages of state action while minimizing the adverse impacts of a state-led approach and to promote what one legal scholar has termed the concept of "dynamic federalism."ⁿ³¹

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III. State Climate Change Programs: Letting a Thousand Flowers Bloom.ⁿ³²

A. The Issue

Most scientists have concluded that anthropogenic emissions of GHGs are the most important contributor to the recent long-term warming of Earth's surface, and that rates and levels of warming are currently, and predicted to be in the future, significantly beyond natural variation and to exceed variations in the rate and magnitude of temperature increases experienced at any time since the creation of human civilization.ⁿ³³ Most scientists also believe this warming will have negative effects on agriculture, forests, wildlife, human health, ocean ecosystems, and other aspects of our planet and will pose significant risks to human and environmental health.ⁿ³⁴

[*71] There are some ways of reducing GHG emissions without costs or at cost savings such as methods to employ energy efficiency and conservation or to prevent product losses. Thus, many corporations that have implemented programs to limit GHG emissions have done so at a profit,ⁿ³⁵ and state planning efforts have identified a variety of mechanisms that will reduce GHGs by employing cost-saving measures.ⁿ³⁶ Other efforts to curb GHGs will incur at least some costs; yet others may involve significant cost, lifestyle or institutional adjustment.ⁿ³⁷ Although the United States joined with the rest of the world in signing and ratifying the Framework Convention on Climate Changeⁿ³⁸ and in signing the Kyoto Protocol to the Framework Convention,ⁿ³⁹ early concerns about possible adverse short-term economic impacts from control of GHGs, as well as uncertainty about specific policy responses, stymied further participation by the federal government in global efforts. In response to this void, a growing number [*72] of states have formulated comprehensive action plans identifying a range of highly-specific policies and programs to reduce GHG emissions. Cumulatively, states have undertaken a wide variety of policy actions that directly or indirectly reduce GHG emissions.

B. The Variety of Approaches and the Process in State Programs

The experiments undertaken in these state "laboratories" have produced a wide variety of policy mechanisms that might be employed by the federal government in a future federal climate action plan. Overall, the states have undertaken well over 250 different types of policy actions across all sectors and GHGs, including many major clean and efficient energy initiatives (See Box 1).ⁿ⁴⁰ Forty states have developed some form of GHG mitigation action plan. Most of these plans were formulated in the late 1990's under funding from the United States Environmental Protection Agency ("EPA") in

response to potential adoption of the Kyoto Protocol. Since 2000, however, a number of states have developed comprehensive climate action plans designed for full adoption using a process described further below; these climate action plans were developed with active leadership by governors and other state officials, high levels of public input and participation, and advanced technical analysis. States that have formulated or are developing such plans since 1990 include Arizona, California, Colorado, Connecticut, Maine, Massachusetts, Montana, North Carolina, New Mexico, Oregon, the Puget Sound region in Washington, Rhode Island, and Vermont.ⁿ⁴¹ Other states are likely to launch similar planning efforts in the near future. In addition, three regional agreements have been formulated to link state actions across or within sectors; these include the New England Governor's/ Eastern Canadian Premiere's Climate Agreement of 2001,ⁿ⁴² the West Coast Governor's Climate Change Initiative of 2003, and the northeastern Regional Greenhouse Gas Initiative.

[*73] The process under which many of these state programs have been developed has employed decision-making models that demonstrate some of the advantages of action at the state level, but could serve as models for more effective federal decision-making. In particular, the more recent planning methods have employed bottom-up, multi-sectoral, stakeholder-driven processes that both result in a dramatic degree of stakeholder buy-in and the selection of policy alternatives that can be most effective for the economic sector and state or region involved. The policy process and the range of alternative policy options selected or considered will be briefly reviewed here.ⁿ⁴³

The technical steps involved in the development of a GHG plan involve the following: (1) development of a GHG inventory and a forecast of future emissions to diagnose sources and trends of emissions and set the state for later establishment of baseline (reference case) conditions; (2) the establishment of GHG reduction goals or targets;ⁿ⁴⁴ (3) the establishment of a comprehensive set of recommended policy options to achieve GHG emissions reductions, including specific implementation mechanisms; and (4) implementation of the selected options, including measurement via reporting systems, and follow-up.

The most recent state processes for developing a set of mitigation options have employed a stakeholder process led by an impartial and expert facilitator. Stakeholders from all economic sectors and from important interest groups (e.g. environmental groups, faith-based groups, state, local and federal governments) are selected and organized into sectoral working groups. The stakeholders are assisted by an impartial facilitator and technical consultants.ⁿ⁴⁵ The stakeholder groups typically receive the results of preliminary fact finding by the facilitation and consulting team, such as a draft inventory and forecast of GHG emissions according to emissions source. The working groups then begin a process of joint fact finding and policy development that includes the establishment of a broad set of specific recommended actions and related goals and reporting systems. The stakeholder working groups can provide important information regarding the accuracy of GHG emissions and reduction projections and the feasibility, cost and acceptability of various options and intermediate goals.

[*74] A GHG inventory and, preferably a companion forecast of future emissions, is a necessary first step in the formulation of effective mitigation plans.ⁿ⁴⁶ A GHG Emissions Inventory and Forecast can provide valuable information to government, business, and the public regarding the sources, trends, and variables affecting GHG emissions. The inventory explains how the activities of everyone in a given geographic area contribute to the generation of GHGs. The emissions inventory reports on six of the major categories of GHGs:

. Carbon dioxide

. Methane (CH₄)

. Nitrous oxide (N₂O)

. Hydrofluorocarbons (HFCs)

. Perfluorocarbons (PFCs)

. Sulfur hexafluoride (SF₆)ⁿ⁴⁷

The estimates are organized by major activity-based emissions categories, such as fossil fuel consumption, biomass fuel consumption, production processes, agriculture and livestock production, and waste disposal, treatment, and recovery. They also are typically broken down by economic sector, including residential, commercial and industrial; waste management; energy production; transportation; agriculture; and forestry. These categories are broken into subcategories and sub-sectors to support specific policy development. This inventory and projection of emissions growth by sector and GHG serves as a reference case that can be used to evaluate the emissions reductions that will be required and that can be achieved through the use of various control measures. Options developed thereafter will be designed to incrementally reduce GHGs beyond this reference case.

The next steps in developing a mitigation plan is the development of recommended GHG reduction measures and the GHG reductions goals that will be achieved through those measures. Goals are typically phased in with more modest goals established with earlier target dates and more ambitious goals established at later dates. For example, the NEG/ECP Climate Action Planⁿ⁴⁸ creates a short term goal of stabilizing 2010 emissions at 1990 levels, a mid term goal of reducing emissions to ten percent below 1990 levels by 2020, and a long term goal to achieve by 2050 the 75 to 85 percent reduction believed necessary to stabilize GHG global levels at twice their pre-industrial levels, and establishes more modest sectoral and overall goals with specific earlier dates. The establishment of reduction goals can either precede the development of GHG reduction measures (the "top-down" approach) or arise from the selected options [*75] (the "bottom-up" approach). A top-down approach based on levels that are necessary to advance toward and achieve stabilization, such as that of the NEG/ECP Climate Action Plan, however, must still be informed by consideration of the feasibility of the options in order to develop reasonable intermediate goals and deadlines. A bottom-up approach considers the achievability of targets based on the aggregate impacts of mitigation options in all sectors and also requires consideration of what is necessary to achieve climate stabilization.

Development of a set of recommended GHG reduction measures involves an iterative process whereby the various policy options are identified, analyzed, and prioritized against a set of agreed upon decision criteria (typically including benefits, costs, feasibility, and ancillary issues). As a first step, a full range of options is developed, followed by a process to screen and select initial priorities for analysis. The options given top priority are then analyzed in greater detail by each sectoral group, employing the following:

. Assessments of GHG reduction potential, performance risk and return for the specific actions and programs;

. Assessments of costs or cost savings per ton of GHG reduced for the specific actions and programs (including cost-benefit analysis, modeling and market simulation);

. Other feasibility assessments related to technical, political, or institutional barriers;

. Identification and evaluation of externalities such as economic, energy, and environmental co-benefits; and

. Analysis of existing legal, market, and institutional structures to identify policy options available under existing statutory authority and needs for additional legislative action.

The first iteration of this process will be an initial scoping analysis that will examine the whole range of alternative options, rank these alternatives based on a "ballpark" assessment, and identify a group that appears most promising to achieve meaningful emissions reductions cost effectively for more detailed analysis. If detailed analysis eliminates an option, the original list may be revisited to identify previously rejected alternatives for more detailed analysis.

This planning process draws upon a growing number of policy options, many of which have been employed by states.

[*76] The Center for Climate Strategies, a group developing climate change action plans for several states, has developed the following initial list of over 250 different policy options that can be employed by states to reduce GHG emissions:

Box 1

Potential Range of State GHG Reduction Opportunities ⁿ⁴⁹

This catalog of state climate mitigation options covers all sectors of the economy, all greenhouse gases, and includes a wide variety of implementation programs. Actions fall into the following general categories:

1. Energy Efficiency and Conservation
2. Development of Renewable and Low Emitting Energy
3. Forest land and Farmland Conservation
4. Reducing and Recycling Waste
5. Transportation and Land Use Efficiency
6. Improving Industrial Processes
7. Education, Reporting and Registries

ENERGY EFFICIENCY AND CONSERVATION

Energy Efficiency Programs, Funds, and Goals

Utility Demand Side Management (DSM) Programs for electricity, natural gas, propane, fuel oil

Energy Efficiency Funds (e.g. Public Benefit Funds) administered by State agency, utility, or 3rd party (e.g. Energy Trust)

Energy Efficiency Requirements (e.g. Utility Savings Goals or Renewable Portfolio Standards)

Market transformation and technology development programs

Appliance Standards

Expansion of State-level Appliance Efficiency Standards
 Support for Federal-level Appliance Efficiency Standards

Buildings

Improved Building Codes
 Promotion and Incentives for Improved Design and Construction (e.g. LEEDS, green buildings)
 Training and Education for Builders and Contractors (e.g. HVAC sizing, duct sealing)
 Training of Building Code and other Officials in Energy Code Enforcement
 Building Commissioning and Recommissioning, including Energy Tracking and [*77] Benchmarking
 Energy Management Training/Training of Building Operators
 Increased Use of Blended Cement (substituting fly ash or other pozzolans for clinker reduces CO₂ emissions)
 Reduction of Emissions from Diesel Engines Used in New Construction and Developments
 Fast-track permitting for green building strategies

Education and Outreach

Consumer education programs
 Introduce in School Curriculum

Pricing and Purchasing

Green Power Purchasing
 Bulk Purchasing Programs for Energy Efficiency or other Equipment (Public or Private sector)
 Net-metering policies
 Time of Use Rates

Technology-specific Policies

Incentives for Renewable Energy Applications (Solar roofs, water heaters, etc.)
 Clean Combined Heat and Power
 Promotion and Tax or Other Incentives (e.g. EnergyStar, credits for solar hot water)
 Appliance Recycling/Pick-Up Programs
 White Roofs, Rooftop Gardens a.k.a. green roofs, and Landscaping (including Shade Tree Programs)

Technology-specific Policies

Focus on specific end uses/technologies: window AC units, lighting, water heating, plug loads, networked PC management, power supplies, motors, pumps, boilers, etc.
 Consumer products programs, may include incentives, retailer training, marketing and promotion, education, etc

Non-energy Emissions (HFCS, PFCS, SF₆, CO₂ Process Emissions)

Participation in Voluntary Industry-Government Partnerships
 Process Changes/Optimization
 Leak Reduction /Capture, Recovery and Recycling of Process Gases
 Use of Alternative Gases (other HFCs, hydrocarbon coolants/refrigerants, etc.)
 Cement Industry: Use of Alternative Fuels

GHG Emissions-Specific Goals and Policies

Support for switching to less carbon-intensive fuels (coal and oil to natural gas or biomass)
 Industry-Specific Emissions Cap and Trade Programs [*78] Voluntary emissions targets
 Small-source Aggregation

Negotiated Emissions or Energy Savings Agreements

Other

Government Agency Requirements and Goals (including procurement)

Focus on specific market segments: existing homes (weatherization), new construction, apartments, low income, etc.

Reinvestment Fund

Municipal Energy Management

Focus on Small and Medium Enterprises (SMEs)

Industrial ecology/byproduct synergy

Industrial Audits

DEVELOPMENT OF RENEWABLE AND LOW EMITTING ENERGY

Development of Renewable and Low Emitting Energy

Environmental Portfolio Standard (renewables and energy efficiency) with renewable energy credit trading

Green Power - renewable resources program

State purchase of renewable energy

Public Benefit Charge Funds

Renewable Energy Incentives (biomass, wind, solar, geothermal)

Green Power Purchases and Marketing

Renewable energy development issues (zoning, siting, etc.)

Research and Development (R&D)

Landfill Gas Recovery (see also Waste)

Waste to Energy (see also Waste)

Distributed Generation (DG)

Incentives for combined heat and power (CHP) and clean distributed generation (DG)

Removing barriers to CHP and clean DG (including utility rates and interconnection barriers, financing, information, etc.)

Interconnection Rules for clean, distributed generation

Net Metering

Pricing strategies

Advanced Fossil Fuel

Incentives for advanced coal, including IGCC and carbon capture and storage (CCS)

Incentives for CO₂ pipelines for CCS

Fuel Cell Development Incentives

Combined H₂/electricity production from fossil fuels with sequestration

Research and Development (R&D) [*79] Other Electricity Measures

Efficiency Improvements and Repowering Existing Plants

Transmission System Incentives for advanced coal, including IGCC and carbon capture and storage (CCS)

Transmission System Upgrading

Reduce Transmission and Distribution Line Loss

Emissions Policies

CO₂ Tax

GHG Cap and Trade

Generation Performance Standards

GHG Offset/mitigation requirements for new power plants

GHG Offset/mitigation requirements for existing power plants

Voluntary Utility CO₂ Targets

Education/Awareness
 Brownfield Redevelopment
 Environmental (emissions) Disclosure
 Public Education
 Transportation and Land Use

TRANSPORTATION AND LAND USE

Passenger Vehicle GHG Emission Rates

Vehicle Technology
 Tailpipe GHG Emission Standards
 ZEV/LEV-2 Implementation
 R&D on Low-GHG Vehicle Technology (e.g., fuel cell)
 Add-on Technologies (Low Friction Oil, Low-Rolling Resistance Tires)

Vehicle Operation
 Enforce Speed Limits
 Vehicle Maintenance, Driver Training
 Transportation System Management

Incentives & Disincentives
 Procurement of Efficient Fleet Vehicles
 Feebates (state-specific or regional)
 CO₂-based registration fees
 Tax Credits for Efficient Vehicles
 Vehicle Scrappage [*80] Land Use and Location Efficiency
 Infill, Brownfield Redevelopment
 Transit-Oriented Development
 Smart Growth Planning, Modeling, Tools
 Targeted Open Space Protection

Increasing Low-GHG Travel Options
 Make full use of CMAQ funds
 Improve Transit Service (frequency, convenience, quality)
 Transit Marketing
 Bike and Pedestrian Infrastructure
 Expand Transit Infrastructure (rail, bus, BRT)
 HOV lanes
 "Fix-it-First" Transit Prioritization (signal prioritization, HOV lanes)
 Telecommute and Live-Near-Your-Work Car sharing
 E-Commerce

Incentives & Disincentives
 Commuter Choice/Parking
 Cash Out
 VMT Tax
 Pay As You Drive Insurance

Increased Fuel Tax (w/ targeted use of revenue towards travel alternatives)
 Location-Efficient Mortgages
 Congestion Pricing (or tolls) (w/ targeted use of revenue towards travel alternatives)
 Parking Pricing or Supply Restrictions
 Transit Repositioning
 Transit Pricing Incentives
 VMT/GHG Offset Requirements for Large Developments
 Benefits for Low GHG Vehicles (preferential parking, use of HOV lanes)

Fuel Measures
 Low-GHG Fuel Standard (e.g., renewable)
 Low-GHG Fuel for State Fleets (e.g., CNG, biodiesel)
 Biofuel expansion (biodiesel, CNG, LPG)
 Alternative Fuel Infrastructure Development

Freight

Vehicle Technology
 Vehicle Technology Improvements (e.g., aerodynamics)
 R&D on Low-GHG Vehicle Technology
 Low-sulfur diesel
 Black carbon control technologies (e.g., use of particulate traps, other complementary [*81] technologies)

Vehicle Operation
 Freight Logistics Improvements/GIS
 Enforce Speed Limits
 Improve Traffic Flow
 Increased Size & Weight of Trucks
 Increase the Number of Rest Areas
 Re-clearance at Scale Houses
 Truck Stop Electrification
 Enforce Anti-Idling

Increasing Low-GHG Travel Options
 Intermodal Freight Initiatives
 Feeder Barge Container Service

Incentives & Disincentives
 Procurement of Efficient Fleet Vehicles (public, private or other)
 Incentives to Retire or Improve Older Less Efficient Vehicles
 Maintenance and Driver Training
 Increased Truck Tolls or Highway User Fees

Intercity Travel: Aviation, High Speed Rail, Bus
 High-speed Rail
 Integrated Aviation, Rail, Bus Networks
 Aircraft emissions
 Airport Ground Equipment

Off-road Vehicles (Construction Equipment, Out-board Motors, ATVs, etc)

Incentives for Purchase of Efficient Vehicles/Equipment
 Improved Operations, Operator Training
 Maintenance Improvements
 Increased Use of Alternative Fuels or Low Sulfur Diesel

PROTECTING AGRICULTURE AND FORESTRY

Agriculture - Production of Fuels and Electricity
 Manure Digesters/Other Waste Energy Utilization
 Biodiesel Production (incentives for feedstocks and production plants)
 Biomass Feedstocks for Electricity or Steam Production
 Ethanol Production

Agriculture - Fertilizer and Manure Management
 Nutrient Management (improve efficiency of fertilizer use) [*82] Manure Management (improve application methods)
 Manure Composting
 Change Feedstocks (optimize nitrogen)
 Reduce Non-Farm (Residential and Commercial) Fertilizer Use

Agriculture - Soil Carbon Management
 Conservation Tillage/No-Till (carbon sequestration and reduced energy use)
 Reduce Summer Fallow (increase soil C content, reduce N₂O emissions)
 Increase Winter Cover Crops (increase soil C content, increase soil N content)
 Improve Water and Nutrient Use (to minimize soil C loss)
 Rotational Grazing/Improve Grazing Crops and/or Management

Agriculture - Land Use Change
 Convert Land to Grassland or Forest Preserve Open Space/Agricultural Land
 Promote "No Net Loss" of Agricultural Land

Agriculture - Farming Practices
 Convert Diesel Farm Equipment to LNG/CNG or Hybrid Technology
 Organic Farming
 Programs to Support Local Farming/Buy Local

Forestry - Biomass Protection and Management
 Forest Protection - Reduced Clearing And Conversion to Nonforest Cover
 Increase Maintenance of Urban and Residential Trees
 Afforestation and/or Restoration of Nonforested Lands
 Reforestation/Restoration of Managed Stands
 Increased Stocking of Poorly Stocked Lands
 Age Extension of Managed Stands
 Thinning and Density Management of Managed Stands
 Fertilization and Waste Recycling
 Expand Short Rotation Woody Crops (for fiber and energy)
 Expanded Use of Genetically Preferred Species
 Modified Biomass Removal Practices (reduced decay and energy use)
 Fire Management and Risk Reduction Programs
 Ecosystem Health Risk Reduction Programs (pest/disease)
 Drought Management Programs (tree selection, placement, protection)

Flood and Riparian Management Programs (tree selection, placement, protection)
 Watershed Management Programs (stand retention, enhancement and management) Habitat Management Programs
 (stand retention, enhancement and management)

Forestry - Wood Products and Waste

Improved Mill Waste Recovery

Improved Logging Residue Recovery

Expanded Use of Wood Products for Building Materials [*83] Expanded Use of State and Locally-Grown Wood
 Products

Forestry - Energy Production

Expanded Use of Forest Biomass Feedstocks for Electricity (fuel switching)

Expanded Use of Forest Biomass Feedstocks for Residential, Commercial/Institutional, or Industrial Heating

Improved Efficiency of Wood Burning Stoves and Direct Heat

Improved Energy Capture from Wood Waste Combustion

Expanded Landfill Methane Recapture

Improved Commercialization of Biomass Gasification and Combined Cycle

WASTE MANAGEMENT

Waste Management Strategies

Advanced Recycling and Composting

Advanced Municipal Solid Waste Management Practices (e.g., bioreactors)

Source Reduction Strategies

Resource Management

Contracting

Manure Digesters

Waste Coal Recapture

Waste Management - Landfill Gas Strategies

Flare Landfill Methane at non-NSPS (smaller) sites

Methane and Biogas Energy Programs

Convert Landfill Methane to Electric Power, Space Heat, or LNG

Waste Management - Wastewater Activities

Energy Efficiency Improvements

Lower Waste Processing Needs (lower water consumption, waste production)

Install Digesters and Turbines

Install Fuel Cells

CROSS CUTTING ISSUES

Inventories, Forecasting and Monitoring

Establish & fund mandatory GHG emission inventory function at DAQ

GHG Emissions Forecasting

GHG Emissions Monitoring

Reporting

GHG Reporting

Report emissions from state facilities & vehicles to public

Include non-CO₂ GHGs

Define CO₂ & non-CO₂ GHGs as pollutants [*84] Require mandatory GHG reporting for major sources
Provide assistance to facilities in reporting & registering GHG emissions

Registry

RGGR Registry - Register reductions in state facility & vehicle emissions for future market use (within 3 years after resources authorized)

Register increased sequestration associated with Ag/Forestry practices

Education

Reinforce sources of GHG, need for State Energy Plan implementation

Promote clean fuel technologies

Promote energy-tech economic development

Promote R&D & demo projects for economic development

Extend training programs for RCI building operators

Public education initiatives

Promote green power

Promote CHP

Require environmental disclosure on utility bills

Promote local farm produce

Augment existing education efforts

Add GHG to Air Awareness efforts

The final stages of planning involve implementation, monitoring and follow-up. Continued monitoring and updated inventories are necessary to determine how implementation is proceeding and the levels of GHG emissions reductions that are actually achieved. Additional or supplemental measures may need to be adopted to achieve the goals of the program in the following three circumstances: if implementation proves that a measure is infeasible, if monitoring shows that the selected measures achieve lower emissions reductions than anticipated, or if emissions increase more than anticipated.

As states have conducted GHG emissions inventories and forecasts, and undertaken mitigation planning efforts, it has become clear that much variation exists in the rates of emissions growth, the sources of emissions, and the levels of past action. This is particularly true when contrasting coastal states of the northeast and west coast with interior energy producing or high growth states such as Pennsylvania, Arizona, New Mexico, and North Carolina. Table 1 documents state growth-rates in emissions. These growth-rates average in the 30th percentile from 1990 to 2020 for coastal states, but climb well over 100 percent in the same period for interior high growth states such as Arizona and North Carolina. The table also provides data on the results of state GHG planning processes to meet or exceed targets and timetables for emissions reductions. Virtually all statewide planning efforts in the past five years have been successful at identifying politically and economically acceptable GHG reduction actions sufficient to meet aggressive GHG reduction goals. One of the high-growth [*85] Southwestern states, Arizona recently completed a climate change planning process that has designated a menu of options that are projected to bring that state's emissions down to 2000 levels by 2020, despite a projected growth under business as usual of 147 percent, and to 50 percent of 2000 levels by 2040. The Arizona plan will do so with net economic cost savings of \$ 5.5 billion by 2020. ⁿ⁵⁰ This process indicated that in many cases, growth provided opportunities for designing GHG emissions reductions (by reconfiguring new growth to be more efficient and cleaner) rather than creating constraints.

Table 1: State GHG Mitigation Actions

State or Region	1990-2020 GHG Forecast	Statewide GHG Targets and Timetables	Estimated Success Toward State GHG Goals
AZ	147%	2000 by 2020; 50% below by 2040	106%
CA	34%	2000 by 2010; 10% below 1990 levels by 2020; 80% below 1990 levels by 2050	TBD
CT	32%	1990 by 2010; 10% below by 2020; 75% by 2100	100%
MA	?	1990 by 2010; 10% below by 2020; 75% by 2100	?
ME	34%	1990 by 2010; 10% below by 2020; 75% by 2100	100%
NC	112%	?	TBD
NEG	?	1990 by 2010; 10% below by 2020; 75% by 2100	TBD
NJ	?	3.5% below 1990 by 2005	100%
NM	48-64%	2000 by 2012; 10% below by 2020; 75% by 2050	133%
NY	24%	5% below 1990 by 2010	?
OR	38%	1990 by 2010; 10% below by 2020; 75% by 2100	85%
Puget Sound	37%	1990 by 2010; 10% below by 2020; 75% by 2100	100%
RI	35%	1990 by 2010; 10% below by 2020; 75% by 2100	100%
VT	?	1990 by 2010; 10% below by 2020; 75% by 2100	TBD

[*86]

These state climate change mitigation programs are paralleled by a growing number of successful initiatives by private industry; institutions such as colleges and universities, and local governments to implement plans for reducing GHG emissions.ⁿ⁵¹ These programs are often closely integrated with the state programs. For example, the New Jersey GHG mitigation program builds on the efforts of private industry and colleges and universities. It does so by utilizing private agreements to implement measures to reduce GHG emissions and by establishing a GHG registry providing some protection for early actors against being put at a competitive disadvantage in a future regulatory regime.ⁿ⁵² The experience of private companies and other entities who have successfully reduced GHG emissions is also valuable in the stakeholder processes upon which state GHG reduction plans are built. These parties can bring their experience to those processes by showing what reductions can be achieved cost effectively and what measures may not work. Many of the mitigation measures identified in Box 1 and relied upon in the state programs were first demonstrated in private programs. Most importantly, rather than imposing additional costs, many of these programs demonstrate that many

GHG reduction measures prove profitable to private parties - sometimes with pay back periods that would justify investment without any regulatory incentive. ⁿ⁵³

[*87]

IV. Advantages of State-led Approaches - Thinking Globally While Acting Locally

Having states take the lead in crafting GHG emissions reduction strategies through these bottom-up, stakeholder driven processes has a number of advantages compared to a more centralized federally developed strategy. ⁿ⁵⁴ Some of the benefits arising from taking action at the state level may not be achievable at the federal level, even where stakeholder processes are employed there. ⁿ⁵⁵

A. Bottom-Up Decision-Making and Greater Stakeholder Involvement

One of the principal advantages of having the states take the lead in designing strategies arises from the fact that bottom-up decision-making is frequently employed by these state processes and can function best at a local level. Such processes at these levels allow greater stakeholder involvement in receiving and transmitting information and in designing and formulating policy. This results in much higher levels of technical and policy consensus by stakeholders, who become more aware of the constraints and goals and have greater confidence in the decision-making process and the information used in that process. It can also often improve the quality of the information used in policy formulation. The stakeholders can frequently provide more detailed and relevant information about what can actually be achieved. ⁿ⁵⁶ This is particularly important for businesses, whose particularized needs and capabilities may not be adequately considered at the federal level. At the federal level, businesses frequently work through trade organizations that are forced to represent the lowest common denominator of the business and are less able to represent the needs and capabilities of individual businesses who may get a voice in state level stakeholder processes.

B. More Narrowly Focused Targets and Strategies

A second advantage of state-based programs is the ability to develop more narrowly drawn targets that are appropriate for the region and the industries. For [*88] example, strategies aimed at smart growth to reduce miles driven are best targeted in growing areas. Programs to assist residential and commercial energy users with energy efficiency programs can be tailored more closely to needs at a state level. Various agricultural and sequestration strategies may vary according to the predominant type of agriculture or soil and rainfall patterns.

C. Flexibility

Third, since states are smaller than the federal government, they have somewhat more flexibility. They may be better able to change strategies if a selected strategy is ineffective or more costly than anticipated.

D. Ability to Innovate with Less Severe Consequences

Fourth, as suggested by Justice Brandeis, states may be better able to innovate. An innovation in a particular state that fails will have less of an impact on the national economy than a federal experiment that fails. Innovative state programs can provide examples of what to do or what not to do. Indeed there is a typical pattern of upward evolution of national policy through states in the United States. As noted earlier, most national environmental laws, for instance, have origins in state actions, including the Clean Air Act, Clean Water Act, and Surface Mining Reclamation Act. ⁿ⁵⁷ This pattern is again likely to occur in the area of climate change policy. In 2005, the U.S. Senate debated two major pieces of legislation to advance a national GHG policy. These included a vote on the McCain-Lieberman Climate Stewardship Act of 2005 ⁿ⁵⁸ that failed by a small margin, and hours later a majority vote in favor of a resolution introduced by Senator Bingaman to establish a mandatory GHG control policy in the United States. ⁿ⁵⁹ As of April 2005, at least five climate change bills had been introduced or proposed in Congress. Thus, it appears that support for mandatory national

action to control GHG emissions is growing; however, Congress has not yet settled on a specific approach. States are likely to provide an important input to this debate by demonstrating policies that reduce emissions in a politically and economically acceptable manner.ⁿ⁶⁰

[*89]

E. Police Power Not Subject to Federal Constitutional Limitations

Finally, states are not subject to certain limitations on federal power. Federal powers to effect social and economic policy are primarily founded upon the spending clause and the commerce clause. Relying on the spending clause requires that the federal government spend money and that each state agree to accept that money and implement a program that is required as a condition of the state's receiving federal money. Reliance on the commerce clause may limit the federal government's ability to influence actions that have no interstate nexus. Because the GHG emissions cross state boundaries and both the impacts and causes of climate change have profound effects on interstate commerce, it would seem that most efforts to control climate change should fall within the purview of Congressional authority to regulate climate change. However, the Supreme Court has been reluctant to extend commerce clause authority to matters that are traditionally the subject of state and local control.⁶² Courts may therefore closely scrutinize attempts to regulate areas such as land use and building codes that have significant impact on GHG emissions but traditionally fall within the ambit of state authority. Because states have the general police power they are not subject to these constraints and are free to regulate all manner of actions without the need to rely upon the spending clause and appropriate funds.

V. Problems with a State-Led Approach

While there are many advantages to allowing states freely to experiment in social policy, a state-led approach has corresponding potential disadvantages. These include a lack of consistency, uneven performance, and limitations on state powers to employ certain policy instruments.

A. Lack of Consistency

First, a lack of consistency among states may create problems both for the states themselves and the regulated community. A multiplicity of contrasting state programs can pose particular difficulties for the regulated community, which operates in markets throughout the United States and the world. This raises particular concern regarding how to establish reciprocity between states under programs enabling joint implementation, trading, or other forms of cooperation. Inconsistent standards also are a major concern of industries operating in markets that transcend state boundaries; inconsistent standards for products or services sold throughout the United States pose particular problems. Just identifying the separate standards can be a significant task and some standards may be inconsistent. Even where standards can be met by meeting the most stringent standard, this might put a company in a position whereby it would [*90] face the prospect of modifying its product to meet the most stringent standards or deciding not to market its product at all in the state with the most stringent standards. It was this need for consistency that led Congress to establish federal corporate average fuel economy ("CAFE") standards and air pollution emissions standards for mobile sources that generally preempt similar state standards.ⁿ⁶¹ Concerns regarding the need for consistency across national markets also led Congress to specifically preempt certain state product standards where federal standards are established under the Toxic Substances Control Act.ⁿ⁶²

In the area of climate change, states have been keenly aware of the burdens on regulated businesses that might arise from inconsistent regulations and have made significant efforts to harmonize their regulatory programs.ⁿ⁶³ Moreover, the rationale for such preemption has been undercut considerably by the ability of affected companies to function in a global marketplace with varying international standards. Both the automobile market and the chemical market are now global markets where companies must meet standards for automobile emissions, automobile fuel economy standards, and chemical safety that are established by other nations at levels more stringent than those of the United States.ⁿ⁶⁴ Companies do so by marketing different products or by marketing products meeting the most stringent standards.

[*91] Second, having a wide variety of state programs can also create problems for the states, particularly those who wish to address an important problem. With no consistency among state programs, a state that takes action to address a problem that other states do not faces the risk that business will flee to the other states or businesses within that state will suffer a competitive disadvantage vis-a-vis their competitors in those states not taking action. Such concerns may lead a state to avoid a more innovative or effective solution. Concern about this effect causing a race to the bottom has often fueled demands for federal legislation establishing a floor. Accordingly, most federal environmental laws establish minimum standards and allow the states to establish more protective standards. ⁿ⁶⁵

On the other hand, the underlying concern that environmental protection measures may put companies at an economic disadvantage may also be a myth. Because a limited number of state GHG plans have been completed in the United States and are currently entering implementation, "after the fact" (ex post) data on the economic impact of these plans is not available. However, "before the fact" (ex ante) economic estimates suggest that their net costs are likely to be relatively low or negative (i.e., the plans will generate cost savings). For example, full implementation of the Arizona GHG Plan is expected to provide net economic savings of \$ 5.5 billion, and the recently completed New Mexico GHG Plan is expected to provide net economic savings of \$ 2.2 billion. By way of further example, one study that compared state macroeconomic performance across states with varying levels of carbon control policies ⁿ⁶⁶ found an "upward spiral" of likely better macroeconomic performance of states with stronger GHG reduction polices in comparison to lower economic performance in states with weaker GHG reduction policies. Similarly, evaluation of corporate GHG reduction efforts by The Climate Group ⁿ⁶⁷ documented cost savings, competitive gains, and lower GHG emissions. In addition, there is substantial ex-post economic information deriving from implementation of federal pollution control programs, including the Clean Air Act.

Evaluations of many independent and peer-reviewed analyses of the cost of regulatory compliance with federal environmental laws have concluded that the cost of implementing pollution reduction programs, broadly speaking, did not harm the United States' competitiveness. ⁿ⁶⁸ Studies have generally concluded that, on average, real costs of implementation were lower than estimated costs before implementation and that real benefits were higher than initial benefit estimates. ⁿ⁶⁹ [*92] Despite the likelihood of relative low or negative costs overall, some states that are major fossil energy producers or consumers are likely to be impacted more than others. ⁿ⁷⁰ If these states act early to address climate change they may see a loss of business to other states in the absence of a federal floor. Moreover, because impacts will not be uniform across sectors and socioeconomic groups within a state, ⁿ⁷¹ even a state that might generate a net benefit from limiting GHG emissions may lose businesses that will be adversely impacted to another state lacking a climate change program.

B. Uneven Performance

A second oft-cited disadvantage of initiating action at the state level arises from the concern that performance will be uneven from state to state. For example, some states have shown hostility or indifference to climate change initiatives, so that, without some mechanism for establishing a floor, there will likely be no uniformly effective approach. ⁿ⁷² Moreover, because states frequently require balanced budgets, there is a threat that during times of economic recession, state programs will be periodically scaled back without federal assistance tied to a federal floor. ⁿ⁷³

C. Limitations on State Authority

A third suite of problems arises from the limitations on state authority. These limitations arise both from the inherently limited geographic and regulatory jurisdiction of each state and the Constitutional limitations imposed. These problems result in coordination difficulties, pose impediments to the establishment of an effective program and may limit the availability of certain policy instruments.

1. Jurisdictional Limitations

Some limitations arise from the inherent limitations in state authority. States may only regulate or tax activities within

their boundaries or those that have an impact within their boundaries. There are political barriers to providing funding or subsidies out-of-state. This poses particular problems in addressing some important aspects of GHG emissions. A major area of concern is electricity generation. Geographically, while emissions can be easily identified as physically originating in one state or another, the actual use of the electricity generated is more difficult to [*93] attribute to any specific state. For example, Pennsylvania is a major exporter of electricity. While the electricity produced in Pennsylvania physically emits GHGs within that state, the actual socio-economic processes that create the demand for the electricity the generation of which produces a significant portion of those emissions occur outside the commonwealth and outside the control of Pennsylvanian policy-makers.ⁿ⁷⁴ Moreover, with competition in electric generation, imposition of significant costs on generation, whether through regulation or taxes, could cause residents of Pennsylvania to switch to high carbon out-of-state generation, as well as reduce imports.

2. Constitutional and Statutory Limitations on State Power

A variety of potential limitations on state authority to limit GHG emissions arise from the constitutional and statutory restrictions on state action created to conserve a federal system. As discussed above, these include limitations on state power created by the "dormant" commerce clause,ⁿ⁷⁵ federal preemption under the Supremacy Clause,ⁿ⁷⁶ and limitations upon states' ability to function cooperatively or internationally under the compacts clause.ⁿ⁷⁷ In fact, these limitations have already been raised as challenges or potential challenges to the actions of the states to limit GHG emissions. One critic of the efforts of various northeastern and middle Atlantic states to create a regional cap and trade program for GHGs pursuant to the Regional Greenhouse Gas Initiativeⁿ⁷⁸ identified the following legal issues as potential challenges:

- Can states impose significant restraints on the interstate electricity industry for purely symbolic purposes?
- Can a group of states establish an interstate emissions credit program without Congressional approval?
- Does the operation of a program with significant effects on interstate electric markets raise preemption issues?
- Is RGGI preempted by federal CO₂ policy?ⁿ⁷⁹

[*94] As noted above, opponents to California's legislation establishing GHG emissions limitations for mobile sources have challenged that law, *inter alia*, on the basis of the dormant commerce clause, the exclusive grant of authority to the federal government to control foreign relations, and preemption by federal regulation of corporate fuel economy and mobile source emissions.ⁿ⁸⁰ Regardless of the strength or weakness of any particular challenge to a particular state program, there are limitations upon state action imposed by these authorities.

The Constitution gives primary authority to the federal government to manage international relationsⁿ⁸¹ and limits the ability of states to enter into binding agreements with one another or foreign governments. The Constitution flatly prohibits states from entering "into any Treaty, Alliance or Confederation"ⁿ⁸² and requires that states obtain the consent of Congress to "enter into any Agreement or Compact with another State, or with a foreign Power."ⁿ⁸³ These provisions prevent states from individually adhering to international treaties, such as the Kyoto Protocol, and require Congressional assent for binding multilateral arrangements.

However, states are free to enter into non-binding multilateral arrangements where the requirements will be implemented through voluntary individual legislative actions by the states. In *United States Steel Corp. v. Multistate Tax Commission*,ⁿ⁸⁴ the Supreme Court upheld the formation of a multi-state tax commission formed to develop tax policy for various states against a compact clause challenge even where no Congressional consent had been approved. The policy developed by the Commission would be implemented by each state individually and there was no binding requirement to implement the policy. In the absence of such a binding requirement, the Court found that Congressional approval was not required because the compact clause is "directed to the formation of any combination tending to the increase of political power in the states, which may encroach upon or interfere with the just supremacy of the United States."ⁿ⁸⁵

Given the inability to enter into a binding treaty or compact, state authority is limited in that a state cannot create a program that would enable the state and businesses operating within the state to take advantage of the GHG trading programs authorized by the Kyoto Protocol.ⁿ⁸⁶ However, states can enter into non- [*95] binding cooperative arrangements with each other and potentially foreign entities, such as the NEG/ECP Climate Action Plan and the programs contemplated by both the RGGI process and California Governor Schwarzenegger's Executive Orderⁿ⁸⁷ calling for the integration of California cap and trade program with the RGGI and EU programs. Implementation of these arrangements, like implementation of the cooperative program for state taxes at issue in *United States Steel Corp. v. Multistate Tax Commission*,ⁿ⁸⁸ will be voluntary and states may elect not to participate.ⁿ⁸⁹ This can limit the efficacy of such joint programs. However, where states do participate voluntarily, they can coordinate their activities and provide that parties in other states with equivalent programs be given credit for their activities, so as to implement a trading program. It is clear that states can give reciprocity to contracts made in other states and reciprocity to a whole host of other activities governed by the law of other states. The northeastern states have voluntarily coordinated their air pollution control policy for many years through such voluntary mechanisms.ⁿ⁹⁰

One might argue that limitation upon states being able to enter into binding agreements may create a disadvantage for businesses. Businesses require predictability regarding future policy to inform planning for long-term capital expenditures, such as those involving processes and energy. One or several states can always change the rules of the game by withdrawing from a regional program and changing their laws. However, the same can be said of the federal government. Moreover, in the case of RGGI, because contracts will have been made on the basis of the states' legislation implementing that program, a state that withdraws may be subject to challenge on any number of grounds. Such action could be challenged as a deprivation of property without due process,ⁿ⁹¹ or possibly as a violation of the compact clause of the Constitution.ⁿ⁹²

The dormant commerce clause imposes more significant and less predictable restrictions that can limit effective state action. The dormant commerce clause prohibits state laws that discriminate against interstate commerce. Thus, state tax and regulatory programs that regulate even-handedly, imposing equal burdens on in-state and out-of-state interests, can withstand scrutiny; and even where the state programs discriminate against interstate commerce, they may do so if they [*96] advance a legitimate state purpose that could not be advanced by a less discriminatory alternative.ⁿ⁹³ While climate change programs can theoretically be crafted to assure that equal burdens are placed on in-state and out-of-state interests, this can sometimes be a difficult task due to a state's limited jurisdiction outside of its borders.

A state's limited jurisdiction may necessitate facially different treatment of in-state and out-of-state sources in order to create a program that is even-handed in effect. For example, in order to assure that emissions sources of greenhouse gas supplying residents of a state are burdened equally in a competitive electricity market, different treatment of in-state and out-of-state sources will be required. Thus, an emissions tax on generating sources within the state would need to be coupled with a tax on electricity based on the GHG emissions generated in production by out-of-state sources supplying electricity within the state.ⁿ⁹⁴ Different treatment may or may not be perceived as discrimination, depending upon the lens through which the reviewing court views the state's program. The difficulty of negotiating this minefield is evident from considering the treatment of states' attempt to regulate municipal solid waste - an area that is traditionally a matter of state and local regulation.ⁿ⁹⁵ In order to conserve the benefits of federalism, courts should craft a commerce clause test that will sustain programs that treat in-state and out-of-state sources differently to assure uniform burdens and

invalidate only those measures with a truly protectionist intent.

The third and final legal limitation on a state-led approach arises from concerns regarding federal preemption of state laws. As noted above, in the case of measures to limit GHG emissions, the primary preemption concerns arise from the preemptive effect of federal regulation of mobile sources under the Clean Air Act and federal CAFE standards. ⁿ⁹⁶ A limitation on the states' ability to address [*97] GHG emissions from the transportation sector would both seriously impair the states' ability to address that problem effectively and most likely result in greater burdens being imposed on the industrial and energy production sectors. The transportation sector represented 30.6 percent of all carbon dioxide emissions in the United States in 2002. ⁿ⁹⁷ More importantly, that sector is growing faster than all other sectors; it has risen by 21 percent from 1990 to 2002, as opposed to a 13.4 percent growth in all other sectors. ⁿ⁹⁸ The California approach of imposing direct limitations on GHG emissions from cars would effectively reduce and could reverse that growth, but it can only succeed and be adopted by other states if EPA grants a waiver under the Clean Air Act (or California establishes its entitlement to a waiver in the courts) and if the courts agree that federal CAFE standards do not preempt. Absent such an approach, states could still utilize a tax on emissions or use a cap and trade system that also applied to sales of motor fuels, ⁿ⁹⁹ but such approaches may face greater political opposition. Other alternatives such as subsidies and tax incentives are more expensive and, if set at affordable levels, may be less effective. ⁿ¹⁰⁰

VI. How to Accommodate State Initiatives in a Federal System - the Old "Truncated Federalism"

A. Existing Clean Air Act Mechanisms to Accommodate the New Old Federalism in Climate-Change Programs

Because most of our major laws were modeled on earlier state laws, it is not surprising that Congress built many mechanisms into those laws to preserve existing state programs and to enable states to operate with a federal floor. Although much of the literature and many cases examine elements of the federal floor as limitations on federalism, these laws are better perceived as mechanisms that preserve the ability of states to innovate in a federal system. By creating a federal floor and mechanisms for federal approval, Congress has addressed many of the limitations and problems with state-led approaches, while conserving the [*98] advantages. The mechanisms incorporated into the Clean Air Act ⁿ¹⁰¹ provide an example of how this old "truncated" federalism can function to preserve the advantages and energy of the state-led climate initiatives while solving some of the problems.

Although some have suggested that the Clean Air Act does not provide a mechanism well-suited for addressing GHG emissions, ⁿ¹⁰² both regulation of GHG emissions and the existing state programs can readily be accommodated in the existing framework for regulating criteria pollutants under that law. Under section 108 of the Clean Air Act, ⁿ¹⁰³ the Administrator of the EPA is first required to list each air pollutant "emissions of which, in his judgment, cause or contribute to air pollution which may be reasonably anticipated to endanger public health or welfare" and "the presence of which in the ambient air results from numerous or diverse mobile or stationary sources." GHGs can be regulated as priority pollutants under that standard. ⁿ¹⁰⁴ Within twelve months of listing a priority pollutant, the Administrator must publish air quality criteria that "accurately reflect the latest scientific knowledge useful in indicating the kind and extent of all identifiable effects on public health or welfare which may be expected from the presence of such pollutant in the ambient air, in varying quantities," ⁿ¹⁰⁵ information on techniques for controlling emissions of the criteria pollutant, ⁿ¹⁰⁶ and primary and secondary National Ambient Air Quality Standards ("NAAQS") set at levels to protect health and welfare, respectively. ⁿ¹⁰⁷

These processes can also be applied to control of GHG emissions and can both proceed consistently with state programs and support those programs. Indeed, the experience of the states in developing multiple mechanisms for both controlling emissions and sequestering GHGs can inform the Administrator's identification of control techniques.

[*99] Although some have suggested that the promulgation of NAAQS would not be an effective means to control GHG emissions, control of the sort contemplated in the UNFCCC could, in fact, readily occur under this regime. The UNFCCC establishes the goal of stabilizing GHG emissions at levels that will prevent dangerous anthropogenic climate

change.ⁿ¹⁰⁸ Although the nations of the world are still in the process of determining what atmospheric concentration of GHGs would generate such dangerous interference, there is a general consensus that stabilizing carbon dioxide levels at concentrations of 450 ppmv will be necessary to prevent dangerous changes,ⁿ¹⁰⁹ but that achieving levels of 550 ppmv, which is approximately twice the level that existed prior to the Industrial Revolution, may be the best level that could realistically be achieved.ⁿ¹¹⁰ A secondary NAAQS represents the concentration of an air pollutant "the attainment and maintenance of which ... is requisite to protect the public welfare from any known or anticipated adverse effects associated with the presence of such air pollutant in the ambient air."ⁿ¹¹¹ That statutory standard suggests that it would be appropriate to establish a secondary standard in the 450 ppmv to 550 ppmv range or at such other level as the latest scientific evidence indicates would prevent dangerous anthropogenic climate change and craft a strategy that would maintain the concentration of carbon dioxide in the atmosphere below that level.ⁿ¹¹²

[*100] The two principal mechanisms that the Clean Air Act employs to achieve and maintain NAAQS are the development and use of state implementation plans ("SIPs")ⁿ¹¹³ and the establishment of technology based air emissions standards, both for mobile sourcesⁿ¹¹⁴ and new or modified stationary sources.ⁿ¹¹⁵ Use of these mechanisms can readily be applied to control of GHG emissions and are entirely consistent with the mechanisms suggested by the UNFCCC. More significantly, they can build upon and support the existing state planning programs.

This is particularly true of the SIP process, as described in the statute. Section 110 of the Clean Air Act requires that each state, within three years of the promulgation of any NAAQS, develop and submit to the Administrator of EPA for approval "a plan which provides for the implementation, maintenance and enforcement of such" NAAQS.ⁿ¹¹⁶ Among other things, these SIPs must

include enforceable emission limitations and other control measures, means, or techniques (including economic incentives such as fees, marketable permits, and auctions of emissions rights), as well as schedules and timetables for compliance, as may be necessary or appropriate to meet the applicable requirements of this chapter ...ⁿ¹¹⁷

The process for use of SIPs to address the problem of GHGs would differ from the process that has been used in the case of other priority pollutants. SIPs for other priority pollutants have focused on strategies to reduce emissions in areas that exceed the NAAQS and to limit increases in emissions for areas where the air quality is better than the NAAQS. These SIPs have also focused planning on modeling to determine local concentrations. In contrast, all areas in all states would be in compliance with the NAAQS for GHGs at the time of the promulgation of the NAAQS, but dramatic decreases in emissions will be required to maintain the NAAQS in the long run. For example, stabilization of global GHG levels at 550 ppmv carbon dioxide equivalents will likely require the reduction of overall emissions by 75 to 85 percent from their 2000 levels by the year 2100.ⁿ¹¹⁸ However, this difference could be dealt with by EPA in promulgating new regulations setting forth the standards for consideration of the SIP submissions for GHGs.ⁿ¹¹⁹ Such regulations could establish that emissions rather than local concentrations would be the focus of SIPs and establish the emissions reductions goals and deadlines necessary to stabilize GHG levels at the **[*101]** NAAQS on a state-by-state basis. The states would be required to establish consistent goals and to craft strategies to achieve these goals.ⁿ¹²⁰ This SIP mechanism could readily build upon and support existing state GHG mitigation planning and programs. A state could incorporate the mechanisms already incorporated in the GHG plan into its SIP with such modifications as are necessary to satisfy the statutory requirements of the Clean Air Act and to meet emissions reduction goals established by the EPA.ⁿ¹²¹

The second mechanism that the Clean Air Act employs, the establishment of new source performance standards, is also consistent with regulation of GHGs and could both support existing state planning programs and legislation and benefit from those efforts. Specifically, section 202 of the Clean Air Act calls for the establishment of technology-based standards for mobile sourcesⁿ¹²² and section 111 requires the establishment of technology-based emissions standards for new or modified stationary sources of air emissions.ⁿ¹²³ State and private GHG emissions reduction programs can inform the development of technology-based standards by showing what reductions can be achieved. Establishing

technology-based standards will not detract from state programs and can support state programs by establishing the floors that will assure that those efforts will not result in the flight of business to other states. More importantly, the establishment of mobile source standards would both support state efforts to address the transportation sector and establish a basis for California seeking a waiver from the requirement that states not establish mobile source standards different from the federal standards. ⁿ¹²⁴

[*102] There are elements of the Clean Air Act, such as the many provisions dealing with non-attainment areas ⁿ¹²⁵ or those dealing with specific air quality regions, ⁿ¹²⁶ that are not yet relevant to control of emissions of GHGs. Some, including the EPA, have suggested that for this reason, it is inappropriate to address GHG emissions under the Act. ⁿ¹²⁷ However, most comprehensive statutes include many provisions that are irrelevant to a matter regulated by other parts of the statute. Many provisions governing non-attainment were added to the Clean Air Act first by the 1977 Amendments ⁿ¹²⁸ and then the 1990 Amendments, ⁿ¹²⁹ because the combination of the SIP process and then-existing requirements for technology-based standards had not achieved the reductions necessary to achieve NAAQS in areas that were not in attainment. ⁿ¹³⁰

[*103] By contrast, the Prevention of Significant Deterioration ("PSD") program of the Clean Air Act ⁿ¹³¹ could readily be applied to the control of GHG emissions, although amendments could make changes that might be deemed more appropriate. The PSD program was added to the Clean Air Act by the 1977 Amendments to respond to a judicial decision requiring that EPA take greater action to prevent deterioration of air quality where it was cleaner than primary or secondary NAAQS. ⁿ¹³² The discussion of the PSD program in the House Report accompanying the 1977 legislation makes it clear that, in enacting those provisions, Congress was motivated by many of the same precautionary concerns that militate towards regulating greenhouse gases - the unanticipated consequences of increases in pollutants, the fact that margins of safety may not be adequate, poorly understood synergistic impacts, and threats of "worldwide weather modification." ⁿ¹³³ The PSD program requires a permit and preconstruction review for every major emitting facility to assure that that facility employs the best available technology and the facility and the growth that it engenders do not adversely impact air quality in areas where the air quality is better than the ambient air quality standards. ⁿ¹³⁴ Moreover, the PSD provisions require that no facility cause an increase in concentrations exceeding certain specified increments and specifically calls for the Administrator to promulgate regulations concerning such increments within two years after the promulgation of any new NAAQS. ⁿ¹³⁵ Because the NAAQS for GHGs would be set above existing concentrations, all areas would be subject to PSD review. The requirements for technology-based standards, and consideration of growth impacts would apply consistently across the nation and could readily be applied to control GHGs. Moreover, the application of the increment approach could readily be adapted to require that new facilities not contribute to increases in atmospheric levels of GHGs. As a practical matter, this would require that all new facilities obtain offsets or reductions in emissions elsewhere to ensure the phased emissions reductions necessary to maintain worldwide GHG levels below 550 ppmv carbon dioxide equivalents.

Many have suggested that a cap and trade program would be more appropriate for addressing GHG emissions than the measures specified in the Clean Air Act. A number of state initiatives have already sought to develop **[*104]** multi-state cap and trade programs. For example, the RGGI process calls for establishing a cap and trade alternative to technology-based standards and the RGGI states have developed a draft rule to implement such a program for the power sector. ⁿ¹³⁶ California has recently enacted legislation creating a cap and trade program covering all economic sectors, ⁿ¹³⁷ and other states have contemplated such a program. These cap and trade programs can also be accommodated and even supported by federal regulation under the Clean Air Act establishing a federal cap and trade program. Using its authority under section 110(a)(2)(D), ⁿ¹³⁸ EPA has promulgated regulations establishing a trading mechanism in lieu of technology-based standards for the utility industry for a variety of pollutants in its Clean Air Interstate Rule ("CAIR"). ⁿ¹³⁹ Section 110(a)(2)(D) requires that each SIP

contain adequate provisions -

(I) prohibiting ... any source or other type of emissions activity within the State from emitting any air pollutant in amounts which will -

(I) contribute significant to nonattainment in, or interfere with maintenance by, any other State with respect to any such national primary or secondary ambient air quality standard ..." ⁿ¹⁴⁰

Under the rationale supporting the CAIR rule, a trading rule for GHGs could be established to assure that emissions from one state will not interfere with the ability of another state to maintain the GHG standard in the long-term. Accordingly, under existing Clean Air Act authority, EPA could establish a trading rule that would coordinate the various state and regional trading programs. Like the CAIR rule, that program could be limited to certain sectors. This could be coupled with SIP mechanisms addressing other sectors. The approach of mixing trading and a variety of other mechanisms has been employed by European countries in their GHG emissions control programs. ⁿ¹⁴¹ A [*105] federal program would also support existing state trading programs by providing for the inclusion of all states in those programs.

B. Elements Necessary in Any Federal Regulatory Program to Support the New Old Federalism in Climate Change Programs

As is evident from the foregoing, federal regulation under the existing Clean Air Act can preserve benefits of state programs while eliminating some or all of the disadvantages. In order to advance the advantages of federalism, any federal program, whether implemented through regulations or new legislation, should incorporate certain elements. These include the following:

1. The system should preserve the states' ability to innovate and craft individual and comprehensive strategies appropriate for the state through stakeholder processes. This can readily be accomplished through a SIP process that already provides for a state-led planning process.
2. The program should eliminate the problems of uneven performance and inconsistent standards by establishing floors and uniform goals. Again, the existing SIP process coupled with provisions for technology-based standards, performance standards or trading will establish such floors and provide for more uniform standards.
3. The program should establish short, medium and long-term consistent goals for reductions, similar to those adopted by states. This also can be accomplished under the SIP process and can be informed by the state targets set through recent comprehensive climate action planning processes. Establishing long-term, uniform goals will support state planning by creating consistent targets at which states can aim. The establishment of long-term goals is of critical importance to business; these goals can make regulatory programs more predictable and enable business to take account of the standards in capital investment planning.

4. The program should assure that states and businesses that have acted early not be put at a disadvantage. Any program should support further innovation rather than undercutting it. To do this, the program should assure that businesses and states that have acted early be given credit for early reductions. Assurances that such credit be given provides the rationale for the establishment of the federal GHG emissions 1605(b) registryⁿ¹⁴² as well as the various state registries. Thus, the baselines established for GHG emissions reductions should be set at the levels [*106] before early action was taken rather than as of the time the federal program is established.

5. The program should include provisions allowing implementation of a trading or GHG tax system incorporating existing state and regional trading or GHG tax programs. This could be accomplished through a mechanism such as that employed in the CAIR rule or through new legislation.

6. Consistent with the range of state GHG reduction approaches in place today, the program should include flexibility to use a range of implementation mechanisms for all sectors and sources. As it is not possible to attain stabilization-level emissions goals without maximal participation by these sectors, it is particularly important that small source sectors such as transportation, residential and commercial, farming and forestry be supported; this could also be accomplished through existing mobile source emissions controls and provision of the California "exemption" from preemption, the SIP mechanism and use of a trading mechanism such as that employed under the CAIR Rule.

7. The program should assure that all sectors can be addressed and remove uncertainty regarding challenges based on preemption and commerce clause restrictions. The establishment of a federal program would result in uniform standards across sectors and reduce uncertainty. Federal approval of programs under SIPs would provide sufficient federal authorization to eliminate the threat of invalidation under the dormant commerce clause. A federal program would also eliminate any question regarding preemption under the federal CAFE standards. While federal preemption would clearly apply with respect to mobile sources, standards would be required and the criteria for a waiver for California standards would be clearer.

C. Tests for Judicial Review

Preservation of the benefits of the new old federalism can be assured by the executive and legislative branches of the federal government by creating and implementing statutory and regulatory mechanisms to support state programs. In judicial review of both federal and state actions, the courts can protect the states' power to craft new solutions within a federal system through three approaches. First, the courts can provide deference to both these state powers and federal laws and regulations that support these programs. Second, the courts can strictly scrutinize the exercise of federal actions undermining these state efforts. Third, the courts can strictly scrutinize both state actions and contentions that challenge supportive federal actions and federal laws and contentions based on federal law [*107] that would impede state actions that address problems in the absence of a federal program.

This could better be achieved if the courts expressly recognize the difference between federalism and states rights and craft the standard of judicial review accordingly. For example, federal actions that provide support for independent state efforts should be afforded substantial deference, and courts should avoid striking down federal minimum standards on the basis of contentions based on state's rights concepts. State programs challenging a federal floor should be scrutinized closely. On the other hand, state programs bumping against a potential ceiling should be approached with a fair degree of deference.

In fact, without expressly acknowledging differences in contentions based on states rights as opposed to federalism, courts have employed such varying standards of scrutiny. This is evident in a pair of cases considering challenges arising from conflicts or perceived conflicts between federal programs and state experimentation in assisted suicide and use of medical marijuana. In *Gonzales v. Oregon*ⁿ¹⁴³ and *Gonzales v. Raich*,ⁿ¹⁴⁴ the Supreme Court considered challenges to state power and federal power. The first challenge was based on contentions that the Oregon assisted suicide statute was inconsistent with federal regulation under the Controlled Substances Act ("CSA"),ⁿ¹⁴⁵ and the second challenged a federal regulation of the intrastate use of medical marijuana under California law, on the grounds that the CSA fell outside of the power of the federal government under the commerce clause.

In *Gonzales v. Oregon*, the federal government argued that federal regulation under the CSA imposed a ceiling on state authority to experiment. The Court approached the task of construing the CSA to provide significant leeway to state experimentation and upheld Oregon's ability to experiment:

In deciding whether the CSA can be read as prohibiting physician-assisted suicide, we look to the statute's text and design. The statute and our case law amply support the conclusion that Congress regulates medical practice insofar as it bars doctors from using their prescription-writing powers as a means to engage in illicit drug dealing and trafficking as conventionally understood. Beyond this, however, the statute manifests no intent to regulate the practice of medicine generally. The silence is understandable given the structure and limitations of federalism, which allow the States "great latitude under their police powers to legislate as to the protection of the lives, limbs, health, comfort, and quiet of all persons."ⁿ¹⁴⁶

[*108] By contrast, *Gonzales v. Raich*ⁿ¹⁴⁷ rejected a "states rights" based challenge to federal power to regulate intrastate use of medical marijuana whose use was authorized by California law, where Congress had clearly endorsed classification of marijuana as a Class I substance and prohibited its distribution throughout the United States.

Justice Thomas dissented in *Gonzales v. Oregon* based on his belief that the decision authorizing federal regulatory power in *Gonzales v. Raich* required a finding that the CSA also prohibited physician assisted suicide. However, the two cases involved fundamentally different issues - *Raich* involved a states rights challenge to federal authority where Congress had clearly spoken, and *Oregon* involved a unilateral effort by the Attorney General to extend a statute to prohibit a states' ability to experiment. Under the test suggested here, courts would give heavy weight to the states' ability to experiment in considering future actions and construction of the CSA,ⁿ¹⁴⁸ but would not exclude the federal power to establish floors entirely.

Under the proposed test, courts would interpret the scope of federal preemption so as to apply it narrowly to state action taken in a field that the federal government has not occupied, and more broadly where the federal government has established a national floor. For example, in considering whether the federal CAFE standards preempt state programs to influence emissions of greenhouse gases from the transportation sector in the absence of a federal floor, courts should limit the preemptive effect of that statute to its narrow focus. That statute was enacted to conserve energy, and it is narrowly targeted at federal fuel economy standards. It should not extend to taxes or to controls on emissions.

This strict scrutiny would also apply to federal decisions on the scope of preemption under the Clean Air Act in the absence of a federal program regulating GHG emissions or a positive decision that GHG emissions should not be regulated.ⁿ¹⁴⁹ The Clean Air Act clearly preempts state regulation of mobile **[*109]** source emissions. This preemption, however, does not extend to taxes and fees. A decision by the EPA Administrator granting or denying California's application for a waiver of preemption will be subject to judicial review. Such review should interpret the scope of the waiver provision and EPA's action in such a way as to support state action taken where the EPA has not taken an action or established a floor. This would require the application of strict scrutiny to a decision denying a waiver, with deference afforded to a challenge to the grant of a waiver.

[*110] The same varying set of standards should be applied in considering commerce clause challenges. As was the case in the Gonzales decisions, the commerce clause's authorization of federal activities creating floors that support state action should be given substantial deference. The extension of dormant commerce clause restrictions to innovative state actions should correspondingly be limited to cases where there is clear intent to create protectionist measures. Measures that employ different limitations on activities or products that generate GHG emissions outside of a state to create a level playing field when activities within the state are restricted should be deemed non-discriminatory.

Finally, compacts clause challenges to cooperative, non-binding efforts to coordinate state policy should fail under existing case law. New tests that limit state power to enact solutions to international problems should not create impediments to such state actions.

VII. Conclusion

States expanding efforts to address climate change represents just one manifestation of a surge of state activity mirroring a similar surge taking place a century ago. Federal laws, such as the Clean Air Act, can be applied and interpreted to support these activities. Doing so can simultaneously preserve the benefits arising from formulation of policy at the state level while preventing many of the problems that arise from state-led solutions. There is a danger that administrative decisions or judicial review could thwart these efforts, sometimes with the ostensible goal of conserving federalism. A new set of terms and tests is appropriate, to distinguish true federalism, which provides "freedom to" implement programs, from "states rights" federalism that limits federal power by providing "freedom from" floors that protect federalism.

Legal Topics:

For related research and practice materials, see the following legal topics:

Energy & Utilities Law Conservation General Overview Environmental Law Air Quality Operating Permits Transportation Law Interstate Commerce Federal Powers

FOOTNOTES:

n1. *Massachusetts v. EPA*, 127 S.Ct. 1438, 2007 U.S. LEXIS 3785 (2007). In this decision, after finding that Massachusetts had standing to challenge the United States Environmental Protection Agencies refusal to regulate emissions of greenhouse gases under section 202 of the Clean Air Act, Clean Air Act, 42 U.S.C. §§7401-7671q, the Court held that (1) section 202(a)(1) of the Clean Air Act, id. § 7521(a)(1), provides EPA with authority to regulate emissions of carbon dioxide and other greenhouse gases as "pollutants", and (2) in refusing to regulate greenhouse gas emissions, EPA improperly failed to articulate reasons consistent with the statutory standard that he regulated emissions that "in his judgment. cause, or contribute to, air pollution which may reasonably be anticipated to endanger public health or welfare."

n2. See Robert B. McKinstry & Coreen Ripp, *Biodiversity Conservation Handbook 1* (Robert B. McKinstry, Jr., Coreen M. Ripp & Emily Lisy, eds., Environmental Law Institute 2006).

n3. See John C. Dernbach, *Moving the Climate Change Debate from Models to Proposed Legislation, Lessons from State Experience*, 30 *Envtl. L. Rep.* (Envtl. L. Inst. 190933 (2000)); Robert B. McKinstry, Jr., *Local Solutions for Global Problems: The Debate over the Causes and Effects of Climate Change and Emerging Mitigation Strategies for States Localities and Private Parties*, 12 *Penn St. Env'tl. L. Rev.* 1

(2003) [hereinafter Local Solutions]; Robert B. McKinstry, Jr., Laboratories for Local Solutions for Global Problems: State, Local and Private Leadership in Developing Strategies to Mitigate the Causes and Effects of Climate Change, 12 Penn St. Envtl. L. Rev. 15 (2003) [hereinafter Laboratories]; John C. Dernbach, Symposium, Facing Climate Change: Opportunities and Tools for States, Introduction 14 Widener L. J. 1 (2004); Barry G. Rabe, North American Federalism and Climate Change Policy: American State and Canadian Provincial Policy Development, 14 Widener L. J. 121 (2004); Laura H. Kosloff, et al., Outcome-Oriented Leadership: How State and Local Climate Change Strategies Can Most Effectively Contribute to Global Warming Mitigation, 14 Widener L. J. 173 (2004); Kirsten H. Engel, Mitigating Global Climate Change in the United States: A Regional Approach, 14 N.Y.U. Envtl L. R. 54 (2005).

n4. Supra note 1.

n5. 42 U.S.C. §§7401-7671q (2003).

n6. United Nations Framework Convention on Climate Change, May 29, 1992, U.N. Doc. A/AC.237/18 (1992), art. 2, reprinted in 31 I.L.M. 849 (1992), available at <http://unfccc.int/resource/docs/convkp/conveng.pdf> (last visited October 17, 2006) [hereinafter Framework Convention or UNFCCC].

n7. For example, an electric power generator in a state with stringent pollution standards on the production of power may face higher generation costs than out-of-state producers with less stringent standards. If the state with the more stringent electricity production standards does not apply emissions standards to imported power, then out-of-state producers may have lower costs and a competitive advantage due to uneven application of state standards. The result may be the importation of lower cost, higher emitting power to the high control state. Some states, such as California, have sought to avoid this dilemma by setting standards on the consumption and sale of electricity rather than its production, so-called "load based" systems. See Cal. Health & Safety Code §§38505(m) (2007) (definition of "statewide greenhouse gas emissions" including emissions from imported electricity), 38530(b)(2) (2007) (emissions reporting to include emissions attributable to imported electricity), 38550 (2007) (requirement for statewide greenhouse gas emissions limit). However, these solutions do not provide relief to electric generators who export electricity from a state that has imposed controls; these exporters would still lose business. These issues become an even greater concern for manufacturers whose markets are not as heavily regulated as the electric power industry.

n8. See *Central Valley Chrysler-Jeep v. Witherspoon*, 456 F. Supp. 2d 1160 (E.D. Cal., 2006) (dismissing commerce clause and antitrust claims, but refusing to dismiss claims based on foreign policy, Clean Air Act and CAFE standards preemption).

n9. U.S. Const. amends. V, XIV.

n10. The federalism issues arising where states bump up against federal limitations have only become more relevant in the area of climate change today as governors and state legislative leaders increasingly view the climate issue as an attractive leadership agenda. Since 2000, 13 states have completed or launched comprehensive state climate change mitigation planning processes under the convening authority of the governor or legislature, and several others have undertaken other major sector-based GHG reduction initiatives. See <http://www.climatestrategies.us> (last visited Sept. 18, 2006).

n11. *New State Ice Co. v. Liebmann*, 285 U.S. 262, 311 (1932) (Brandeis, J., dissenting).

n12. See McKinsty, Jr., *Laboratories*, supra note 4, at 16.

n13. 42 U.S.C. § 7401 (2003).

n14. 33 U.S.C. §§1251-1387 (2003).

n15. The DRBC is an interstate commission established pursuant to an interstate compact among Delaware, New Jersey, New York and Pennsylvania to manage water quantity and quality in the Delaware River.

n16. 30 U.S.C. §§1201-1328 (2003).

n17. The hazardous site remediation program established by New Jersey pursuant to the New Jersey Spill Compensation and Control Act, N.J. Stat. Ann. § 58:10-23.11a, was copied by Congress in enacting the federal Comprehensive Environmental Response Compensation and Liability Act (CERCLA). 42 U.S.C. §§9601-9675 (2007).

n18. See, e.g., 30 U.S.C. § 1253 (2003) (Surface Mining Control and Reclamation Act (SMCRA) standards for state programs); 33 U.S.C. § 1342(b) (2003) (Clean Water Act, establishing standards for state national pollutant discharge elimination system); § 1344(g) (Clean Water Act, establishing standards for state dredge and fill permit system); 42 U.S.C. § 300g-2 (2003) (Safe Drinking Water Act (SDWA), authorizing State enforcement); § 6926 (Resource Conservation and Recovery Act standards for authorized State hazardous waste programs); § 7410 (Clean Air Act standards for state Implementation Plans (SIP) to achieve and maintain National Ambient Air Quality

Standards (NAAQS)); § 7661a (Clean Air Act standards for state air pollution permit programs); see also 16 U.S.C. § 1535 (2003) (establishing standards for state administration of certain programs under the Endangered Species Act (ESA)).

n19. See, e.g., 33 U.S.C. § 1313 (2003) (stating responsible for establishing water quality standards under the Clean Water Act); 42 U.S.C. § 7410 (2003) (Clean Air Act standards for State Implementation Plans to achieve and maintain National Ambient Air Quality Standards).

n20. See, e.g., 16 U.S.C. § 1535(f) (ESA); 30 U.S.C. § 1255 (2003) (SMCRA); 33 U.S.C. § 1370 (2003) (Clean Water Act); § 2718 (Oil Pollution Act); 42 U.S.C. § 6929 (West 2003) (RCRA hazardous waste); § 6991g (RCRA underground storage tanks); § 7416 (Clean Air Act); § 9614 (CERCLA); but see § 7573 (preempting inconsistent state regulation of air pollutant emissions from mobile sources).

n21. See, e.g., 33 U.S.C. § 1319(a)(1) (federal government may issue order or enforcement action under Clean Water Act based on state-issued permit where state fails to take enforcement action after notice); § 1319(a)(2) (federal Environmental Protection Agency (EPA) may take over all Clean Water Act enforcement in face of "widespread" permit violations indicating failure of state to enforce); § 1342(c) (authorizing EPA to remove state authority to administer federal permit program when "a State is not administering a program ... in accordance with the requirements" of the federal Clean Water Act); 42 U.S.C. §§7413(a)(1), (5) (allowing federal enforcement of Clean Air Act state implementation plan and new source requirements, respectively, where state fails to take enforcement action); § 7413(a)(3) (authorizing EPA to take over all enforcement of implementation plan or permit program in face of widespread state failure to enforce).

n22. See, e.g., *Harmon Industries v. Browner*, 191 F.3d 894 (8th Cir. 1999).

n23. U.S. Const. art. I, § 8, cl. 1 ("The Congress shall have the power to lay and collect Taxes, ... to pay the Debts and provide for the common Defense and general Welfare of the United States...").

n24. U.S. Const. art. I, § 8, cl. 3 ("The Congress shall have the power to regulate commerce with foreign nations, and among the several states, and with the Indian tribes.").

n25. U.S. Const. amend. X ("The powers not delegated to the United States by the Constitution, nor prohibited by it to the states, are reserved to the states respectively, or to the people.").

n26. U.S. Const. amend. XI (The judicial power of the United States shall not be construed to extend to any suit in law or equity, commenced or prosecuted against one of the United States by citizens of another state or by citizens or subjects of any foreign state.").

n27. U.S. Const. amend. V, XIV.

n28. See e.g., *C & A Carbone, Inc. v. Town of Clarkstown*, 511 U.S. 383 (1994); *Pike v. Bruce Church, Inc.*, 397 U.S. 137 (1970); *Central Valley Chrysler-Jeep v. Witherspoon*, 456 F. Supp. 2d 1160 (E.D. Cal., 2006) (dismissing dormant commerce clause challenge to California law establishing mobile source emissions limitations for greenhouse gases).

n29. 29 U.S. Const. art. VI ("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.").

n30. U.S. Const. art. I, § 10 cl. 3 ("No State shall, without the Consent of Congress, ... enter into any Agreement or Compact with another State, or with a foreign Power ...").

n31. Kirsten H. Engel, *Harnessing the Benefits of Dynamic Federalism in Environmental Law*, 56 *Emory L.J.* 159 (2006). Legal scholarship has frequently tried to delineate separate spheres of influence for state and local governments. Professor Engel, using the example of state climate change initiatives, suggests that the spheres of activity and appropriate activity frequently overlap and that activities by the state and federal governments can support one another through the process of "dynamic federalism." I suggest here the very concept that there should be exclusive state and federal spheres more properly refers to the concept of "state rights," and an examination of the federalism touted by Justice Brandeis needs to recognize the mutually supportive roles of state laboratories and federal incubation of those laboratories, or "dynamic federalism" as that term is used by Professor Engel.

n32. Mao Tse Tung ("let a hundred flowers bloom, a hundred schools of thought contend") (1957).
<http://www.phrases.org.uk/meanings/226950.html>.

n33. See, e.g., *Joint Science Academies' Statement: Global Response to Climate Change*, available at <http://www.nationalacademies.org/onpi/06072005.pdf> (June 2005) (signed by the presidents of the national scientific academies in Brazil, Canada, China, France, Germany, India, Italy, Japan, Russia, United Kingdom, and the United States). The Statement begins:

Climate change is real. There will always be uncertainty in understanding a system as complex as the world's climate. However, there is now strong evidence that significant global warming is occurring. The evidence comes from direct measurements of rising surface air temperatures and subsurface ocean temperatures and from phenomena such as increases in average global sea levels, retreating glaciers, and changes to many physical and biological systems. It is likely that most of the warming in recent decades can be attributed to human activities (IPCC 2001). This warming has already led to changes in the Earth's climate.

(emphasis added). See also, Richard Alley, Terje Berntsen, Nathaniel L. Bindoff, Zhenlin Chen, Amnat Chidthaisong, Pierre Friedlingstein, Jonathan Gregory, Gabriele Hegerl, Martin Heimann, Bruce Hewitson, Brian Hoskins, Fortunat Joos, Jean Jouzel, Vladimir Kattsov, Ulrike Lohmann, Martin Manning, Taroh Matsuno, Mario Molina, Neville Nicholls, Jonathan Overpeck, Dahe Qin, Graciela Raga, Venkatachalam Ramaswamy, Jiawen Ren, Matilde Rusticucci, Susan Solomon, Richard Somerville, Thomas F. Stocker, Peter Stott, Ronald J. Stouffer, Penny Whetton, Richard A. Wood, David Wratt, *Climate Change 2007: The Physical Science Basis, Summary for Policymakers, Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change*, (February 2007); Naomi Oreskes, *The Scientific Consensus on Climate Change*, 306 *Science* 1686 (2004); J.T. Houghton, Y. Ding, D.J. Griggs, M. Noguer, P.J. van der Linden, D. Xiaosu, eds. *Climate Change 2001: The Scientific Basis. Contribution of Working Group I to the Third Assessment Report of the Intergovernmental Panel on Climate Change (IPCC)* (Cambridge University Press: Cambridge, U.K., 2001); National Academy of Sciences/National Research Council, *Preface to Climate Change Science: An Analysis of Some Key Questions* (2001) [hereinafter NAS/NRC 2001]; National Academy of Sciences/National Research Council, *Abrupt Climate Change: Inevitable Surprises* (2002) [hereinafter NAS/NRC 2002]; National Academy of Sciences/National Research Council, *Surface Temperature Reconstructions for the Last 2,000 Years* 2, 3 (2006) (concluding that the global mean surface temperature during the last few decades of the 20th century was higher than any comparable period in the past four centuries, and, likely so, in the past 1,000 years.)

n34. J. J. McCarthy, O.F. Canziani, N.A. Leary, D.J. Dokken, K.S. White, eds., *Climate change 2001: Impacts, Adaptation & Vulnerability. Contribution of Working Group II to the Third Assessment Report of the Intergovernmental Panel on Climate Change (IPCC)* (Cambridge University Press: Cambridge, U.K., 2001); see also National Assessment Synthesis Team, *Climate change Impacts on the United States: The Potential Consequences of Climate Variability and Change* (2001); NAS/NRC 2002, *supra* note 33; NAS/NRC 2001, *supra*, note 33. By way of example, a panel of the National Research Council of National Academy of Sciences that reviewed the state of the science in 2001 for President Bush made the following findings:

The optimal climate for crops may change, requiring significant regional adaptations. Some models project an increased tendency toward drought over semi-arid regions, such as the U.S. Great Plains. Hydrologic impacts could be significant over the western United States, where much of the water supply is dependent on the amount of snow pack and the timing of the spring runoff. Increased rainfall rates could impact pollution run-off and flood control. With higher sea level, coastal regions could be subject to increased wind and flood damage even if tropical storms do not change in intensity. A significant warming also could have far reaching implications for ecosystems.

Climate is one of a number of factors influencing the incidence of infectious disease. Cold related stress would decline in a warmer climate, while heat stress and smog induced respiratory illnesses in major urban areas would increase, if no adaptation occurred.

Global warming could well have serious adverse societal and ecological impacts by the end of this century, especially if globally-averaged temperature increases approach the upper end of the IPCC projections. Even in the more conservative scenarios, the models project temperatures and sea levels that continue to increase well beyond the end of this century, suggesting that assessments that examine only the next 100 years may well underestimate the magnitude of the eventual impacts.

NAS/NRC 2001 *supra*, note 33 at 4. The evidence of warming and impacts has only strengthened since 2001. For example, there is evidence that the shrinking of the Arctic sea cap is accelerating. See, e.g., J. Hansen, et al., *Global Temperature Change*, *Proc. Natl. Acad. Sci.*

(forthcoming); J.C. Comiso, Arctic Warming Signals from Satellite Observations, 61-3 Weather 70-76 (2006). This new evidence will likely be discussed in the fourth IPCC report, which is now under review.

n35. See Michael Northop, Leading by Example: Profitable Corporate Strategies and Successful Public Policies for Reducing Greenhouse Gas Emissions, 14 Widener L.J. 21 (2004).

n36. See, e.g., Center for Climate Strategies, Fact Sheet: Arizona Climate Plan (2006).

n37. Even these changes may produce "co-benefits" by promoting other public policy objectives such as energy independence, fiscal reform, and growth management. Some measures may also expand job creation and promote long-term economic growth, such as shifts from conventional fossil based energy supplies to renewable energy sources.

n38. United Nations Framework Convention on Climate Change, *supra* note 6.

n39. Kyoto Protocol to the United Nations Framework Convention on Climate Change, Dec. 10, 1997, U.N. Doc. FCCC/CP/1997/L.7/Add.1 (1998), available at <http://unfccc.int/resource/docs/convkp/kpeng.pdf> [hereinafter Kyoto Protocol].

n40. Thomas D. Peterson, State Climate Action Planning, available at <http://www.southernenvironment.org/cases/globalwarming/StateClimateActionPlanning.pdf> (last visited July 2, 2007).

n41. Arizona (completed 2006) <http://www.azclimatechange.us>; California (completed 2005) [www.climatechange.ca.gov/climateactionteam/reports/2005-122-98 DRAFT CAT REPORT TO GOV+LEG.PDF](http://www.climatechange.ca.gov/climateactionteam/reports/2005-122-98_DRAFT_CAT_REPORT_TO_GOV+LEG.PDF); Connecticut (completed December 2003) <http://www.ctclimatechange.com/StateActionPlan.html>; Maine (completed 2004) <http://www.maineqh.raabassociates.org/index.asp>; Massachusetts (completed 2003) <http://www.mass.gov/portal/site/massgovportal/menuitem.6fa7d87cce2a31c14db4a11020468a0c/?pageID=ocdterminal&L=2&L0=Home&LI=Environment&sid=ocdfrontpageclimateplanchuck&csid=Eocd>; Montana (in progress) <http://www.mtclimatechange.us/>; New Mexico (in progress) <http://www.nmclimatechange.us>; North Carolina (CSA completed 2005; new plan in progress) <http://www.ncclimatechange.us>, <http://www.daq.state.nc.us/news/leg/>; Oregon (completed 2004) <http://www.Oregon.gov/ENERGY/GBLWRM/docs/>; Puget Sound (completed 2004) <http://www.pscleanair.org/specprog/globelim/cpsp>; Rhode Island (completed 2002) <http://www.dem.ri.gov/programs/bpoladm/stratpp/greenhos.htm>; Vermont (in progress) <http://www.vtclimatechange.us/>. For additional details see <http://www.climatestrategies.us>.

n42. The Committee on the Environment and the Northeast International Committee on Energy of the Conference of New England Governors and Eastern Canadian Premiers, *New England Governors/Eastern Canadian Premiers Climate Change Action Plan 2001* (Aug. 28, 2001) (hereinafter *NEG/ECP Climate Change Action Plan*"); see McKinstry, Jr., *Laboratories*, supra note 3, at 31-35.

n43. The planning process has been described in greater detail elsewhere. See McKinstry, Jr., *Laboratories*, supra note 3, at 28-31; Adam Rose, *Greenhouse Gas Mitigation Action Planning: An Overview*, 12 *Penn St. Envtl L.Rev.* 153 (2004); Thomas D. Peterson, *Symposium Facing Climate Change: Opportunity and Tool for State: The Evolution of State Climate Change Policy in the United States: Lessons Learned and New Directions*, 14 *Widener L.J.* 81 (2004).

n44. This step may occur either before or after the development of a range of specific mitigation actions.

n45. The consultants may or may not be part of the same team or organization as the facilitator, but, under ideal circumstances, the consulting team is coordinated by the central facilitator.

n46. Rose, supra, note 43.

n47. Some inventories may also measure emissions of black carbon (or soot), which is increasingly recognized as contributing to global warming.

n48. *NEG/ECP Climate Action Plan*, supra note 42.

n49. Thomas D. Peterson, *Potential List of PA GHG Options* (Working Draft 2004).

n50. Center for Climate Strategies, *Fact Sheet: Arizona Climate Plan* (2006).

n51. See McKinstry, Jr., *Laboratories*, supra note 3, at 54-64; Michael Northrup, *Symposium Facing Climate Change: Opportunity and Tool for State: Leading by Example: Profitable Corporate Strategies and Successful Public Policies for Reducing Greenhouse Gas Emissions*, 14 *Widener L.J.* 21 (2004).

n52. McKinstry, Jr., *Laboratories*, supra note 3, at 39-44. Many companies may hesitate to implement early, voluntary actions to reduce pollution because of fear that, if they reduce their pollution early, the reduced level will become the starting point for reductions in a future regulatory regime. Thus, companies fear that if everyone is required to reduce emissions by 50%, an early actor who has already reduced emissions by 50% will have a limit that is 25% of that actor's original uncontrolled emissions (50% of the 50% already achieved) while that company's competitor who did not take early action will have a 50% limit. Taking measures to assure that early actors are not put at a disadvantage due to their good works is particularly important in a cap and trade program where everyone is given pollution allowances based on certain baseline emissions. A registry is intended to prevent this by providing a measurement of that early reduction that can be considered in establishing baselines for a future regulatory regime. Thus, in awarding initial allowances, the early actor would be given allowances based on its original emissions as recorded in the registry. While future legislatures may not be bound to require such consideration, legislation establishing such registries contains at least an implied promise and sometimes an explicit guarantee that early reductions will be credited.

n53. See Northrup, supra, note 51.

n54. For an alternative description of some of these advantages and the corresponding disadvantages of state-led policies, see Rabe, supra note 3.

n55. On the other hand, many of these advantages may simply be the flip side of the disadvantages of acting at the state level, as discussed more fully in the next section.

n56. One frequently cited disadvantage of state level decision-making arises from the perception that local "special interests" may be better able to influence decision-makers to give those interests advantageous deals and go to the lowest common denominator. In light of the prevalence of earmarks in federal appropriations legislation in recent years, this phenomenon is equally present in federal decision-making. In state planning processes, provision of assurances that the decision making process is open to all, fully transparent and directed to goals that require meaningful reductions will assure that no special deals will be made and the advantages of obtaining more direct, relevant information maintained. As evidenced by the results in Arizona, this type of open stakeholder driven process at the state level can often identify opportunities for achieving a "win-win" situation, with significant reductions and significant cost savings.

n57. McKinstry, Jr., Laboratories, *supra* note 3.

n58. S-342. The bill was introduced as the Climate Security Act of 2003 in the previous session.

n59. See 151 Cong. Rec. S-6980-7037 (2005). S-342 was offered as an amendment to the Energy Bill and failed by a 60-38 vote, *id.* at S-7029. A motion to table the sense of the Senate resolution offered by Senator Bingaman failed by a 53-44 vote. *Id.* at S-7037.

n60. Indeed, leaders of the incoming Congress have already indicated that new climate legislation is likely to include national approaches that emulate state action. For instance, California Senator Barbara Boxer has indicated that she will introduce national legislation that parallels the California Climate Action Plan. Bills in programs by Vermont Senator Jim Jeffords and California Representative Henry Waxman are expected to propose a broader, state-like approach to emissions reductions.

n61. 49 U.S.C. § 32919 (2006) (CAFE standards, preempting state regulations "related to fuel economy standards or average fuel economy standards for automobiles."); Clean Air Act, 42 U.S.C. § 7543(a) (2006) (preempting "any standard relating to the control of emissions from new motor vehicles or new motor vehicles subject to this part" or requirements for "certification, inspection, or any other approval," but authorizing waiver of preemption where mobile source standards are established by California and waiver is approved by EPA); but see Oxygenated Fuels Ass'n. v. Davis, 331 F.3d 665 (9th Cir. 2003) (upholding California's ban on the fuel additive MTBE against (1) express preemption challenge under parallel express preemption provision contained in 42 U.S.C. § 7545(4)(A) on the basis of conclusions that parallel exemption for California contained in § 7545(c)(4)(B) applied and that preemption was inapplicable where ban was intended to address ground water contamination and (2) implied preemption challenge).

n62. See 15 U.S.C. § 2617 (2006).

n63. State climate planning efforts have responded to these concerns with recommendations to develop reporting and registry procedures that, ultimately, can be made uniform across all states. A new effort to combine several state registries into a consolidated approach was launched recently between states of the northeast, Midwest, west coast, and interior west. Most recently, California Governor Schwarzenegger signed an Executive Order calling for the integration of California cap and trade program created by the Global Warming Solutions Act of 2006, AB 32, 2006 Cal. Stat. Ch. 488, to be codified at Cal. Health & Safety Code §§38500-38597, with both the trading program established for the northeastern states by the Regional Greenhouse Gas Initiative and the trading program in the EU. California E.O. S-20-06, § 5 ("The State Air Resources Board shall collaborate with the Secretary for Environmental Protection and the Climate Action Team to develop a comprehensive market-based compliance program with the goal of creating a program that permits trading with the European Union, the Regional Greenhouse Gas Initiative and other jurisdictions."), press release available at <http://gov.ca.gov/index.php?/press-release/4447/>. State policy making efforts have also frequently replicated standards set by neighboring states, or established means to explore harmonization, such as the Southwest Climate Change Initiative.

n64. For example, the EU, Japan, China, Australia and Canada all have established fuel economy standards that are already significantly more stringent than the United States federal CAFE standards, *supra*, note 60, and the disparity will increase in the future as other standards rise (although the California mobile source emissions standards for GHGs, if they survive challenge in and are not preempted, would reduce somewhat the disparity). See Feng An & Amanda Sauer, Comparison of Passenger Vehicle Fuel Economy and GHG Emission Standards Around the World (Pew Center on Global Climate Change 2004), Executive Summary at 1. The EU "REACH" initiative will establish chemical safety standards significantly exceeding United States federal standards under the Toxics Substances Control Act, 15 U.S.C. §§2601-2692 (2006). See Proposal for a Regulation of the European Parliament and of the Council Concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), Establishing a European Chemicals Agency and Amending Directive 1999/45/EC and Regulation (EC) (on Persistent Organic Pollutants), SEC(2003)1171, available at <http://register.consilium.eu.int/pdf/en/05/st15/st15921.en05.pdf> (last visited June 29, 2007.)

n65. See, e.g., Surface Mining Control and Reclamation Act, 30 U.S.C. § 1255 (2006); Clean Water Act, 33 U.S.C. § 1370 (2003); Resource Conservation and Recovery Act, 42 U.S.C. § 6929 (2003); Clean Air Act, 42 U.S.C. § 7416 (2003) (for standards other than those affecting mobile sources).

n66. Abt Associates, Inc., Is There a Relationship Between State Economic Performance and Carbon Emissions Economic Intensity? A Cross-State Econometric Study (Prepared for U.S. EPA, Cambridge, MA, Jan. 28, 2005).

n67. The Climate Group, <http://www.theclimategroup.org/index.php?pid=373>.

n68. Congressional testimony of Dr. Paul Portney, Director of Resources for the Future, <http://www.rff.org/>.

n69. See Tim Flannery, *The Weather Makers* 234 (2005), citing Eban Goodstein, *Polluted Data*, 8 *American Prospect* 1 (1997).

n70. Adam Rose & G. Oladosu, *Greenhouse Gas Reduction in the U.S.: Identifying Winners and Losers in an Expanded Permit Trading System*, 23 *Energy J.* No. 21 (2002).

n71. Adam Rose & G. Oladosu, *Income Distribution Impacts of Climate Change Mitigation Policy in the Susquehanna River Basin*, 29 *Energy Economics* No. 3 (2007).

n72. See Rabe, *supra* note 3, at 135-38.

n73. *Id.*

n74. The problem of attribution has already been evidenced in implementation of renewable portfolio standards for electric power, which, to date, have been enacted by 22 states and the District of Columbia. In response, however, states and regional power pools are establishing requirements for disclosure of multiple attributes. For example, the PJM Interconnection has established the Generator Attributes Tracking System (GATS) for this purpose. See PJM GATS Working Group Web site, available at <http://www.pjm-eis.com/gats/gats.html> (last visited Oct. 16, 2006).

n75. See *supra* note 24.

n76. U.S. Const. art. VI.

n77. U.S. Const. art. I, § 10, cl. 3.

n78. See <http://www.rggi.org/> (last visited Feb. 10, 2006).

n79. Peter Glaser, *The Regional Greenhouse Gas Initiative: A Contrarian Perspective*, Powerpoint Presentation, slide 23 (2006), available at <http://www.abanet.org/enviro/committees/renewableenergy/teleconarchives/012606/> (last visited Feb. 14, 2006).

n80. See *Central Valley Chrysler-Jeep v. Witherspoon*, 456 F. Supp. 2d 1160 (E.D. Cal., 2006) (denying motion to dismiss preemption claims and granting motion to dismiss commerce clause claim).

n81. See *supra*, note 24.

n82. U.S. Const. art. I, § 10, cl. 1.

n83. U.S. Const. art. I, § 10, cl. 3.

n84. 434 U.S. 452, 470, (1978).

n85. *Id.* at 701 (quoting *Virginia v. Tennessee* 148 U.S. 503, 519 (1893)).

n86. See, Kyoto Protocol, art. 17, *supra*, note 39; see UNFCCC, Conference of the Parties, UNFCCC COP Decision 18/CP.7 Modalities, rules and guidelines for emissions trading under Article 17 of the Kyoto Protocol, Report of the Conference of the Parties on Its Seventh Session, Held at Marrakesh From 29 October to 10 November 2001 at 50 (2002), available at http://unfccc.int/files/kyoto_mechanisms/cdm/application/pdf/13a02.pdf#page=50 (last visited Feb. 12, 2006).

n87. See *supra* note 62.

n88. *United States Steel Corp v. Multistate Tax Commn.*, 434 U.S. 452 (1978).

n89. For example, Massachusetts is a party to the NEG/ECP Climate Action Plan, which calls for a regional trading program and the RGGI process, but, at least initially, has elected not to participate in the memorandum of understanding establishing the regional trading program under RGGI. See, *Regional Greenhouse Gas Initiative Memorandum of Understanding (2005)* available at <http://www.rggi.org/agreement.htm> (follow "Multi-State Agreement"; then follow "Memorandum of Understanding" hyperlink).

n90. These states have worked together under the auspices of the Northeast States for Coordinated Air Use Management ("NESCAUM") found at <http://www.nescaum.org/> (last visited Feb. 22, 2007).

n91. U.S. Const. amend. V, XIV.

n92. U.S. Const. art. I, § 10, cl. 1 ("No State shall ...pass any ... Law impairing the Obligation of Contracts...")

n93. *Pike v. Bruce Church, Inc.*, 397 U.S. 137 (1970).

n94. See Robert B. McKinstry, Jr., Adam Rose & Coreen Ripp, Incentive-Based Approaches to Greenhouse Gas Mitigation in Pennsylvania: Protection the Environment and Promoting Fiscal Reform [hereinafter "Incentive-Based Approaches"], 14 *Widener L. J.* 205 (2004).

n95. See, e.g., *C & A Carbone, Inc. v. Town of Clarkstown*, 511 U.S. 383, (1994) (ordinance requiring disposal of all MSW generated in the jurisdiction of a New York town at a local waste transfer facility to support financing of the facility was a "local processing requirement" that discriminated against interstate commerce in violation of dormant commerce clause restrictions); *Fort Gratiot Sanitary Landfill v. Michigan*, 504 U.S. 353 (1992) (waste import restrictions imposed by a county as a part of its municipal waste planning scheme violated the dormant commerce clause restrictions); *Maharg, Inc. v. VanWert Solid Waste Mgmt. Dist.*, 249 F.3d 544 (6th Cir. 2001) (upholding uniform waste generation fee coupled with landfill designation program against commerce clause challenge); *Red River Serv. Corp. v. City of Minot*, 146 F.3d 583 (8th Cir. 1998) (upholding a municipality's ability to restrict disposal of waste within a municipally-owned facility to the municipality's residents against commerce clause challenge); *Gary D. Peake Excavating, Inc. v. Town Board of the Town of Hancock*, 93 F.3d 68 (2d Cir. 1996) (upholding law uniformly banning all landfill operation within a municipality against commerce clause challenge).

n96. 49 U.S.C.A. § 32919 (CAFE standards); 42 U.S.C.A. § 7543(a) (Clean Air Act). In *Central Valley Chrysler-Jeep v. Witherspoon*, slip opinion, 2006 WL 2734359 (E.D.Cal. 2006), the court denied California's motion to dismiss challenges to its GHG mobile source emissions law based on various theories of preemption. These theories included express preemption under these provisions and subject matter preemption under the energy and clean air statutes as well as the Executive authority to manage international relations.

n97. Calculated from data provided by the Center for Climate Change and Environmental Forecasting, About Transportation and Climate Change, found at <http://climate.volpe.dot.gov/national.html> (last visited Feb. 22, 2007), citing original data source EPA Inventory Report 2004.

n98. *Id.*

n99. McKinstry et al., *supra* note 94.

n100. If the transportation sector is not addressed effectively, reductions needed to achieve the GHG emission reduction goals must be achieved through limitations on other sectors. Experience in the past suggests that the industrial and energy sectors, whose emissions are readily identifiable and whose regulation is usually politically palatable, will be targeted to make up the difference. Thus, an application of the law that would preserve the states' ability to adopt even-handed regulation of GHG emissions from the transportation industry would best serve effective GHG emissions reduction and the business community.

n101. 42 U.S.C.A. §§7401-7671(q) (2006).

n102. United States Environmental Protection Agency Notice, Control of Emissions From New Highway Vehicles and Engines, 68 Fed. Reg. 52922, 52924, 2003 WL 22068000 (F.R.) (Sept. 8, 2003) (stating that the NAAQS system, created by sections 108-110 of the Clean Air Act, 42 U.S.C. §§7408-7410, is "fundamentally ill-suited to addressing [greenhouse] gases in relation to global climate change."). EPA made this assertion in denying the petition to regulate mobile emissions of greenhouse gases under section 202(a)(1) of the Clean Air Act, *id.* § 7521(a)(1), at issue in *Massachusetts v. Environmental Protection Agency*, *supra supra* note 1. The Supreme Court rejected EPA's contention, finding that "there is nothing counterintuitive to the notion that EPA can curtail the emission of substances that are putting the global climate out of kilter." *Id.*, slip op. at 26.

n103. 42 U.S.C.A. § 7408.

n104. This is a necessary implication of the Supreme Court's determination in *Massachusetts v. Environmental Protection Agency*, *supra* note 1, where the Court construed identical language ("in his judgment, cause or contribute to air pollution which may be reasonably anticipated to endanger public health or welfare") found in section 202(a)(1) of the Clean Air Act, 42 U.S.C. § 7521(a)(1) (2003).

n105. 42 U.S.C.A. § 7408(a)(2) (2003).

n106. 42 U.S.C.A. § 7408(b)(1) (2003)

n107. 42 U.S.C.A. § 7409(b) (2003).

n108. " The ultimate objective of this Convention and any related legal instruments that the Conference of the Parties may adopt is to achieve, in accordance with the relevant provisions of the Convention, stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system. Such a level should be achieved within a time-frame sufficient to allow ecosystems to adapt naturally to climate change, to ensure that food production is not threatened and to enable economic development to proceed in a sustainable manner." UNFCCC, *supra* note 6, at art. 2.

n109. The International Scientific Steering Committee concluded that limiting levels to below 400 ppmv would prevent dangerous anthropogenic climate change and that limiting levels to 450 ppmv presented a medium likelihood of keeping temperature increases to below 2 [degrees] C and thereby preventing dangerous changes. International Scientific Steering Committee, *Avoiding Dangerous Climate Change: Executive Summary of the Conference Report (2005)*, [http://www.defra.gov.uk/ \(search "Avoiding Dangerous Climate Change"; then follow "Avoiding Dangerous Climate Change" hyperlink\)](http://www.defra.gov.uk/search/Avoiding%20Dangerous%20Climate%20Change) (last visited Feb. 22, 2007).

n110. See Tim Flannery, *The Weather Makers* 168 (Atlantic Monthly Press 2006). While most discussion suggests a range of 450 ppmv to 550 ppmv, there are significant risks in allowing global levels of carbon dioxide to rise to 550 ppmv, since adjusted levels of total GHGs would be significantly above 550 ppmv of carbon dioxide equivalents. Paul Baer & Tom Athanasiou, *Honesty About Dangerous Climate Change* (2004), available at http://www.ecoequity.org/ceo/ceo_8_2.htm (last visited Feb. 22, 2007).

n111. 42 U.S.C.A. § 7409(b) (2003) (emphasis added).

n112. Some have pointed to the fact that new legislation, e.g. 42 U.S.C.A. §§7651-7651o (2007), was required to control acid deposition due to the fact that the NAAQS statutory mechanisms could not address that problem adequately and have analogized control of GHG emissions to acid rain control. However, the analogy is a false one. The NAAQS mechanism was not well suited to acid deposition due to the fact that emissions of acid rain precursors are transported over long distances and generate acid rain in the upper atmosphere without there being significant concentrations at ground level. Unlike acid rain, GHGs, particularly carbon dioxide, mix throughout the atmosphere, such that a meaningful ground level standard can be established. Unlike other NAAQS, at the time the NAAQS are promulgated, all states will be in compliance with the NAAQS. Nevertheless the statutory scheme is equally directed towards maintenance of the NAAQS and it is

equally certain that without some control mechanisms global concentrations will shoot past the 550 ppmv level.

n113. 42 U.S.C.A. § 7410 (2006).

n114. 42 U.S.C.A. § 7521 (2006).

n115. 42 U.S.C.A. § 7411 (2006).

n116. 42 U.S.C.A. § 7410(a)(1) (2006).

n117. 42 U.S.C.A. § 7410(a)(2)(A) (2006).

n118. Intergovernmental Panel on Climate Change ("IPCC"), *Climate Change 2001: The Scientific Basis* 76 (J.T. Houghton, Y. Ding, D.J. Griggs, M. Noguer, P.J. van der Linden, X. Dai, K. Maskell, & C.A. Johnson eds., Cambridge University Press 2001) .

n119. 42 U.S.C.A. § 7410(k) (2006).

n120. Most state plans include some goals and deadlines. See *supra* Table 1. The NEG/ECP Climate Action Plan, *supra*, note 42, establishes a series of emissions reduction goals and deadlines varying by time and sector, with an ultimate long range goal of a 75% to 85% reduction by the year 2100. California, Oregon, New Mexico and the Puget Sound Plan have also established an ultimate emissions reduction goal of 75%, with California and New Mexico seeking to achieve that goal by 2050. This goal represents the likely level of reductions required in the United States to achieve stabilization at 550 ppmv carbon dioxide equivalents under the assumption that global per capita GHG emissions will be equal.

The EPA has argued that the fact that global action is required to stabilize GHG emissions suggests that the SIP process is unsuited to control of GHG emissions. The Agency has stated that the SIP process focuses on local levels of emissions rather than pollutants that mix on a global basis. The Agency suggested that the long-lived nature of the emissions and global nature of the problem would pose significant technical difficulties. Fed. Reg. 52922, 52926-7, notice of denial of petition for rulemaking (Sept. 8, 2003). However, many states have

already set goals using the best scientific evidence available, based on the assumption of equal per capita GHG emissions in the year 2100. EPA could employ the same assumptions. There is nothing the statutory language of the Clean Air Act limiting the applicability of SIP to local air concentrations.

n121. This process would differ considerably from that prescribed by current EPA regulations, which focus upon achievement of NAAQS in non-attainment areas and then maintenance and impose considerable limitations on the flexibility of states. See 40 C.F.R. pts. 51 (standards for SIP approvals) & 52 (SIP approvals and conditions). EPA will be required to establish regulations focusing upon stepwise reduction of emissions in order to maintain GHG levels below 550 ppmv carbon dioxide equivalents.

n122. 42 U.S.C.A. § 7521(a)(2) (2006). As noted, the Supreme Court in *Massachusetts v. EPA*, supra note 1, has determined that section 202 can be applied to address emissions of GHGs from mobile sources.

n123. 42 U.S.C.A. § 7411 (2006).

n124. The standard for EPA granting a waiver from preemption is that the standard is at least as protective of the federal standards and none of the following applies: "(A) the determination of the State is arbitrary and capricious, (B) such State does not need such State standards to meet compelling and extraordinary conditions, or (C) such State standards and accompanying enforcement procedures are not consistent with Section 7521(a) of this title." 42 U.S.C.A. § 7543(b)(1) (2006). It is not immediately clear how this language would apply where there are no federal emissions standards. For example, does California need its GHG emissions standards to meet compelling and extraordinary conditions because there are no federal standards or because of the fact that a disproportionate share of its GHG emissions arise from mobile sources? On the other hand, does the lack of federal standards mean that no such circumstances exist? With a federal standard and requirements for phased reductions in emissions, California could establish extraordinary circumstances by demonstrating a need for greater reductions in the transportation sector due to the fact that a disproportionately high percentage of its GHG emissions come from the transportation sector.

n125. See, e.g., 42 U.S.C.A. §§ 7407(d)(4), 7501-7515 (2006).

n126. See 42 U.S.C.A. § 7407 (2006) (making each State "have the primary responsibility for assuring air quality within the entire geographic areas comprising such State by submitting an implementation plan for such State which will specify the manner in which the national primary and secondary ambient air quality standards will be achieved and maintained within each air quality control region in such State.") Since carbon dioxide mixes throughout the atmosphere, the argument goes, this focus on regions is superfluous. However, the statute focuses on plans for maintenance within the entire state, including regions that extend into other states and, in the case of the 19 states bordering Canada and Mexico, other nations. Indeed, the 1990 Amendments required additional provisions to include special provisions for cases where non-attainment was caused by international sources, establishing a rule that a SIP could be approved if it be shown that a state would meet NAAQS but for the international contribution. 42 U.S.C.A. § 7509a (2006). Thus, by the very structure of the Act, consideration of international emissions is necessary. Moreover, mercury, which EPA is regulating, See Clean Air Mercury Rule ("CAMR") 70 Fed. Reg. 28606, 2005 WL 1157494 (F.R.) (May 18, 2005), also originates from international sources and has worldwide distribution.

n127. See United States Environmental Protection Agency Notice, Control of Emissions From New Highway Vehicles and Engines, 68 Fed. Reg. 52922, 52924, 2003 WL 22068000 (F.R.) (Sept. 8, 2003) (stating that the NAAQS system, created by sections 108-110 of the Clean Air Act, 42 U.S.C. 7408-7410 (2003), is "fundamentally ill-suited to addressing [greenhouse] gases in relation to global climate change.").

n128. Clean Air Act Amendments of 1977, Pub. L. 95-95, §§108, 129, 91 Stat. 693, 745 (establishing non-attainment NSR requirements).

n129. Clean Air Act Amendments of 1990, Pub. L. 101-549, §§101-110, 104 Stat. 2399-2471.

n130. See Senate Report No. 101-228 (Environment and Public Works Committee) (Dec. 20, 1989) at 3, 1990 U.S. Code Cong. & Admin. News 3385, 3389 ("Attainment of the health-based air quality standards has proven more difficult than anticipated in the 1977 Amendments. Although most areas of the country were to have attained the standards for ozone and carbon monoxide by 1983, in 1989, over half of the population of the United States is still exposed to levels of air pollution considered unhealthy by the Environmental Protection Agency and medical researchers.").

n131. 42 U.S.C. §§7470-79 (2006).

n132. *Sierra Club v. Ruckelshaus*, 344 F.Supp. 253 (D.D.C. 1972), *aff'd* 4 E.R.C. 1815, 2 *Env'tl. L. Rep.* 20,262 (D.C.Cir. 1972), *aff'd* by equally divided court *sub nom* *Fri v. Sierra Club*, 412 U.S. 541 (1973), cited in House Report (Interstate and Foreign Commerce Committee) No. 95-294 (May 12, 1977) at 104-105, 1977 U.S. Cong. & Admin. News 1077, 1183.

n133. See *id.* 1977 U.S. Cong. & Admin. News at 1181-1257. It is true that the Committee's concern, in 1977, related to the possibility of global cooling from the impacts of aerosols, *id.* at 1217. Nevertheless, the reference to "worldwide weather modification" indicates a clear Congressional intent that the PSD program could be an important tool in addressing air pollution impacts with global consequences.

n134. 42 U.S.C.A. § 7475 (2006).

n135. 42 U.S.C.A. § 7476 (2006).

n136. Regional Greenhouse Gas Initiative Model Rule (Aug. 15, 2005), available at [http://www.rggi.org/docs/model rule 8 15 06.pdf](http://www.rggi.org/docs/model%20rule%208%2015%2006.pdf) (last visited Sept. 11, 2006).

n137. See the California Global Warming Solutions Act of 2006, AB 32, 2006 Assem. Cal. Stat. Ch. 488 (Cal. 2006) to be codified at Cal. Health & Safety §§38500-38597.

n138. 42 U.S.C.A. § 7410(a)(2)(D) (2006).

n139. Clean Air Interstate Rule, (CAIR), 70 Fed. Reg. 25162, 2005 WL 1113746 (May 12, 2005).

n140. *Id.* at 110(a)(2)(D).

n141. The EU strategies are collected on the Climate Action Europe website, available at <http://www.climnet.org/EUenergy/implementation.htm> (last visited Feb. 22, 2007). For examples of these strategies, see, e.g., German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety, Germany's National Climate Protection Programme, Summary, available at <http://www.climnet.org/EUenergy/implementation/MSdocs/GermCCprogram.pdf> (last visited Oct. 17, 2006); U.K. Secretary of State for the Environment, Food and Rural Affairs, Climate Change: The UK Programme 2006, available at <http://www.defra.gov.uk/ENVIRONMENT/climatechange/uk/ukccp/pdf/ukccp06-all.pdf> (last visited Oct. 17, 2006).

n142. 42 U.S.C.A § 13385 (2006); see also, 59 Fed. Reg. 52769 (Oct. 19, 1994) (final original guidelines); 60 Fed. Reg. 35385 (July 7, 1995) (announcing availability of reporting forms) 70 Fed. Reg. 15163 (Mar. 24, 2005) (announcing availability of revised reporting guidelines).

n143. 546 U.S. 243 (2006).

n144. 545 U.S. 1 (2005).

n145. 21 U.S.C.A. §§801 et seq (2003).

n146. *Medtronic, Inc. v. Lohr*, 518 U.S. 470, 475 (1996) (quoting *Metropolitan Life Ins. Co. v. Massachusetts*, 471 U.S. 724, 756 (1985)).

n147. *Gonzales v. Raich*, 545 U.S. 1 (2005).

n148. The CSA includes a provision authorizing petitions for reclassification of marijuana as a Class II substance. While the Court indicated that this fact ought not affect its consideration of the extent of federal power, it did suggest that the evidence presented would support reclassification:

We acknowledge that evidence proffered by respondents in this case regarding the effective medical uses for marijuana, if found credible after trial, would cast serious doubt on the accuracy of the findings that require marijuana to be listed in Schedule I. See, e.g., Institute of Medicine, *Marijuana and Medicine: Assessing the Science Base* 179 (J. Joy, S. Watson, & J. Benson eds. 1999) (recognizing that "scientific data indicate the potential therapeutic value of cannabinoid drugs, primarily THC [Tetrahydrocannabinol] for pain relief, control of nausea and vomiting, and appetite stimulation"); see also *Conant v. Walters*, 309 F.3d 629, 640-643 (C.A.9 2002) (Kozinski, J., concurring) (chronicling medical studies recognizing valid medical uses for marijuana and its derivatives). But the possibility that the drug may be reclassified in the future has no relevance to the question whether Congress now has the power to regulate its production and distribution. Respondents' submission, if accepted, would place all homegrown medical substances beyond the reach of Congress' regulatory jurisdiction.

Gonzales, 545 U.S. 1 at 27-29. In the test suggested here, review of a petition by a state for reclassification to allow prescription should give a high degree of deference to states' ability to authorize use of medical marijuana and would apply a reduced level of deference to a federal decision denying such a petition and preventing state experimentation.

n149. In *Massachusetts v. EPA*, supra note 1, the Court did not hold that EPA was required to regulate emissions but remanded the matter for EPA to make a determination "whether in his judgment, cause or contribute to air pollution which may be reasonably anticipated to endanger public health or welfare" or whether other reasons founded in the Clean Air Act would authorize deferral. However, given the state of climate science, it does not appear that EPA could reasonably defer regulation under the precautionary standard established under section 202(a)(1). Moreover, a decision that GHG emissions should not be regulated would appear to be contrary to the clear findings and requirements of the UNFCCC, which, as treaty law, is binding on EPA. The UNFCCC includes the following findings:

Concerned that human activities have been substantially increasing the atmospheric concentrations of greenhouse gases, that these increases enhance the natural greenhouse effect, and that this will result on average in an additional warming of the Earth's surface and atmosphere and may adversely affect natural ecosystems and humankind,

Recalling also the provisions of General Assembly resolution 44/206 of 22 December 1989 on the possible adverse effects of sea-level rise on islands and coastal areas, particularly low-lying coastal areas and the pertinent provisions of General Assembly resolution 44/172 of

19 December 1989 on the implementation of the Plan of Action to Combat Desertification, ...

More significantly, it includes the following requirements, applicable to the United States:

Art. 3, § 3. The Parties should take precautionary measures to anticipate, prevent or minimize the causes of climate change and mitigate its adverse effects. Where there are threats of serious or irreversible damage, lack of full scientific certainty should not be used as a reason for postponing such measures, taking into account that policies and measures to deal with climate change should be cost-effective so as to ensure global benefits at the lowest possible cost. To achieve this, such policies and measures should take into account different socio-economic contexts, be comprehensive, cover all relevant sources, sinks and reservoirs of greenhouse gases and adaptation, and comprise all economic sectors. Efforts to address climate change may be carried out cooperatively by interested Parties.

Art. 4, § 1(c) All Parties ...shall ... formulate, implement, publish and regularly update national and, where appropriate, regional programmes containing measures to mitigate climate change by addressing anthropogenic emissions by sources and removals by sinks of all greenhouse gases ...

Art. 4, § 2(a) Each of these Parties shall adopt national policies and take corresponding measures on the mitigation of climate change, by limiting its anthropogenic emissions of greenhouse gases and protecting and enhancing its greenhouse gas sinks and reservoirs. These policies and measures will demonstrate that developed countries are taking the lead in modifying longer-term trends in anthropogenic emissions consistent with the objective of the Convention, recognizing that the return by the end of the present decade to earlier levels of anthropogenic emissions of carbon dioxide and other greenhouse gases not controlled by the Montreal Protocol would contribute to such modification, ... (emphasis added)

To positively find that GHG emissions should not be limited would appear contrary to these international obligations. See *Murray v. Schooner Charming Betsy*, 6 U.S. 64, 118 (1804) ("an act of Congress ought never to be construed to violate the law of nations if any other possible construction remains ...").