Chapter 3: U.S. Legal Developments: Legislative, Executive, and Judicial Action

The United States has produced new federal climate change regulation over the past several years. However, its path to regulation, unlike that of many other countries, has been shaped significantly by litigation. Rather than greenhouse gas emissions regulation taking place under a new statute focused on climate change, the U.S. federal government is developing regulation under the Clean Air Act, a law broadly focused on air pollution that was initially passed in 1963, amended significantly into its modern formulation in 1970.

The U.S. approach to federal climate change regulation emerged out of a 2007 Supreme Court decision. The Court's holding in *Massachusetts v. EPA* (*Massachusetts*) that the Environmental Protection Agency abused its discretion in how it decided not to regulate greenhouse gas emissions under the Clean Air Act, paired with other court decisions, has resulted in significant new climate change regulation. In the period since the *Massachusetts* decision, Congress has neither eliminated this Clean Air Act regulatory authority nor supplemented the very limited legislation directly addressing climate change, other than through investing in clean energy through the American Recovery and Reinvestment Act of 2009 (ARRA).

This combination has resulted in a U.S. regulatory regime largely constructed under the Clean Air Act and through litigation, a state of affairs that has led to disagreement and uncertainty. Those who desire climate change regulation generally would prefer comprehensive climate change legislation and accept greenhouse gas emissions regulation under the Clean Air Act as a second best path forward. Those who oppose climate change regulation think that the new regulations under the Clean Air Act are problematic.

The Supreme Court's 2011 decision in *American Electric Power v. Connecticut* (*AEP*) reinforced the current U.S. regulatory approach under the Clean Air Act. While largely foreclosing a parallel path of federal common law nuisance suits over climate change, the Court indicated that regulatory suits under the Clean Air Act were an appropriate way of influencing the current federal approach to climate change. It also left open the door to federal common law nuisance suits in a scenario in which Congress eliminates the EPA's regulatory authority over greenhouse gas emissions under the Clean Air Act.

This chapter reviews the evolution of U.S. federal regulatory policy on climate change. It begins by detailing the existing legislation directly addressing climate change in the United States, and the political battles over more comprehensive climate change legislation. It then turns to the ways in which the Clean Air Act, through a mix of judicial and executive action, has come to serve as the primary statute regulating greenhouse gas emissions in the United States. It concludes by surveying some of the other key federal developments with a particular focus on the Recovery Act funding of and President Obama's ongoing focus on "clean energy," the complexities of climate change adaptation, and the ever-shifting results of climate change litigation under other environmental statutes and tort law.

A. Existing and Prospective Climate Change Legislation

Although the U.S. Congress looks unlikely to pass any sort of comprehensive climate change legislation in the short term, the United States does have some statutory law directly related to climate change. This Section explores that law, as well as the failed efforts to produce a more comprehensive legislative approach to this problem. In so doing, the Section grounds the rest of the chapter, as it clarifies why those wanting to address climate change more comprehensively at a national level have turned to more general environmental and energy law.

1. Limited Direct Statutory Regime

The United States lacks comprehensive climate change legislation, but has statutes focused on research, monitoring, and reporting. None of these statutes directly focused on climate change require specific greenhouse gas emissions reductions or adaptation measures. But they have resulted in the United States assessing the state of its emissions, which is a crucial first step in making effective reductions.

The following excerpt, which predates the failure of comprehensive climate change legislation, provides an overview of how the United States helps to cause and is affected by climate change, and the current statutes directly addressing the problem. It supplements Chapter One's broader discussion of science, law, and policy by examining the U.S. interaction with the problem.

Margaret Rosso Grossman, *Climate Change and the Law,* 58 AM. J. COMP. L. 223, 223, 226–28, 231, 241–43 (2010).

Human activities, in the United States and elsewhere, contribute to the emission of greenhouse gases, which persist in the global atmosphere and lead to climate change, including global warming and other climate variability. The United States has begun to cooperate more fully with international measures to mitigate climate change, but has not yet enacted comprehensive climate legislation. Nonetheless, federal statutes and regulations in the areas of environmental, energy, and climate law help to reduce greenhouse gas emissions and to mitigate climate change. States have also adopted measures to mitigate climate change, and several regional programs exist. Although fewer regulatory efforts in the United States have focused on adaptation to climate change, both the federal government and the states will require programs to adapt to the effects of unavoidable climate change.

….

B. Climate Change in the United States

Global warming is significant for the United States. In the last fifty years, U.S. average air temperature increased more than 2°F, and precipitation increased 5%, with more rain falling in heavier downpours. Other changes include more frequent and intense extreme weather events (heat waves, droughts), more destructive hurricanes, higher water temperatures, rising sea levels, and stronger winter storms. Impacts of climate change are likely to become more severe, affecting water resources, altering ecosystems, and challenging crop and livestock production. Higher sea levels and storm surges will threaten coastal areas. Climate change may exacerbate other social and environmental stresses and threaten human health. Moreover, "[f]uture climate change and its impacts depend on choices made today," both to reduce emissions and to adapt to unavoidable changes.

In the United States, as in other nations, carbon dioxide is the GHG emitted in the largest quantities. Other GHGs, however, have more global warming potential (GWP). For example, methane has a GWP of 25 (25 times more potent, for equal weights, than CO_2); nitrous oxide, 298. High GWP gases are sulfur hexafluoride (SF_6, GWP of 22,800), hydrofluorocarbons (HFCs, 12-14,800), and perfluorocarbons (PFCs, 7390-12,200). Emissions data are often expressed as CO_2 equivalents, a unit of measurement that expresses the GWP of other gases in terms of the warming potential of CO_2.

Total anthropogenic GHG emissions for 2008 in the United States were 6,956.8 teragrams of CO_2 equivalent (Tg CO_2e), 14% more than in 1990. Net emissions in 2008, however, were 6,016.4 Tg CO_2e, after reduction of 940.3 Tg CO_2e for carbon "sinks" (carbon sequestration from land use, land-use change, and forestry activities). Total U.S. emissions of GHGs in 2008 were 2.9% lower than in 2007, a decrease attributed to higher fuel costs that resulted in less demand for transportation fuels and for electricity; a drop in CO_2 emissions offset small increases in emissions of other GHGs.

Between 2007 and 2008, GHG intensity (metric tons CO_2e per million dollars of gross domestic product) fell by 2.6%, while between 2006 and 2007, emissions intensity had fallen by only 0.6%, a relatively slow rate of improvement.

The majority of 2008 GHG emissions in the United States were CO_2 (85.1%), most of which is energy-related. Other significant emissions were methane (8.2%), nitrous oxide (4.6%), and high-GWP gases (2.2%). Most CO_2 emissions resulted from fossil fuel combustion, primarily in five major sectors: electricity generation, transportation, industry, residential, and commercial. Methane emissions were from enteric fermentation from livestock, manure management, decomposition of landfill wastes, and natural gas systems. Agricultural soil management and fuel combustion from mobile sources emitted N_2O; high GWP emissions (HGCs, PFCs and SF_6) resulted from various industrial processes.

….

III. U.S. Law and Climate Change

As of April 2010, the United States had not enacted a comprehensive climate law. Indeed, until recently, the federal government's attitude toward climate change ranged from "simple inaction to outright obstructionism," with little meaningful federal regulation and documented efforts to play down the extent and serious effects of climate change. Even so, however, environmental and energy laws and regulations help to reduce emissions and mitigate climate change. These measures, which affect climate change directly and indirectly, govern areas like fuel conservation, energy efficiency, and reporting of GHG and other emissions. The legal

environment continues to change, as the Environmental Protection Agency (EPA) and other agencies promulgate regulations and Congress debates climate change proposals.

….

C. Climate Law

Since the late 1970s, U.S. laws have focused to some extent on climate specifically. The first U.S. climate laws recognized the threat of global warming and authorized research to help the government understand the problem and draft effective solutions. Later measures developed goals and policies in response to climate change, including monitoring and reporting of GHGs and carbon capture and sequestration. Proposals pending in Congress are comprehensive and include an emissions cap-and-trade program.

1. Research

The 1978 National Climate Program Act established a National Climate Program and a National Climate Program Office with requirements for research and planning. Similarly, the 1987 Global Climate Protection Act called for a policy response based on scientific information generated by the 1978 law. It required a national policy on global climate change, with goals of understanding the greenhouse effect, fostering international cooperation, and mitigating GHG emissions. The 1990 Global Change Research Act established the interagency U.S. Global Change Research Program, which demanded comprehensive research to assist the United States and the world to "understand, assess, predict, and respond to human-induced and natural processes of global change."

2. Monitoring and Reporting

Research led to more direct focus on causes of climate change. Thus, the Energy Policy Act of 1992, which implemented U.S. obligations under the Framework Convention, required an annual inventory of aggregate GHG emissions. Voluntary reporting helped the United States to track GHG emissions, but the law did not require reduction of emissions.

More recently, Congress, moving from research toward response, asked for mandatory reporting of GHG emissions. The Consolidated Appropriations Act, 2008 called for a "comprehensive and effective national program of mandatory, market-based limits and incentives . . . that slow, stop, and reverse the growth of [GHG] emissions . . ." and identified funds for EPA development of a rule to require mandatory reporting of GHG emissions. The Omnibus Appropriations Act, 2009 required EPA to promulgate a GHG reporting rule, and the resulting regulation requires reporting by facilities that produce about 85% of all U.S. GHG emissions. Although EPA's rule does not require mitigation of GHG emissions, it lays the foundation for future limitations and reductions.

In late 2009, Congress debated legislation to impose the "mandatory, market-based limits and incentives" mentioned above. Proposed legislation would include a GHG registry, a cap-and-trade program, scheduled reduction of emissions, and other measures. Debates have continued, but by April 2010, Congress had enacted no comprehensive climate change legislation.

3. Sequestration

Both the Energy Policy Act [EPA Act] and EISA [2007 Energy Independence and Security Act] encourage carbon capture, sequestration, and storage. Under the 2005 law, the Secretary of Energy must implement a "10-year carbon capture research and development program to develop carbon dioxide capture technologies on combustion-based systems." EISA authorizes research and testing of carbon capture, storage, and sequestration. Proposed legislation would encourage sequestration and authorize regulations for minimizing risks of storage and a program to ensure compensation for damages and limit long-term liability for sequestration facilities.

NOTES AND QUESTIONS

1. What do the existing laws focused on climate change accomplish? How do research, monitoring, and reporting provide the basis for further efforts on climate change? What are their limitations?

2. Does it matter if the United States never passes comprehensive climate change legislation? Could it adequately address the problem through environmental and energy law, paired with these limited measures?

3. Perhaps in part as a result of the relatively limited direct legislation on climate change, many of the governmental programs in the United States relevant to climate change, such as ones encouraging energy conservation and efficiency practices, involve voluntary measures by corporations. An extensive debate has taken place over how much value voluntary environmental programs have. A recent empirical study by Professors Robert Innes and Abdoul Sam concludes that such programs can be a helpful component of an overall regulatory scheme.

> Overall, this work lends support to the view that [Voluntary Pollution Reduction] VPR programs, carefully combined with regulatory and enforcement rewards for program participation, can be useful and effective tools to reduce pollution and save government costs of overseeing firms' environmental performance. Voluntary programs may also offer firms the opportunity to convey their environmental commitment to potential political adversaries and thereby deter costly boycotts and political conflicts. As a result, even when consumer free riding prevents firms from obtaining any "green premia" in the marketplace--a failure that would otherwise doom VPR efforts--voluntary environmental programs can succeed.
>
> Robert Innes & Abdoul G. Sam, *Voluntary Pollution Reductions and the Enforcement of Environmental Law: An Empirical Study of the 33/50 Program*, 51 J.L. & ECON. 271 (2008).

What role do you think voluntary pollution reduction programs should play in climate change regulation, particularly given the relatively weak direct legislative regime?

2. Failed Efforts at Comprehensive Climate Change Legislation

The 2010 defeat of proposed cap-and-trade legislation in Congress was not the first one. The U.S. Congress has considered and failed to pass comprehensive climate change legislation numerous times in the past decade. Most bills never even made it out of congressional

committees. This pattern of repeated failure, paired with current political realities, makes comprehensive climate change legislation a dim prospect in the United States.

The following excerpt details the most recent failures and the ways in which the 2010 mid-term elections made comprehensive climate change legislation even more unlikely.

Brian Moskal & Michael McDonough, *The Impact of the 2010 Midterm Elections on Climate Change Legislation*, CLIMATE CHANGE LAW & POLICY REPORTER (Dec. 2010).

Enacting climate change legislation was one of the pillars of President Obama's presidential campaign in 2007 and 2008, and as early as November 2008, the President-elect called for Congress to craft and pass a comprehensive climate bill in its upcoming 2009 term. Following the President's call for a bill, Congress spent a significant amount of time and effort addressing various bills related to GHG emissions. The American Clean Energy and Security Act of 2009 (ACES), often informally called the Waxman-Markey bill, was passed by the House in 2009. ACES would have established a nationwide cap-and-trade system within the existing CAA for GHG emissions, requiring a reduction in GHG emissions to 83% of 2005 levels by 2020, and to 17% of those levels by 2050. ACES also would have prevented GHGs from being categorized as criteria pollutants or hazardous air pollutants under the CAA, and would have exempted major GHG-emitting facilities from the New Source Review and Title V provisions of the CAA.

Shortly after ACES' passage, the Senate considered various pieces of companion climate legislation. In September 2009, Sens. John Kerry (D - Mass.) and Barbara Boxer (D - Calif.) introduced a climate bill entitled the Clean Energy Jobs and American Power Act. This bill would have required GHG reductions to 80% of 2005 levels by 2020 by instituting caps on GHG emissions and a nationwide allowance system similar to the cap-and-trade provisions of ACES. The bill would have prohibited EPA from creating national ambient air quality standards for GHG emissions or regulating them as hazardous air pollutants, but would have allowed New Source Review and Title V permitting for sources emitting at least 25,000 metric tons per year CO2 equivalent. The bill passed the Senate Committee on Environment and Public Works, chaired by Sen. Boxer, in November 2009. But due to the shifting political landscape and worsening economy in the summer of 2010, the bill lost momentum in the Senate, with many observers believing it had little chance of garnering enough bipartisan support to survive a filibuster.

In May 2010, Sens. Kerry and Joe Lieberman (I - Conn.) released a modified climate bill simply entitled the American Power Act. Sen. Lindsey Graham (R - S.C.), once another co-sponsor of the bill, withdrew from the sponsor team the month before. The American Power Act would not have included a comprehensive cap-and-trade system like ACES and the predecessor Clean Energy Jobs and American Power Act. Rather, it would have employed a cap-and-trade system for some industries, delayed implementation of that system for others, and possibly imposed a carbon tax on still others, while also focusing more heavily on creating jobs in the energy sector and providing incentives for nuclear power, offshore exploration and production, clean coal, and carbon sequestration. This bill would have excluded GHGs from triggering New Source Review for any facility that is initially permitted or modified after January 1, 2009, and would have prohibited EPA from setting performance standards for certain GHG sources covered by the cap.

The bill also would have prevented EPA from regulating GHGs as hazardous air pollutants, setting national ambient air quality standards for GHGs, or using GHGs as a trigger for Title V simply based on climate effects alone. Provisions designed to attract bipartisan backing included support for nuclear energy development and expansion of offshore drilling.

In the summer of 2010, with the passage of climate change legislation becoming more unlikely in the Senate and the political winds continuing to favor Republicans, attention turned to direct efforts to rein in EPA's regulation of GHGs. In June 2010, the Senate considered but ultimately defeated a resolution introduced by Sen. Lisa Murkowski (R - Alaska) that would have eliminated EPA's authority to regula[te] GHG emissions. Senate attention then turned to measures to delay implementation of GHG regulations, led by a call for a two-year moratorium on stationary source regulation by Sen. Rockefeller (D. - W. Va.) and other Democrats from states with significant coal production. Supporters cited the deteriorating economic climate and pointed out that further job losses would result from adoption of aggressive GHG regulations.

Impact of the Election on Congressional Climate Policy and Legislation

In November 2010, Republican[s] won major gains in Congress, retaking control of the House and narrowing the Democratic majority in the Senate. In regaining the majority in the House, Republicans are now in a position to staff key House committees with power over environmental and climate issues, including Energy and Commerce (with Joe Barton (R - Tex.), Fred Upton (R - Mich.) and John Shimkus (R. - Ill.) thought to be front-runners for the chairmanship), Natural Resources (with Doc Hastings (R - Wash.) likely to get the nod as chair), Science and Technology (likely to be chaired by Ralph Hall (R - Tex.)), and the Select Committee on Energy Independence and Global Warming (likely to be chaired by James Sensenbrenner (R - Wis.) if the Select Committee is not scrapped entirely).

With the change in personnel in Congress, expectations for potential climate legislation have shifted significantly. In late September, the President appeared to walk back expectations for a sweeping climate bill in the foreseeable future, noting in an interview with *Rolling Stone* that "one of my top priorities next year is to have an energy policy that begins to address all facets of our overreliance on fossil fuels.... We may end up having to do it in chunks, as opposed to some sort of comprehensive omnibus legislation." On Election Day, President Obama stated that "cap-and-trade was just one way of skinning the cat. It was not the only way. It was a means, not an end. And I'm going to be looking for other means to address this problem." President Obama has cited legislation investing in energy sources such as natural gas and nuclear power as one area where he believes Congress can reach bipartisan agreements to reduce GHG emissions.

Rep. Barton recently signaled that House Republicans are also open to energy legislation, but not direct climate change legislation, stating: "We support the Clean Air Act and the Clean Water Act. We support aggressive enforcement of those two laws, but you don't want to use the environmental laws as a surrogate to prevent rational, valid development of our natural resource base.... We're not going to do cap and trade." Sen. Graham, a Republican who may be influential in future discussion in the Senate given his past bipartisan negotiations, similarly stated just before the election that if Republicans "get back in power in the House and get close in the Senate" — which is precisely what occurred — they should "come up with an energy policy without cap and trade that will create energy jobs in America, break our dependency on foreign

oil, and clean up the air." He said key issues that should be addressed in energy legislation include increased domestic exploration for onshore and offshore oil and gas; promotion of electric, hydrogen, and hybrid vehicles; and support for nuclear power.

One of the key questions throughout debates over what form, if any, comprehensive climate change legislation should take has been whether cap-and-trade or carbon taxation is a preferable way to price carbon. A cap-and-trade approach establishes a market for carbon with a limit on the total amount of carbon. Those with carbon dioxide emissions allocations, whether purchased or given to them, trade; those who do not need all their allocations sell them to those who need more, a process which creates a price for those allocations. In contrast, a taxation approach directly sets the price for carbon by making people and companies pay an additional amount for each unit of carbon dioxide they emit. Many economists prefer a carbon tax approach, but cap-and-trade had been seen prior to the 2010 failure of comprehensive climate change legislation to be more politically viable given the aversion to new taxation in the U.S. political system.

The following excerpt from Professor Victor Flatt, written towards the end of the Bush administration when climate change legislation looked likely, compares the then-pending round of legislative proposals, all of which died by mid-2010. It builds upon Chapter One's broader introduction to cap-and-trade and tax-based approaches by looking at their benefits and limitations in a U.S. context.

Victor B. Flatt*, Taking the Legislative Temperature: Which Federal Climate Change Legislative Proposal is "Best"?*, 102 NW. U. L. REV. COLLOQUY 123, 135–39 (2007).

Interestingly all of the climate change legislative proposals would be considered market-based control regimes, with Bingaman-Specter, Udall-Petri, Lieberman-McCain, Kerry-Snowe, Waxman, Feinstein-Carper, and Alexander-Lieberman, all envisioning a cap-and-trade scheme for CO_2, and Stark and Larson proposing an economy wide tax.

A tax system can control pollution by setting a tax on emissions (such as for CO_2) at a high enough level to discourage such emissions. For instance, one could presumably set a tax on CO_2 emissions (or energy production associated with CO_2 emissions) that would discourage emissions enough to reach a CO_2 reduction target. Cap-and-trade systems adopt the target first and then allocate the overall amount allowed by the target to parties in the market to use, sell, or buy (trade) as they please. Cap-and-trade can be an efficient pollution reduction mechanism because the trading allows the private sector to control emissions at the lowest possible cost (to the private sector) and also encourages innovation.

Currently, none of our environmental laws attempt to control pollution through a tax and we have only one cap and trade system, the one for sulfur dioxide ("SO_2") to control acid rain that was passed in 1990. That all of the climate change legislative proposals embrace a tax or cap-and-trade system shows just how much these systems have gained in respectability in the last seventeen years. But there are disadvantages to such a system that indicate the issue must be examined more closely.

There are several good critiques of market-based systems to control pollution and comparisons of market based regimes, command and control regimes, and other regimes. The

primary critiques of market-based systems are that they may create hot-spots of pollution which hurt specific groups, usually the poor or politically powerless; that they are not fair because they do not necessarily penalize a polluter with the money to purchase pollution rights; that they send the wrong moral signals; and that they are difficult to enforce.

Of these criticisms, three do not appear to be of much concern when addressing the regulation of CO_2 specifically. Because CO_2's harm is worldwide and dispersed, there are no "hotspots" for concern. Moreover, concerns over moral signals seem lessened with CO_2 as compared to almost any other pollutant because CO_2 historically has not been seen as a "bad" thing, so producers are not said to have historically engaged in a bad behavior. Fairness is not as large a concern since all high-energy sector use usually has direct benefit to the general public.

The enforcement issue, however, could be more important than the others for the regulation of CO_2. One of the unique features of the cap-and-trade market in SO_2, is that only large coal-fired power plants are involved in the market. These are relatively limited in number, and already regulated. Therefore, the enforcement and administration costs as well as the possibility of costs from regulatory failure are relatively low for the benefit that can be derived from the system. CO_2 regulation would be a different animal altogether. First, CO_2 and other greenhouse gases are not limited to coal-fired power plants, though they are a major source. Mobile sources play a large role, and if a system were to include offsets (see discussion, *infra*), the entities that must be monitored and regulated mushroom exponentially.

None of the legislative cap-and-trade proposals would subject every CO_2 source to the market mechanism, but in such cases, significant sources that are left out of the system must still be regulated. For instance Corporate Average Fuel Efficiency (or CAFE) standards for automobiles, which require an automotive seller's fleet to have a certain fuel efficiency (which in turn reduces CO_2 emissions) is an effective way of controlling CO_2 from automobiles. These have been debated in the related energy bill and should be part of the climate change solution. Consideration of CAFE standards (or other method to control CO_2 from cars, such as a tax) needs to occur at the same time as a consideration of any cap and trade proposal to see how much the relative reductions would cost and how the cost would be allocated.

Even if CO_2 met all of the criteria necessary for the efficient use of cap and trade, some kinds of command and control, particularly those that mandate the adoption of some market standard in certain sectors, can overcome commons problems and "split actor" problems and bring reductions at lower cost because of the ease of enforcement. For instance, the EU consideration on the ban of incandescent light bulb sales seems a very cost-effective way to increase energy efficiency and thereby reduce the production of CO_2. Thus, efficient reduction of climate-changing emissions might be accompanied by command and control systems, at least in some arenas, such as automobile design.

In addition, a major nationwide survey demonstrated that a majority of the American public would actually prefer a command and control system rather than a market system to control climate change. The fact that this has not had a major impact on the legislative proposals to date suggests either that the parties proposing the laws have a better sense of what regulation will be effective, or those who propose the laws realize that market systems may not be as fair and effective but may benefit a particular favored industry or constituency--or some combination of the two.

The difficulty with cap-and-trade enforcement may be why two of the proposals (Feinstein-Carper and Alexander-Lieberman) only apply to the electricity sector. It has already been demonstrated that this sector can be efficiently regulated in a cap-and-trade system. However,

limiting the law to this one sector means that overall emissions reductions cannot be as large. Moreover, it raises fairness concerns. While most Americans use electricity and would presumably share the cost of increases, the public at large will not see equitable distribution of costs to the extent that power plants have their rates set by inconsistent state regulation.

Feinstein-Carper and Alexander-Lieberman could be seen as compromise proposals that anticipate further legislation in other sectors, but propose the electricity generation sector first because of the ease of regulation. Nevertheless, the very concept of proceeding in sectors raises concern. First, there is no guarantee that future legislation will occur after one sector passes. Moreover, as discussed above, experience with cap-and-trade in the electricity generating sector may not be applicable to all industries, requiring individual sector systems in any future legislation. Sector-by-sector regulation might reduce cheating because trading within sectors will likely be easier to monitor, but the lack of inter-sector trading or offsets would defeat many of the benefits of a market system in the first place. Economy-wide proposals may be considered the most efficient and the most fair, but this consideration must be balanced against the enforceability of economy-wide limits.

The enforcement problems inherent to a cap-and-trade system should spur a closer look at the legislative proposals that embrace taxation of CO_2 content. Such taxes are easier to enforce than cap and trade because they are picked up at product and service origination and added to final prices. Economists generally favor a tax because it internalizes any efficiencies of a trading system (if the price of producing carbon is not recouped in one sector, it will cease production) without having to monitor a complicated trading system.

The main objection to a tax system seems to be the belief that the American public abhors any "tax" and will punish any legislator who proposes or votes for one, even if the tax is incorporated into final prices. Representative Dingell has recently challenged this assumption, and I leave it to political scientists to further analyze this question and educate the public. There is also some concern that the appropriate level of "tax" will not be selected to reach the intended reduction target, a problem that one need not worry about in cap-and-trade. This is considered an economic science problem, but a general aversion to taxes may mean that this "target" gets set by other considerations than the most efficient production of CO_2.

Nevertheless, because of ease of administration, a tax system is probably superior with respect to enforcement and fairness and could be tweaked to provide relief for the poor or others whom we feel deserve relief from regulatory impacts.

NOTES AND QUESTIONS

1. Why did comprehensive climate change legislation fail? Are there forms it could take in the foreseeable future that would avoid these difficulties?

2. Do you agree with Professor Flatt that a tax approach would likely be superior but is not as politically viable? If so, why are taxes less popular? Do you think that there are strategies that might address those concerns?

3. Professor Richard Epstein argues that cap-and-trade and tax are actually not that different, but rather have the same benefits and limitations:

> In principle, it should always be possible to design a first-best tax that operates exactly like a first-best regulation. Put otherwise, the perfect tax and the perfect regulation system will have the same level of overall pollution, and the same production and outcomes by all firms within the system. All superficial differences will disappear.
>
> ….
>
> The problems, however, are a mirror image of one another. If we cannot set the tax in a carbon tax system, then for the same reasons we cannot set the cap in a cap and trade system. The same problems remain: too much leakage to small emitters, including farm animals, no real knowledge of the magnitude of the harm that one is trying to avert, and no confidence that we can decide who gets the trading rights for free and who has to purchase them at some auction.
>
> Richard A. Epstein, *Carbon Dioxide: Our Newest Pollutant*, 43 Suffolk U. L. Rev. 797, 823–24 (2010).

Do you agree with Professor Epstein? Do you think that there are comparative advantages and disadvantages of cap-and-trade versus carbon tax approaches to comprehensive climate change regulation? Why have efforts focused so heavily on cap-and-trade approaches?

4. Professors Holly Doremus and Michael Hanemann have argued that a cap-and-trade regime would be insufficient to control climate change on its own and that the federal government should also adopt a climate law modeled on the Clean Air Act's cooperative federalism approach. *See* Holly Doremus & W. Michael Hanemann, *Of Babies and Bathwater: Why the Clean Air Act's Cooperative Federalism Framework is Useful for Addressing Global Warming*, 50 ARIZ. L. REV. 799 (2008). Professor Alice Kaswan similarly proposes a cooperative federalism approach to climate change legislation that includes federal minimum standards which states can exceed and delegation of program implementation. Alice Kaswan, *A Cooperative Federalism Proposal for Climate Legislation: The Value of State Autonomy in the Federalism System*, 85 DENV. U. L. REV. 791 (2008). If you were designing climate change legislation, what would its key elements be? Would you create some sort of a cap-and-trade approach, a carbon tax approach, or some other alternative? What mechanisms would you put in to make it maximally effective?

B. Supreme Court and Executive Action under the Clean Air Act

The Clean Air Act is the primary federal environmental statute under which U.S. greenhouse gas regulation is occurring. A limited 1963 version of the Clean Air Act was passed in response to growing concern about the public health impacts of severe air pollution, especially smog. Through major amendments and the creation of the Environmental Protection Agency (EPA) in 1970, the Clean Air Act became a more comprehensive federal response to air pollution. Since then, the EPA has played an important role in implementing the statute through creating regulations and programs. Amendments to the Clean Air Act in 1990 further expanded the EPA's authority to promulgate and enforce regulations to reduce air pollutant emissions.

As U.S. legislative efforts on climate change repeatedly floundered, the EPA grappled under multiple presidential administrations with whether greenhouse gas emissions should be viewed

as air pollutants under the Clean Air Act. Although these emissions are quite different from the smog that motivated the creation of the Clean Air Act, the statute defines the term air pollution broadly. After years of unsuccessful efforts within and outside the EPA to have the agency regulate greenhouse gas emissions as air pollutants, a diverse group of governmental and nongovernmental entities petitioned the EPA to do so. This petition ultimately resulted in the 2007 U.S. Supreme Court decision in *Massachusetts v. EPA*, which has provided the basis for greenhouse gas regulation to move forward.

This Section discusses that landmark case, the motor vehicle and stationary sources regulation that have followed, challenges to these regulatory efforts, and the impact of the Supreme Court's 2011 opinion in *AEP*. It explores how a combination of judicial and executive decision making, grounded in environmental law, has moved greenhouse gas regulation forward in the absence of comprehensive climate change legislation.

1. *Massachusetts v. EPA*

The U.S. Supreme Court decision in *Massachusetts v. EPA*, 549 U.S. 497 (2007), underlies the federal efforts to regulate greenhouse gas emissions. It also represents the deep divisions within the United States over climate change regulation. The twenty-six petitioners before the Supreme Court included twelve states, a U.S. territory, three cities, and thirteen nongovernmental organizations. The respondents included not only the EPA, but also ten other states and nineteen industry and utility groups.

This case, the first in which the Supreme Court engaged the problem of climate change, involved important threshold and substantive issues. Before the Supreme Court could reach the substantive issues, it had to decide the threshold question of whether petitioners had standing to bring the case. This determination required the Supreme Court to analyze the nature of the problem of climate change in order to decide if petitioners could satisfactorily demonstrate the required elements of standing: injury, causation, and remedy. As a substantive matter, the Supreme Court had to determine whether the Clean Air Act's broad definition of air pollutant applied to greenhouse gas emissions even though their relevant atmospheric interactions are quite different than many of the substances previously regulated under the statute.

The following excerpts from the majority opinion and dissents reveal the controversies in the case with respect to both standing and the merits of interpreting the statute.

Massachusetts v. EPA, 549 U.S. 497, 127 S.Ct. 1438 (2007).

Justice Stevens delivered the opinion of the Court.

A well-documented rise in global temperatures has coincided with a significant increase in the concentration of carbon dioxide in the atmosphere. Respected scientists believe the two trends are related. For when carbon dioxide is released into the atmosphere, it acts like the ceiling of a greenhouse, trapping solar energy and retarding the escape of reflected heat. It is therefore a species-the most important species-of a "greenhouse gas."

Calling global warming "the most pressing environmental challenge of our time," a group of States, local governments, and private organizations alleged in a petition for certiorari that the

Environmental Protection Agency (EPA) has abdicated its responsibility under the Clean Air Act to regulate the emissions of four greenhouse gases, including carbon dioxide. Specifically, petitioners asked us to answer two questions concerning the meaning of § 202(a)(1) of the Act: whether EPA has the statutory authority to regulate greenhouse gas emissions from new motor vehicles; and if so, whether its stated reasons for refusing to do so are consistent with the statute.

In response, EPA, supported by 10 intervening States and six trade associations, correctly argued that we may not address those two questions unless at least one petitioner has standing to invoke our jurisdiction under Article III of the Constitution. Notwithstanding the serious character of that jurisdictional argument and the absence of any conflicting decisions construing § 202(a)(1), the unusual importance of the underlying issue persuaded us to grant the writ. 548 U.S. 903, 126 S.Ct. 2960, 165 L.Ed.2d 949 (2006).

I

Section 202(a)(1) of the Clean Air Act, as added by Pub.L. 89-272, § 101(8), 79 Stat. 992, and as amended by, *inter alia*, 84 Stat. 1690 and 91 Stat. 791, 42 U.S.C. § 7521(a)(1), provides:

"The [EPA] Administrator shall by regulation prescribe (and from time to time revise) in accordance with the provisions of this section, standards applicable to the emission of any air pollutant from any class or classes of new motor vehicles or new motor vehicle engines, which in his judgment cause, or contribute to, air pollution which may reasonably be anticipated to endanger public health or welfare ...."

The Act defines "air pollutant" to include "any air pollution agent or combination of such agents, including any physical, chemical, biological, radioactive ... substance or matter which is emitted into or otherwise enters the ambient air." § 7602(g). "Welfare" is also defined broadly: among other things, it includes "effects on ... weather ... and climate." § 7602(h).

….

IV

Article III of the Constitution limits federal-court jurisdiction to "Cases" and "Controversies." Those two words confine "the business of federal courts to questions presented in an adversary context and in a form historically viewed as capable of resolution through the judicial process." *Flast v. Cohen*, 392 U.S. 83, 95, 88 S.Ct. 1942, 20 L.Ed.2d 947 (1968). It is therefore familiar learning that no justiciable "controversy" exists when parties seek adjudication of a political question, *Luther v. Borden*, 7 How. 1, 12 L.Ed. 581 (1849), when they ask for an advisory opinion, *Hayburn's Case*, 2 Dall. 409, 1 L.Ed. 436 (1792), see also *Clinton v. Jones*, 520 U.S. 681, 700, n. 33, 117 S.Ct. 1636, 137 L.Ed.2d 945 (1997), or when the question sought to be adjudicated has been mooted by subsequent developments, *California v. San Pablo & Tulare R. Co.*, 149 U.S. 308, 13 S.Ct. 876, 37 L.Ed. 747 (1893). This case suffers from none of these defects.

The parties' dispute turns on the proper construction of a congressional statute, a question eminently suitable to resolution in federal court. Congress has moreover authorized this type of challenge to EPA action. See 42 U.S.C. § 7607(b)(1). That authorization is of critical importance to the standing inquiry….

EPA maintains that because greenhouse gas emissions inflict widespread harm, the doctrine of standing presents an insuperable jurisdictional obstacle. We do not agree. At bottom, "the gist of the question of standing" is whether petitioners have "such a personal stake in the outcome of the controversy as to assure that concrete adverseness which sharpens the presentation of issues upon which the court so largely depends for illumination." *Baker v. Carr*, 369 U.S. 186, 204, 82 S.Ct. 691, 7 L.Ed.2d 663 (1962).

….

Only one of the petitioners needs to have standing to permit us to consider the petition for review. See *Rumsfeld v. Forum for Academic and Institutional Rights, Inc.*, 547 U.S. 47, 52, n. 2, 126 S.Ct. 1297, 164 L.Ed.2d 156 (2006). We stress here, as did Judge Tatel below, the special position and interest of Massachusetts. It is of considerable relevance that the party seeking review here is a sovereign State and not, as it was in *Lujan*, a private individual.

Well before the creation of the modern administrative state, we recognized that States are not normal litigants for the purposes of invoking federal jurisdiction.

….

Just as Georgia's independent interest "in all the earth and air within its domain" supported federal jurisdiction a century ago, so too does Massachusetts' well-founded desire to preserve its sovereign territory today….That Massachusetts does in fact own a great deal of the "territory alleged to be affected" only reinforces the conclusion that its stake in the outcome of this case is sufficiently concrete to warrant the exercise of federal judicial power.

When a State enters the Union, it surrenders certain sovereign prerogatives….

These sovereign prerogatives are now lodged in the Federal Government, and Congress has ordered EPA to protect Massachusetts (among others) by prescribing standards applicable to the "emission of any air pollutant from any class or classes of new motor vehicle engines, which in [the Administrator's] judgment cause, or contribute to, air pollution which may reasonably be anticipated to endanger public health or welfare." 42 U.S.C. § 7521(a)(1). Congress has moreover recognized a concomitant procedural right to challenge the rejection of its rulemaking petition as arbitrary and capricious. § 7607(b)(1). Given that procedural right and Massachusetts' stake in protecting its quasi-sovereign interests, the Commonwealth is entitled to special solicitude in our standing analysis.

With that in mind, it is clear that petitioners' submissions as they pertain to Massachusetts have satisfied the most demanding standards of the adversarial process. EPA's steadfast refusal to regulate greenhouse gas emissions presents a risk of harm to Massachusetts that is both "actual" and "imminent." *Lujan*, 504 U.S., at 560, 112 S.Ct. 2130 (internal quotation marks omitted). There is, moreover, a "substantial likelihood that the judicial relief requested" will prompt EPA to take steps to reduce that risk. *Duke Power Co. v. Carolina Environmental Study Group, Inc.*, 438 U.S. 59, 79, 98 S.Ct. 2620, 57 L.Ed.2d 595 (1978).

The Injury

The harms associated with climate change are serious and well recognized. Indeed, the NRC Report itself-which EPA regards as an "objective and independent assessment of the relevant

science," 68 Fed.Reg. 52930-identifies a number of environmental changes that have already inflicted significant harms, including "the global retreat of mountain glaciers, reduction in snow-cover extent, the earlier spring melting of ice on rivers and lakes, [and] the accelerated rate of rise of sea levels during the 20th century relative to the past few thousand years ...." NRC Report 16.

Petitioners allege that this only hints at the environmental damage yet to come. According to the climate scientist Michael MacCracken, "qualified scientific experts involved in climate change research" have reached a "strong consensus" that global warming threatens (among other things) a precipitate rise in sea levels by the end of the century, MacCracken Decl. ¶ 5, Stdg.App. 207, "severe and irreversible changes to natural ecosystems," *id.*, ¶ 5(d), at 209, a "significant reduction in water storage in winter snowpack in mountainous regions with direct and important economic consequences," *ibid.*, and an increase in the spread of disease, *id.*, ¶ 28, at 218-219. He also observes that rising ocean temperatures may contribute to the ferocity of hurricanes. *Id.*, ¶¶ 23-25, at 216-217.

That these climate-change risks are "widely shared" does not minimize Massachusetts' interest in the outcome of this litigation. See *Federal Election Comm'n v. Akins*, 524 U.S. 11, 24, 118 S.Ct. 1777, 141 L.Ed.2d 10 (1998) ("[W]here a harm is concrete, though widely shared, the Court has found 'injury in fact' "). According to petitioners' unchallenged affidavits, global sea levels rose somewhere between 10 and 20 centimeters over the 20th century as a result of global warming. MacCracken Decl. ¶ 5(c), Stdg.App. 208. These rising seas have already begun to swallow Massachusetts' coastal land. *Id.*, at 196 (declaration of Paul H. Kirshen ¶ 5), 216 (MacCracken Decl. ¶ 23). Because the Commonwealth "owns a substantial portion of the state's coastal property," *id.*, at 171 (declaration of Karst R. Hoogeboom ¶ 4), it has alleged a particularized injury in its capacity as a landowner. The severity of that injury will only increase over the course of the next century: If sea levels continue to rise as predicted, one Massachusetts official believes that a significant fraction of coastal property will be "either permanently lost through inundation or temporarily lost through periodic storm surge and flooding events." *Id.*, ¶ 6, at 172. Remediation costs alone, petitioners allege, could run well into the hundreds of millions of dollars….

Causation

EPA does not dispute the existence of a causal connection between manmade greenhouse gas emissions and global warming. At a minimum, therefore, EPA's refusal to regulate such emissions "contributes" to Massachusetts' injuries.

EPA nevertheless maintains that its decision not to regulate greenhouse gas emissions from new motor vehicles contributes so insignificantly to petitioners' injuries that the Agency cannot be hauled into federal court to answer for them.…

But EPA overstates its case. Its argument rests on the erroneous assumption that a small incremental step, because it is incremental, can never be attacked in a federal judicial forum. Yet accepting that premise would doom most challenges to regulatory action.

….

And reducing domestic automobile emissions is hardly a tentative step. Even leaving aside the other greenhouse gases, the United States transportation sector emits an enormous quantity of carbon dioxide into the atmosphere-according to the MacCracken affidavit, more than 1.7 billion metric tons in 1999 alone. ¶ 30, Stdg.App. 219. That accounts for more than 6% of worldwide carbon dioxide emissions. *Id.*, at 232 (Oppenheimer Decl. ¶ 3); see also MacCracken Decl. ¶ 31, at 220. To put this in perspective: Considering just emissions from the transportation sector, which represent less than one-third of this country's total carbon dioxide emissions, the United States would still rank as the third-largest emitter of carbon dioxide in the world, outpaced only by the European Union and China. Judged by any standard, U.S. motor-vehicle emissions make a meaningful contribution to greenhouse gas concentrations and hence, according to petitioners, to global warming.

The Remedy

While it may be true that regulating motor-vehicle emissions will not by itself *reverse* global warming, it by no means follows that we lack jurisdiction to decide whether EPA has a duty to take steps to *slow* or *reduce* it. …

We moreover attach considerable significance to EPA's "agree[ment] with the President that 'we must address the issue of global climate change,' " 68 Fed.Reg. 52929 (quoting remarks announcing Clear Skies and Global Climate Initiatives, 2002 Public Papers of George W. Bush, Vol. 1, Feb. 14, p. 227 (2004)), and to EPA's ardent support for various voluntary emission-reduction programs, 68 Fed.Reg. 52932. As Judge Tatel observed in dissent below, "EPA would presumably not bother with such efforts if it thought emissions reductions would have no discernable impact on future global warming." 415 F.3d, at 66.

In sum-at least according to petitioners' uncontested affidavits-the rise in sea levels associated with global warming has already harmed and will continue to harm Massachusetts. The risk of catastrophic harm, though remote, is nevertheless real. That risk would be reduced to some extent if petitioners received the relief they seek. We therefore hold that petitioners have standing to challenge EPA's denial of their rulemaking petition.

V

The scope of our review of the merits of the statutory issues is narrow. As we have repeated time and again, an agency has broad discretion to choose how best to marshal its limited resources and personnel to carry out its delegated responsibilities. See *Chevron U.S.A. Inc. v. Natural Resources Defense Council, Inc.*, 467 U.S. 837, 842-845, 104 S.Ct. 2778, 81 L.Ed.2d 694 (1984). That discretion is at its height when the agency decides not to bring an enforcement action. Therefore, in *Heckler v. Chaney*, 470 U.S. 821, 105 S.Ct. 1649, 84 L.Ed.2d 714 (1985), we held that an agency's refusal to initiate enforcement proceedings is not ordinarily subject to judicial review. Some debate remains, however, as to the rigor with which we review an agency's denial of a petition for rulemaking.

There are key differences between a denial of a petition for rulemaking and an agency's decision not to initiate an enforcement action. See *American Horse Protection Assn., Inc. v. Lyng*, 812 F.2d 1, 3-4 (C.A.D.C.1987). In contrast to nonenforcement decisions, agency refusals to initiate rulemaking "are less frequent, more apt to involve legal as opposed to factual analysis,

and subject to special formalities, including a public explanation." *Id.*, at 4; see also 5 U.S.C. § 555(e). They moreover arise out of denials of petitions for rulemaking which (at least in the circumstances here) the affected party had an undoubted procedural right to file in the first instance. Refusals to promulgate rules are thus susceptible to judicial review, though such review is "extremely limited" and "highly deferential." *National Customs Brokers & Forwarders Assn. of America, Inc. v. United States*, 883 F.2d 93, 96 (C.A.D.C.1989).

EPA concluded in its denial of the petition for rulemaking that it lacked authority under 42 U.S.C. § 7521(a)(1) to regulate new vehicle emissions because carbon dioxide is not an "air pollutant" as that term is defined in § 7602. In the alternative, it concluded that even if it possessed authority, it would decline to do so because regulation would conflict with other administration priorities. As discussed earlier, the Clean Air Act expressly permits review of such an action. § 7607(b)(1). We therefore "may reverse any such action found to be ... arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law." § 7607(d)(9).

VI

On the merits, the first question is whether § 202(a)(1) of the Clean Air Act authorizes EPA to regulate greenhouse gas emissions from new motor vehicles in the event that it forms a "judgment" that such emissions contribute to climate change. We have little trouble concluding that it does. In relevant part, § 202(a)(1) provides that EPA "shall by regulation prescribe ... standards applicable to the emission of any air pollutant from any class or classes of new motor vehicles or new motor vehicle engines, which in [the Administrator's] judgment cause, or contribute to, air pollution which may reasonably be anticipated to endanger public health or welfare." 42 U.S.C. § 7521(a)(1). Because EPA believes that Congress did not intend it to regulate substances that contribute to climate change, the agency maintains that carbon dioxide is not an "air pollutant" within the meaning of the provision.

The statutory text forecloses EPA's reading. The Clean Air Act's sweeping definition of "air pollutant" includes " *any* air pollution agent or combination of such agents, including *any* physical, chemical ... substance or matter which is emitted into or otherwise enters the ambient air ... ." § 7602(g) (emphasis added). On its face, the definition embraces all airborne compounds of whatever stripe, and underscores that intent through the repeated use of the word "any." Carbon dioxide, methane, nitrous oxide, and hydrofluorocarbons are without a doubt "physical [and] chemical ... substance [s] which [are] emitted into ... the ambient air." The statute is unambiguous.

….

While the Congresses that drafted § 202(a)(1) might not have appreciated the possibility that burning fossil fuels could lead to global warming, they did understand that without regulatory flexibility, changing circumstances and scientific developments would soon render the Clean Air Act obsolete. The broad language of § 202(a)(1) reflects an intentional effort to confer the flexibility necessary to forestall such obsolescence.… Because greenhouse gases fit well within the Clean Air Act's capacious definition of "air pollutant," we hold that EPA has the statutory authority to regulate the emission of such gases from new motor vehicles.

VII

The alternative basis for EPA's decision-that even if it does have statutory authority to regulate greenhouse gases, it would be unwise to do so at this time-rests on reasoning divorced from the statutory text. While the statute does condition the exercise of EPA's authority on its formation of a "judgment," 42 U.S.C. § 7521(a)(1), that judgment must relate to whether an air pollutant "cause[s], or contribute[s] to, air pollution which may reasonably be anticipated to endanger public health or welfare," *ibid.* Put another way, the use of the word "judgment" is not a roving license to ignore the statutory text. It is but a direction to exercise discretion within defined statutory limits.

….

In short, EPA has offered no reasoned explanation for its refusal to decide whether greenhouse gases cause or contribute to climate change. Its action was therefore "arbitrary, capricious, ... or otherwise not in accordance with law." 42 U.S.C. § 7607(d)(9)(A). We need not and do not reach the question whether on remand EPA must make an endangerment finding, or whether policy concerns can inform EPA's actions in the event that it makes such a finding. Cf. *Chevron U.S.A. Inc. v. Natural Resources Defense Council, Inc.*, 467 U.S. 843-844, 104 S.Ct. 2778, 81 L.Ed.2d 694, at 1. We hold only that EPA must ground its reasons for action or inaction in the statute.

VIII

The judgment of the Court of Appeals is reversed, and the case is remanded for further proceedings consistent with this opinion.

It is so ordered.

Chief Justice Robert, with whom Justice Scalia, Justice Thomas, and Justice Alito join, dissenting.

Global warming may be a "crisis," even "the most pressing environmental problem of our time." Pet. for Cert. 26, 22. Indeed, it may ultimately affect nearly everyone on the planet in some potentially adverse way, and it may be that governments have done too little to address it. It is not a problem, however, that has escaped the attention of policymakers in the Executive and Legislative Branches of our Government, who continue to consider regulatory, legislative, and treaty-based means of addressing global climate change.

Apparently dissatisfied with the pace of progress on this issue in the elected branches, petitioners have come to the courts claiming broad-ranging injury, and attempting to tie that injury to the Government's alleged failure to comply with a rather narrow statutory provision. I would reject these challenges as nonjusticiable. Such a conclusion involves no judgment on whether global warming exists, what causes it, or the extent of the problem. Nor does it render petitioners without recourse. This Court's standing jurisprudence simply recognizes that redress of grievances of the sort at issue here "is the function of Congress and the Chief Executive," not the federal courts. *Lujan v. Defenders of Wildlife*, 504 U.S. 555, 576, 112 S.Ct. 2130, 119 L.Ed.2d 351 (1992). I would vacate the judgment below and remand for dismissal of the petitions for review.

I

….

Our modern framework for addressing standing is familiar: "A plaintiff must allege personal injury fairly traceable to the defendant's allegedly unlawful conduct and likely to be redressed by the requested relief." *DaimlerChrysler, supra,* at 342, 126 S.Ct., at 1861 (quoting *Allen v. Wright,* 468 U.S. 737, 751, 104 S.Ct. 3315, 82 L.Ed.2d 556 (1984); (internal quotation marks omitted)). Applying that standard here, petitioners bear the burden of alleging an injury that is fairly traceable to the Environmental Protection Agency's failure to promulgate new motor vehicle greenhouse gas emission standards, and that is likely to be redressed by the prospective issuance of such standards.

Before determining whether petitioners can meet this familiar test, however, the Court changes the rules. It asserts that "States are not normal litigants for the purposes of invoking federal jurisdiction," and that given "Massachusetts' stake in protecting its quasi-sovereign interests, the Commonwealth is entitled to *special solicitude* in our standing analysis." *Ante,* at 1454, 1455 (emphasis added).

Relaxing Article III standing requirements because asserted injuries are pressed by a State, however, has no basis in our jurisprudence, and support for any such "special solicitude" is conspicuously absent from the Court's opinion.

….

What is more, the Court's reasoning falters on its own terms. The Court asserts that Massachusetts is entitled to "special solicitude" due to its "quasi-sovereign interests," *ante,* at 1455, but then applies our Article III standing test to the asserted injury of the Commonwealth's loss of coastal property….

On top of everything else, the Court overlooks the fact that our cases cast significant doubt on a State's standing to assert a quasi-sovereign interest-as opposed to a direct injury-against the Federal Government….

.

II

It is not at all clear how the Court's "special solicitude" for Massachusetts plays out in the standing analysis, except as an implicit concession that petitioners cannot establish standing on traditional terms. But the status of Massachusetts as a State cannot compensate for petitioners' failure to demonstrate injury in fact, causation, and redressability.

When the Court actually applies the three-part test, it focuses, as did the dissent below, see 415 F.3d 50, 64 (C.A.D.C.2005) (opinion of Tatel, J.), on the Commonwealth's asserted loss of coastal land as the injury in fact. If petitioners rely on loss of land as the Article III injury, however, they must ground the rest of the standing analysis in that specific injury. That alleged injury must be "concrete and particularized," *Defenders of Wildlife,* 504 U.S., at 560, 112 S.Ct. 2130, and "distinct and palpable," *Allen,* 468 U.S., at 751, 104 S.Ct. 3315 (internal quotation marks omitted). Central to this concept of "particularized" injury is the requirement that a plaintiff be affected in a "personal and individual way," *Defenders of Wildlife,* 504 U.S., at 560,

n. 1, 112 S.Ct. 2130, and seek relief that "directly and tangibly benefits him" in a manner distinct from its impact on "the public at large," *id.*, at 573-574, 112 S.Ct. 2130.…

The very concept of global warming seems inconsistent with this particularization requirement. Global warming is a phenomenon "harmful to humanity at large," 415 F.3d, at 60 (Sentelle, J., dissenting in part and concurring in judgment), and the redress petitioners seek is focused no more on them than on the public generally-it is literally to change the atmosphere around the world.

If petitioners' particularized injury is loss of coastal land, it is also that injury that must be "actual or imminent, not conjectural or hypothetical," *Defenders of Wildlife, supra*, at 560, 112 S.Ct. 2130 (internal quotation marks omitted), "real and immediate," *Los Angeles v. Lyons*, 461 U.S. 95, 102, 103 S.Ct. 1660, 75 L.Ed.2d 675 (1983) (internal quotation marks omitted), and "certainly impending," *Whitmore v. Arkansas*, 495 U.S. 149, 158, 110 S.Ct. 1717, 109 L.Ed.2d 135 (1990) (internal quotation marks omitted).

As to "actual" injury, the Court observes that "global sea levels rose somewhere between 10 and 20 centimeters over the 20th century as a result of global warming" and that "[t]hese rising seas have already begun to swallow Massachusetts' coastal land." *Ante,* at 1456. But none of petitioners' declarations supports that connection.... Thus, aside from a single conclusory statement, there is nothing in petitioners' 43 standing declarations and accompanying exhibits to support an inference of actual loss of Massachusetts coastal land from 20th-century global sea level increases. It is pure conjecture.

The Court's attempts to identify "imminent" or "certainly impending" loss of Massachusetts coastal land fares no better. … "Allegations of possible future injury do not satisfy the requirements of Art. III. A threatened injury must be *certainly impending* to constitute injury in fact." *Whitmore, supra*, at 158, 110 S.Ct. 1717 (internal quotation marks omitted; emphasis added).

III

Petitioners' reliance on Massachusetts's loss of coastal land as their injury in fact for standing purposes creates insurmountable problems for them with respect to causation and redressability….

Petitioners view the relationship between their injuries and EPA's failure to promulgate new motor vehicle greenhouse gas emission standards as simple and direct: Domestic motor vehicles emit carbon dioxide and other greenhouse gases. Worldwide emissions of greenhouse gases contribute to global warming and therefore also to petitioners' alleged injuries. Without the new vehicle standards, greenhouse gas emissions-and therefore global warming and its attendant harms-have been higher than they otherwise would have been; once EPA changes course, the trend will be reversed.

The Court ignores the complexities of global warming, and does so by now disregarding the "particularized" injury it relied on in step one, and using the dire nature of global warming itself as a bootstrap for finding causation and redressability. First, it is important to recognize the

extent of the emissions at issue here…. According to one of petitioners' declarations, domestic motor vehicles contribute about 6 percent of global carbon dioxide emissions and 4 percent of global greenhouse gas emissions. Stdg.App. 232. The amount of global emissions at issue here is smaller still; § 202(a)(1) of the Clean Air Act covers only *new* motor vehicles and *new* motor vehicle engines, so petitioners' desired emission standards might reduce only a fraction of 4 percent of global emissions.

This gets us only to the relevant greenhouse gas emissions; linking them to global warming and ultimately to petitioners' alleged injuries next requires consideration of further complexities.

….

Petitioners are never able to trace their alleged injuries back through this complex web to the fractional amount of global emissions that might have been limited with EPA standards. In light of the bit-part domestic new motor vehicle greenhouse gas emissions have played in what petitioners describe as a 150-year global phenomenon, and the myriad additional factors bearing on petitioners' alleged injury-the loss of Massachusetts coastal land-the connection is far too speculative to establish causation.

IV

Redressability is even more problematic. To the tenuous link between petitioners' alleged injury and the indeterminate fractional domestic emissions at issue here, add the fact that petitioners cannot meaningfully predict what will come of the 80 percent of global greenhouse gas emissions that originate outside the United States....

….

No matter, the Court reasons, because *any* decrease in domestic emissions will "slow the pace of global emissions increases, no matter what happens elsewhere." *Ante,* at 1458. Every little bit helps, so Massachusetts can sue over any little bit.

The Court's sleight of hand is in failing to link up the different elements of the three-part standing test. What must be *likely* to be redressed is the particular injury in fact. The injury the Court looks to is the asserted loss of land. The Court contends that regulating domestic motor vehicle emissions will reduce carbon dioxide in the atmosphere, *and therefore* redress Massachusetts's injury. But even if regulation *does* reduce emissions-to some indeterminate degree, given events elsewhere in the world-the Court never explains why that makes it *likely* that the injury in fact-the loss of land-will be redressed. Schoolchildren know that a kingdom might be lost "all for the want of a horseshoe nail," but "likely" redressability is a different matter. The realities make it pure conjecture to suppose that EPA regulation of new automobile emissions will *likely* prevent the loss of Massachusetts coastal land.

V

Petitioners' difficulty in demonstrating causation and redressability is not surprising given the evident mismatch between the source of their alleged injury-catastrophic global warming-and the narrow subject matter of the Clean Air Act provision at issue in this suit. The mismatch suggests that petitioners' true goal for this litigation may be more symbolic than anything else. The constitutional role of the courts, however, is to decide concrete cases-not to serve as a convenient forum for policy debates….

When dealing with legal doctrine phrased in terms of what is "fairly" traceable or "likely" to be redressed, it is perhaps not surprising that the matter is subject to some debate. But in considering how loosely or rigorously to define those adverbs, it is vital to keep in mind the purpose of the inquiry. The limitation of the judicial power to cases and controversies "is crucial in maintaining the tripartite allocation of power set forth in the Constitution." *DaimlerChrysler*, 547 U.S., at 341, 126 S.Ct., at 1860-1861 (internal quotation marks omitted). In my view, the Court today-addressing Article III's "core component of standing," *Defenders of Wildlife, supra*, at 560, 112 S.Ct. 2130-fails to take this limitation seriously.

….

Perhaps the Court recognizes as much. How else to explain its need to devise a new doctrine of state standing to support its result? The good news is that the Court's "special solicitude" for Massachusetts limits the future applicability of the diluted standing requirements applied in this case. The bad news is that the Court's self-professed relaxation of those Article III requirements has caused us to transgress "the proper-and properly limited-role of the courts in a democratic society." *Allen*, 468 U.S., at 750, 104 S.Ct. 3315 (internal quotation marks omitted).

I respectfully dissent.

Justice Scalia, with whom THE CHIEF JUSTICE, Justice THOMAS, and Justice ALITO join, dissenting.

I join THE CHIEF JUSTICE's opinion in full, and would hold that this Court has no jurisdiction to decide this case because petitioners lack standing. The Court having decided otherwise, it is appropriate for me to note my dissent on the merits.

I

A

The provision of law at the heart of this case is § 202(a)(1) of the Clean Air Act (CAA or Act), which provides that the Administrator of the Environmental Protection Agency (EPA) "shall by regulation prescribe ... standards applicable to the emission of any air pollutant from any class or classes of new motor vehicles or new motor vehicle engines, which *in his judgment* cause, or contribute to, air pollution which may reasonably be anticipated to endanger public health or welfare." 42 U.S.C. § 7521(a)(1) (emphasis added)….There is no dispute that the Administrator has made no such judgment in this case.…

The question thus arises: Does anything *require* the Administrator to make a "judgment" whenever a petition for rulemaking is filed? Without citation of the statute or any other authority, the Court says yes. Why is that so? …. Where does the CAA say that the EPA Administrator is required to come to a decision on this question whenever a rulemaking petition is filed? The Court points to no such provision because none exists.

Instead, the Court invents a multiple-choice question that the EPA Administrator must answer when a petition for rulemaking is filed. The Administrator must exercise his judgment in one of three ways: (a) by concluding that the pollutant *does* cause, or contribute to, air pollution that

endangers public welfare (in which case EPA is required to regulate); (b) by concluding that the pollutant *does not* cause, or contribute to, air pollution that endangers public welfare (in which case EPA is *not* required to regulate); or (c) by "provid[ing] some reasonable explanation as to why it cannot or will not exercise its discretion to determine whether" greenhouse gases endanger public welfare, *ante,* at 1462, (in which case EPA is *not* required to regulate).

I am willing to assume, for the sake of argument, that the Administrator's discretion in this regard is not entirely unbounded-that if he has no reasonable basis for deferring judgment he must grasp the nettle at once. The Court, however, with no basis in text or precedent, rejects all of EPA's stated "policy judgments" as not "amount[ing] to a reasoned justification," *ante,* at 1463, effectively narrowing the universe of potential reasonable bases to a single one: Judgment can be delayed *only* if the Administrator concludes that "the scientific uncertainty is [too] profound." *Ibid.* The Administrator is precluded from concluding *for other reasons* "that it would ... be better not to regulate at this time." *Ibid.* Such other reasons-perfectly valid reasons-were set forth in the Agency's statement.

.....

EPA's interpretation of the discretion conferred by the statutory reference to "its judgment" is not only reasonable, it is the most natural reading of the text. The Court nowhere explains why this interpretation is incorrect, let alone why it is not entitled to deference under *Chevron U.S.A. Inc. v. Natural Resources Defense Council, Inc.*, 467 U.S. 837, 104 S.Ct. 2778, 81 L.Ed.2d 694 (1984). As the Administrator acted within the law in declining to make a "judgment" for the policy reasons above set forth, I would uphold the decision to deny the rulemaking petition on that ground alone.

B

Even on the Court's own terms, however, the same conclusion follows. As mentioned above, the Court gives EPA the option of determining that the science is too uncertain to allow it to form a "judgment" as to whether greenhouse gases endanger public welfare …. EPA *has* said precisely that-and at great length, based on information contained in a 2001 report by the National Research Council (NRC) entitled Climate Change Science: An Analysis of Some Key Questions….

I simply cannot conceive of what else the Court would like EPA to say.

II

A

Even before reaching its discussion of the word "judgment," the Court makes another significant error when it concludes that "§ 202(a)(1) of the Clean Air Act *authorizes* EPA to regulate greenhouse gas emissions from new motor vehicles in the event that it forms a 'judgment' that such emissions contribute to climate change." *Ante,* at 1459 (emphasis added). For such authorization, the Court relies on what it calls "the Clean Air Act's capacious definition of 'air pollutant.' " *Ante,* at 1460.

….The Court is correct that "[c]arbon dioxide, methane, nitrous oxide, and hydrofluorocarbons," *ante,* at 1462, fit within the second half of that definition: They are

"physical, chemical, ... substance[s] or matter which [are] emitted into or otherwise ente[r] the ambient air." But the Court mistakenly believes this to be the end of the analysis. In order to be an "air pollutant" under the Act's definition, the "substance or matter [being] emitted into ... the ambient air" must also meet the *first* half of the definition-namely, it must be an "air pollution agent or combination of such agents." The Court simply pretends this half of the definition does not exist.

The Court's analysis faithfully follows the argument advanced by petitioners, which focuses on the word "including" in the statutory definition of "air pollutant." See Brief for Petitioners 13-14. As that argument goes, anything that *follows* the word "including" must necessarily be a subset of whatever *precedes* it. Thus, if greenhouse gases qualify under the phrase following the word "including," they must qualify under the phrase preceding it. Since greenhouse gases come within the capacious phrase "any physical, chemical, ... substance or matter which is emitted into or otherwise enters the ambient air," they must also be "air pollution agent[s] or combination[s] of such agents," and therefore meet the definition of "air pollutant[s]."

That is certainly one possible interpretation of the statutory definition. The word "including" can indeed indicate that what follows will be an "illustrative" sampling of the general category that precedes the word. *Federal Land Bank of St. Paul v. Bismarck Lumber Co.,* 314 U.S. 95, 100, 62 S.Ct. 1, 86 L.Ed. 65 1941). Often, however, the examples standing alone are broader than the general category, and must be viewed as limited in light of that category.…

In short, the word "including" does not require the Court's (or the petitioners') result. It is perfectly reasonable to view the definition of "air pollutant" in its entirety… This is precisely the conclusion EPA reached… Once again, in the face of textual ambiguity, the Court's application of *Chevron* deference to EPA's interpretation of the word "including" is nowhere to be found. Evidently, the Court defers only to those reasonable interpretations that it favors.

….

In the end, EPA concluded that since "CAA authorization to regulate is generally based on a finding that an air pollutant causes or contributes to air pollution," 68 Fed.Reg. 52928, the concentrations of CO_2 and other greenhouse gases allegedly affecting the global climate are beyond the scope of CAA's authorization to regulate. "[T]he term 'air pollution' as used in the regulatory provisions cannot be interpreted to encompass global climate change." *Ibid.* Once again, the Court utterly fails to explain why this interpretation is incorrect, let alone so unreasonable as to be unworthy of *Chevron* deference.

* * *

The Court's alarm over global warming may or may not be justified, but it ought not distort the outcome of this litigation. This is a straightforward administrative-law case, in which Congress has passed a malleable statute giving broad discretion, not to us but to an executive agency. No matter how important the underlying policy issues at stake, this Court has no business substituting its own desired outcome for the reasoned judgment of the responsible agency.

NOTES AND QUESTIONS

1. What are the key arguments that the majority and dissenting opinions make on standing and the substantive law? Which arguments do you find most persuasive and least persuasive?

2. What is the EPA required to do after *Massachusetts v. EPA*? Is there a scenario in which the EPA could have continued not to engage in greenhouse gas regulation after this opinion?

3. Why does the Supreme Court focus on the special nature of states in its standing analysis? Does the Court's reasoning on this issue make it more or less likely that private parties could have standing in climate change cases?

4. Consider the following interchange during the oral argument of *Massachusetts v. EPA*:

> Justice Scalia: But I always thought an air pollutant was something different from a stratospheric pollutant, and your claim here is not that the pollution of what we normally call "air" is endangering health. . . . [Y]our assertion is that after the pollution leaves the air and goes up into the stratosphere it is contributing to global warming.
>
> Mr Milkey: Respectfully, Your Honor, it is not the stratosphere. It's the troposphere.
>
> Justice Scalia: Troposphere, whatever. I told you before I'm not a scientist.
>
> (Laughter).
>
> Justice Scalia: That's why I don't want to deal with global warming, to tell you the truth.
>
> Transcript of Oral Argument at 22-23, Massachusetts v. EPA, 127 S.Ct. 1438 (2007) (No. 05-1120), 2006 WL 3431932 at 22–23.

Although Justice Scalia was likely being humorous, his remarks raise questions about how courts should engage complex climate change science. What do you think is the most appropriate way for judges to approach the scientific issues that these cases raise?

Professor Doremus has raised broader concerns over the scientizing of politics, that is, both sides using science as an argumentative device. She notes that "The combination of actual uncertainty and public expectations of certainty makes the rhetoric of science equally available to the regulatory offense and defense." *See* Holly Doremus, *Science Plays Defense: Natural Resource Management in the Bush Administration*, 32 ECOLOGY L.Q. 249, 255 (2005). How did these issues play out in *Massachusetts v. EPA*?

5. How do debates over the appropriate role of different levels of government in climate change regulation play out in this case? Professor Hari Osofsky has explored this question in some depth, arguing that those wanting less regulation claimed that climate change was too big for regulatory action at state and national levels, and that those wanting more regulation argued for the smaller-scale nature of emissions and impacts. Hari M. Osofsky, *The Intersection of Scale, Science, and Law in* Massachusetts v. EPA, 9 OREGON R. INT'L L. 233 (2007). Professor Kaswan has argued that these suits play an important role in addressing jurisdictional overlap. Alice Kaswan, *The Domestic Approach to Global Climate Change: What Role for Federal, State, and Litigation Initiatives?*, 42 U.S.F. L. REV. 39 (2008).What role do you think the federal and state governments should play in addressing problems like climate change that also have international dimensions, and when it is appropriate for courts to help resolve these conflicts over regulatory scale?

2. Endangerment Finding and Subsequent Regulation

Although the Bush administration EPA did not take significant action in the aftermath of *Massachusetts v. EPA*, the Obama administration began implementing the decision upon taking office. The first step in the implementation was to decide whether or not greenhouse gas emissions cause or contribute to the endangerment of public health and welfare. In order for the EPA to issue regulations limiting the emissions of greenhouse gases under the Clean Air Act, it had to make such an endangerment finding. Over the course of 2009, the EPA issued a draft and then final finding under Clean Air Act Section 202(a), a decision which provides the basis for further regulatory action.

The following is an excerpt from that finding. It contains two primary parts: a general finding that greenhouse gases endanger health and public welfare and a more specific finding that the greenhouse gas emissions covered by Clean Air Act Section 202(a) cause or contribute to that endangerment.

> **Endangerment and Cause or Contribute Findings for Greenhouse Gases Under Section 202(a) of the Clean Air Act, 74 Fed. Reg. 66494, 66516–24 (codified Dec. 15, 2009 at 40 C.F.R. ch. 1),** ***available at*** **http://www.epa.gov/climatechange/endangerment/downloads/Federal_Register-EPA-HQ-OAR-2009-0171-Dec.15-09.pdf.**

IV. Greenhouse Gases Endanger Public Health and Welfare

The Administrator finds that elevated concentrations of greenhouse gases in the atmosphere may reasonably be anticipated to endanger the public health and to endanger the public welfare of current and future generations. The Administrator is making this finding specifically with regard to six key directly-emitted, long-lived and well-mixed greenhouse gases: Carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride. The Administrator is making this judgment based on both current observations and projected risks and impacts into the future. Furthermore, the Administrator is basing this finding on impacts of climate change within the United States. However, the Administrator finds that when she considers the impacts on the U.S. population of risks and impacts occurring in other world regions, the case for endangerment to public health and welfare is only strengthened.

….

B. The Air Pollution Is Reasonably Anticipated To Endanger Both Public Health and Welfare

The Administrator finds that the elevated atmospheric concentrations of the well-mixed greenhouse gases may reasonably be anticipated to endanger the public health and welfare of current and future generations. This section describes the major pieces of scientific evidence supporting the Administrator's endangerment finding, discusses both the public health and welfare nature of the endangerment finding, and addresses a number of key issues the Administrator considered when evaluating the state of the science as well as key public comments on the Proposed Findings….

As described in Section II of these Findings, the endangerment test under CAA section 202(a) does not require the Administrator to identify a bright line, quantitative threshold above which a positive endangerment finding can be made. The statutory language explicitly calls upon the Administrator to use her judgment. This section describes the general approach used by the Administrator in reaching the judgment that a positive endangerment finding should be made, as well as the specific rationale for finding that the greenhouse gas air pollution may reasonably be anticipated to endanger both public health and welfare. First, the Administrator finds the scientific evidence linking human emissions and resulting elevated atmospheric concentrations of the six well-mixed greenhouse gases to observed global and regional temperature increases and other climate changes to be sufficiently robust and compelling. This evidence is briefly explained in more detail in Section V of these Findings. The Administrator recognizes that the climate change associated with elevated atmospheric concentrations of carbon dioxide and the other well-mixed greenhouse gases have the potential to affect essentially every aspect of human health, society and the natural environment. The Administrator is therefore not limiting her consideration of potential risks and impacts associated with human emissions of greenhouse gases to any one particular element of human health, sector of the economy, region of the country, or to any one particular aspect of the natural environment. Rather, the Administrator is basing her finding on the total weight of scientific evidence, and what the science has to say regarding the nature and potential magnitude of the risks and impacts across all climate-sensitive elements of public health and welfare, now and projected out into the foreseeable future. The Administrator has considered the state of the science on how human emissions and the resulting elevated atmospheric concentrations of well-mixed greenhouse gases may affect each of the major risk categories, *i.e.*, those that are described in the TSD [Technical Support Document], which include human health, air quality, food production and agriculture, forestry, water resources, sea level rise and coastal areas, the energy sector, infrastructure and settlements, and ecosystems and wildlife. The Administrator understands that the nature and potential severity of impacts can vary across these different elements of public health and welfare, and that they can vary by region, as well as over time.

The Administrator is therefore aware that, because human-induced climate change has the potential to be far-reaching and multi-dimensional, not all risks and potential impacts can be characterized with a uniform level of quantification or understanding, nor can they be characterized with uniform metrics. Given this variety in not only the nature and potential magnitude of risks and impacts, but also in our ability to characterize, quantify and project into the future such impacts, the Administrator must use her judgment to weigh the threat in each of the risk categories, weigh the potential benefits where relevant, and ultimately judge whether

these risks and benefits, when viewed in total, are judged to be endangerment to public health and/or welfare.

This has a number of implications for the Administrator's approach in assessing the nature and magnitude of risk and impacts across each of the risk categories. First, the Administrator has not established a specific threshold metric for each category of risk and impacts. Also, the Administrator is not necessarily placing the greatest weight on those risks and impacts which have been the subject of the most study or quantification.

Part of the variation in risks and impacts is the fact that climbing atmospheric concentrations of greenhouse gases and associated temperature increases can bring about some potential benefits to public health and welfare in addition to adverse risks. The current understanding of any potential benefits associated with human-induced climate change is described in the TSD and is taken into consideration here. The potential for both adverse and beneficial effects are considered, as well as the relative magnitude of such effects, to the extent that the relative magnitudes can be quantified or characterized. Furthermore, given the multiple ways in which the buildup of atmospheric greenhouse gases can cause effects (*e.g.*, via elevated carbon dioxide concentrations, via temperature increases, via precipitation increases, via sea level rise, and via changes in extreme events), these multiple pathways are considered. For example, elevated carbon dioxide concentrations may be beneficial to crop yields, but changes in temperature and precipitation may be adverse and must also be considered. Likewise, modest temperature increases may have some public health benefits as well as harms, and other pathways such as changes in air quality and extreme events must also be considered.

The Administrator has balanced and weighed the varying risks and effects for each sector. She has judged whether there is a pattern across the sector that supports or does not support an endangerment finding, and if so whether the support is of more or less weight. In cases where there is both a potential for benefits and risks of harm, the Administrator has balanced these factors by determining whether there appears to be any directional trend in the overall evidence that would support placing more weight on one than the other, taking into consideration all that is known about the likelihood of the various risks and effects and their seriousness. In all of these cases, the judgment is largely qualitative in nature, and is not reducible to precise metrics or quantification. Regarding the timeframe for the endangerment test, it is the Administrator's view that both current and future conditions must be considered. The Administrator is thus taking the view that the endangerment period of analysis extend from the current time to the next several decades, and in some cases to the end of this century. This consideration is also consistent with the timeframes used in the underlying scientific assessments. The future timeframe under consideration is consistent with the atmospheric lifetime and climate effects of the six well-mixed greenhouse gases, and also with our ability to make reasonable and plausible projections of future conditions.

The Administrator acknowledges that some aspects of climate change science and the projected impacts are more certain than others. Our state of knowledge is strongest for recently observed, large-scale changes. Uncertainty tends to increase in characterizing changes at smaller (regional) scales relative to large (global) scales. Uncertainty also increases as the temporal scales move away from present, either backward, but more importantly forward in time. Nonetheless, the

current state of knowledge of observed and past climate changes and their causes enables projections of plausible future changes under different scenarios of anthropogenic forcing for a range of spatial and temporal scales. In some cases, where the level of sensitivity to climate of a particular sector has been extensively studied, future impacts can be quantified whereas in other instances only a qualitative description of a directional change, if that, may be possible. The inherent uncertainty in the direction, magnitude, and/or rate of certain future climate change impacts opens up the possibility that some changes could be more or less severe than expected, and the possibility of unanticipated outcomes. In some cases, low probability, high impact outcomes (*i.e.,* known unknowns) are possibilities but cannot be explicitly assessed.

….

V. The Administrator's Finding That Emissions of Greenhouse Gases From CAA Section 202(a) Sources Cause or Contribute to the Endangerment of Public Health and Welfare

As discussed in Section IV.A of these Findings, the Administrator is defining the air pollution for purposes of the endangerment finding to be the elevated concentration of well-mixed greenhouse gases in the atmosphere. The second step of the two-part endangerment test is for the Administrator to determine whether the emission of any air pollutant emitted from new motor vehicles cause or contribute to this air pollution. This is referred to as the cause or contribute finding, and is the second finding by the Administrator in this action.

….

B. The Administrator's Finding Regarding Whether Emissions of the Air Pollutant From Section 202(a) Source Categories Cause or Contribute to the Air Pollution That May Be Reasonably Anticipated To Endanger Public Health and Welfare

The Administrator finds that emissions of the well-mixed greenhouse gases from new motor vehicles contribute to the air pollution that may reasonably be anticipated to endanger public health and welfare. This contribution finding is for all of the CAA section 202(a) source categories and the Administrator considered emissions from all of these source categories. The relevant mobile sources under CAA section 202 (a)(1) are ''any class or classes of new motor vehicles or new motor vehicle engines, * * *.''CAA section 202(a)(1) (emphasis added). The new motor vehicles and new motor vehicle engines (hereinafter ''CAA section 202(a) source categories'') addressed are: Passenger cars, light-duty trucks, motorcycles, buses, and medium and heavy-duty trucks….

The Administrator reached her decision after reviewing emissions data on the contribution of CAA section 202(a) source categories relative to both global greenhouse gas emissions and U.S. greenhouse gas emissions. Given that CAA section 202(a) source categories are responsible for about 4 percent of total global greenhouse gas emissions, and for just over 23 percent of total U.S. greenhouse gas emissions, the Administrator finds that both of these comparisons, independently and together, support a finding that CAA section 202(a) source categories contribute to the air pollution that may be reasonably anticipated to endanger public health and welfare. The Administrator is not placing primary weight on either approach; rather she finds that both approaches clearly establish that emissions of the well-mixed greenhouse gases from section 202(a) source categories contribute to air pollution with may reasonably be anticipated to endanger public health and welfare. As the Supreme Court noted, ''[j]udged by any standard, U.S. motor-vehicle emissions make a meaningful contribution to greenhouse gas concentrations and hence, * * * to global warming.'' *Massachusetts v. EPA,* 549 U.S. at 525.38.

The EPA followed its endangerment finding with rulemaking to regulate motor vehicle greenhouse gas emissions. It began in 2010 by promulgating—jointly with the National Highway Traffic Safety Administration (NHTSA)—the "National Program," which for the first time intertwined fuel efficiency and vehicle tailpipe emissions for 2012–16 model year cars and light trucks. Before this new program, regulation regarding fuel efficiency and vehicle tailpipe emissions took place separately. The EPA and NHSTA are in the process of establishing rules for model years 2017–25. In addition, the EPA and NHTSA adopted a Heavy-Duty National Program in 2011, which regulates greenhouse gas emissions and establishes fuel efficiency standards for medium- and heavy-duty vehicles.

The National Program has significance beyond its groundbreaking regulation of motor vehicle greenhouse gas emissions and collaboration between EPA and NHTSA. It also represents an important moment of compromise among the federal government, California, and automakers. The Clean Air Act allows California to set its own tailpipe emissions standards that exceed federal standards if it receives a waiver to do so. States then choose between following the federal and California standards. After a Bush administration denial of California's petition for a waiver to regulate tailpipe greenhouse gas emissions, which resulted in lawsuits, the Obama administration granted that waiver. However, the National Program creates a convergence between those higher California standards and federal standards, a uniformity which automakers prefer. In January 2010, the EPA, Department of Transportation, and California announced a unified timeframe for proposing greenhouse gas emissions and fuel economy standards for 2017–25 cars and light trucks.

The following is an excerpt from the joint rulemaking establishing the initial National Program. It provides an overview of the program and a description of the core elements of the rule.

Light-Duty Vehicle Greenhouse Gas Emission Standards and Corporate Average Fuel Economy Standards; Final Rule, 75 Fed. Reg. 25323, 25326–29 (May 7, 2010), ***available at*** **http://epa.gov/otaq/climate/regulations.htm.**

I. Overview of Joint EPA/NHTSA National Program

A. Introduction

The National Highway Traffic Safety Administration (NHTSA) and the Environmental Protection Agency (EPA) are each announcing final rules whose benefits will address the urgent and closely intertwined challenges of energy independence and security and global warming. These rules will implement a strong and coordinated Federal greenhouse gas (GHG) and fuel economy program for passenger cars, light-duty-trucks, and medium-duty passenger vehicles (hereafter light-duty vehicles), referred to as the National Program. The rules will achieve substantial reductions of GHG emissions and improvements in fuel economy from the light-duty vehicle part of the transportation sector, based on technology that is already being commercially applied in most cases and that can be incorporated at a reasonable cost. NHTSA's final rule also constitutes the agency's Record of Decision for purposes of its NEPA analysis.

This joint rulemaking is consistent with the President's announcement on May 19, 2009 of a National Fuel Efficiency Policy of establishing consistent, harmonized, and streamlined requirements that would reduce GHG emissions and improve fuel economy for all new cars and light-duty trucks sold in the United States. The National Program will deliver additional environmental and energy benefits, cost savings, and administrative efficiencies on a nationwide basis that would likely not be available under a less coordinated approach. The National Program also represents regulatory convergence by making it possible for the standards of two different Federal agencies and the standards of California and other states to act in a unified fashion in providing these benefits. The National Program will allow automakers to produce and sell a single fleet nationally, mitigating the additional costs that manufacturers would otherwise face in having to comply with multiple sets of Federal and State standards. This joint notice is also consistent with the Notice of Upcoming Joint Rulemaking issued by DOT and EPA on May 19, 2009 and responds to the President's January 26, 2009 memorandum on CAFE standards for model years 2011 and beyond, the details of which can be found in Section IV of this joint notice.

Climate change is widely viewed as a significant long-term threat to the global environment. As summarized in the Technical Support Document for EPA's Endangerment and Cause or Contribute Findings under Section 202(a) of the Clear Air Act, anthropogenic emissions of GHGs are very likely (90 to 99 percent probability) the cause of most of the observed global warming over the last 50 years. The primary GHGs of concern are carbon dioxide (CO2), methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride. Mobile sources emitted 31 percent of all U.S. GHGs in 2007 (transportation sources, which do not include certain off-highway sources, account for 28 percent) and have been the fastest-growing source of U.S. GHGs since 1990. Mobile sources addressed in the recent endangerment and contribution findings under CAA section 202(a)--light-duty vehicles, heavy-duty trucks, buses, and motorcycles--accounted for 23 percent of all U.S. GHG in 2007.\8\ Light-duty vehicles emit CO2, methane, nitrous oxide, and hydrofluorocarbons and are responsible for nearly 60 percent of all mobile source GHGs and over 70 percent of Section 202(a) mobile source GHGs. For light-duty vehicles in 2007, CO2 emissions represent about 94 percent of all greenhouse emissions (including HFCs), and the CO2 emissions measured over the EPA tests used for fuel economy compliance represent about 90 percent of total light-duty vehicle GHG emissions.

Improving energy security by reducing our dependence on foreign oil has been a national objective since the first oil price shocks in the 1970s. Net petroleum imports now account for approximately 60 percent of U.S. petroleum consumption. World crude oil production is highly concentrated, exacerbating the risks of supply disruptions and price shocks. Tight global oil markets led to prices over $100 per barrel in 2008, with gasoline reaching as high as $4 per gallon in many parts of the U.S., causing financial hardship for many families. The export of U.S. assets for oil imports continues to be an important component of the historically unprecedented U.S. trade deficits. Transportation accounts for about two-thirds of U.S. petroleum consumption. Light-duty vehicles account for about 60 percent of transportation oil use, which means that they alone account for about 40 percent of all U.S. oil consumption.

1. Building Blocks of the National Program

The National Program is both needed and possible because the relationship between improving fuel economy and reducing CO2 tailpipe emissions is a very direct and close one. The amount of those CO2 emissions is essentially constant per gallon combusted of a given type of fuel. Thus, the more fuel efficient a vehicle is, the less fuel it burns to travel a given distance. The less fuel it burns, the less CO2 it emits in traveling that distance. While there are emission control technologies that reduce the pollutants (e.g., carbon monoxide) produced by imperfect combustion of fuel by capturing or converting them to other compounds, there is no such technology for CO2. Further, while some of those pollutants can also be reduced by achieving a more complete combustion of fuel, doing so only increases the tailpipe emissions of CO2. Thus, there is a single pool of technologies for addressing these twin problems, i.e., those that reduce fuel consumption and thereby reduce CO2 emissions as well.

….

B. Summary of the Joint Final Rule and Differences From the Proposal

In this joint rulemaking, EPA is establishing GHG emissions standards under the Clean Air Act (CAA), and NHTSA is establishing Corporate Average Fuel Economy (CAFE) standards under the Energy Policy and Conservation Action of 1975 (EPCA), as amended by the Energy Independence and Security Act of 2007 (EISA). The intention of this joint rulemaking is to set forth a carefully coordinated and harmonized approach to implementing these two statutes, in accordance with all substantive and procedural requirements imposed by law.

NHTSA and EPA have coordinated closely and worked jointly in developing their respective final rules. This is reflected in many aspects of this joint rule. For example, the agencies have developed a comprehensive Joint Technical Support Document (TSD) that provides a solid technical underpinning for each agency's modeling and analysis used to support their standards. Also, to the extent allowed by law, the agencies have harmonized many elements of program design, such as the form of the standard (the footprint-based attribute curves), and the definitions used for cars and trucks. They have developed the same or similar compliance flexibilities, to the extent allowed and appropriate under their respective statutes, such as averaging, banking, and trading of credits, and have harmonized the compliance testing and test protocols used for purposes of the fleet average standards each agency is finalizing. Finally, under their respective statutes, each agency is called upon to exercise its judgment and determine standards that are an appropriate balance of various relevant statutory factors. Given the common technical issues before each agency, the similarity of the factors each agency is to consider and balance, and the authority of each agency to take into consideration the standards of the other agency, both EPA and NHTSA are establishing standards that result in a harmonized National Program.

This joint final rule covers passenger cars, light-duty trucks, and medium-duty passenger vehicles built in model years 2012 through 2016. These vehicle categories are responsible for almost 60 percent of all U.S. transportation-related GHG emissions. EPA and NHTSA expect that automobile manufacturers will meet these standards by utilizing technologies that will reduce vehicle GHG emissions and improve fuel economy. Although many of these technologies are available today, the emissions reductions and fuel economy improvements finalized in this notice will involve more widespread use of these technologies across the light-duty vehicle fleet. These include improvements to engines, transmissions, and tires, increased use of start-stop technology, improvements in air conditioning systems, increased use of hybrid and other advanced technologies, and the initial commercialization of electric vehicles and plug-in hybrids.

NHTSA's and EPA's assessments of likely vehicle technologies that manufacturers will employ to meet the standards are discussed in detail below and in the Joint TSD.

The National Program is estimated to result in approximately 960 million metric tons of total carbon dioxide equivalent emissions reductions and approximately 1.8 billion barrels of oil savings over the lifetime of vehicles sold in model years (MYs) 2012 through 2016. In total, the combined EPA and NHTSA 2012-2016 standards will reduce GHG emissions from the U.S. light-duty fleet by approximately 21 percent by 2030 over the level that would occur in the absence of the National Program. These actions also will provide important energy security benefits, as light-duty vehicles are about 95 percent dependent on oil-based fuels. The agencies project that the total benefits of the National Program will be more than $240 billion at a 3% discount rate, or more than $190 billion at a 7% discount rate. In the discussion that follows in Sections III and IV, each agency explains the related benefits for their individual standards.

Together, EPA and NHTSA estimate that the average cost increase for a model year 2016 vehicle due to the National Program will be less than $1,000. The average U.S. consumer who purchases a vehicle outright is estimated to save enough in lower fuel costs over the first three years to offset these higher vehicle costs. However, most U.S. consumers purchase a new vehicle using credit rather than paying cash and the typical car loan today is a five year, 60 month loan. These consumers will see immediate savings due to their vehicle's lower fuel consumption in the form of a net reduction in annual costs of $130-$180 throughout the duration of the loan (that is, the fuel savings will outweigh the increase in loan payments by $130-$180 per year). Whether a consumer takes out a loan or purchases a new vehicle outright, over the lifetime of a model year 2016 vehicle, the consumer's net savings could be more than $3,000. The average 2016 MY vehicle will emit 16 fewer metric tons of CO2-equivalent emissions (that is, CO2 emissions plus HFC air conditioning leakage emissions) during its lifetime. Assumptions that underlie these conclusions are discussed in greater detail in the agencies' respective regulatory impact analyses and in Section III.H.5 and Section IV.

This joint rule also results in important regulatory convergence and certainty to automobile companies. Absent this rule, there would be three separate Federal and State regimes independently regulating light-duty vehicles to reduce fuel consumption and GHG emissions: NHTSA's CAFE standards, EPA's GHG standards, and the GHG standards applicable in California and other States adopting the California standards. This joint rule will allow automakers to meet both the NHTSA and EPA requirements with a single national fleet, greatly simplifying the industry's technology, investment and compliance strategies. In addition, to promote the National Program, California announced its commitment to take several actions, including revising its program for MYs 2012-2016 such that compliance with the Federal GHG standards will be deemed to be compliance with California's GHG standards. This will allow the single national fleet used by automakers to meet the two Federal requirements and to meet California requirements as well. California is proceeding with a rulemaking intended to revise its 2004 regulations to meet its commitments. EPA and NHTSA are confident that these GHG and CAFE standards will successfully harmonize both the Federal and State programs for MYs 2012-2016 and will allow our country to achieve the increased benefits of a single, nationwide program to reduce light-duty vehicle GHG emissions and reduce the country's dependence on fossil fuels by improving these vehicles' fuel economy.

A successful and sustainable automotive industry depends upon, among other things, continuous technology innovation in general, and low GHG emissions and high fuel economy vehicles in particular. In this respect, this action will help spark the investment in technology

innovation necessary for automakers to successfully compete in both domestic and export markets, and thereby continue to support a strong economy.

While this action covers MYs 2012-2016, many stakeholders encouraged EPA and NHTSA to also begin working toward standards for MY 2017 and beyond that would maintain a single nationwide program. The agencies recognize the importance of and are committed to a strong, coordinated national program for light-duty vehicles for model years beyond 2016.

NOTES AND QUESTIONS

1. Why was it important for the EPA to find not only that greenhouse gases endanger public health and welfare, but also that the specific emissions regulated in the Clean Air Act's Section 202(a) do so? On what basis does the EPA make both findings? What are the strengths and weaknesses of its analysis?

2. How did the endangerment finding provide the basis for the motor vehicles regulations that followed? To what extent is the finding framed in a way that it might have implications beyond motor vehicles?

3. What are the advantages and disadvantages of the EPA and NHSTA jointly regulating? Why do you think that such joint regulation has not taken place in the past?

4. What are the benefits and limitations of California being able to petition for a waiver from federal standards, and states being able to choose between those standards? What might have motivated the federal government and California to work to harmonize their standards in the coming years? Why might the federal government have decided to include the automobile industry in those negotiations?

3. Extension to Stationary Sources and Judicial and Legislative Challenges

In May 2010, the EPA took the first major step in extending its greenhouse gas regulatory efforts to stationary sources such as power plants, refineries, and other major industrial emitters. It issued a final rule establishing the threshold greenhouse gas permit requirements for new and existing facilities under the New Source Review Prevention of Significant Deterioration (PSD) and Title V.

These two permitting programs cover air pollution arising stationary sources (as opposed to motor vehicles). They provide permits when constructing new facilities, modifying existing facilities, and operating these facilities will lead to emissions of substances defined as pollutants under the Clean Air Act. The PSD permitting process was created through Clean Air Act amendments in 1977, and provides for review of new facilities or facility modifications that would significantly increase a pollutant regulated under the Act. Title V focuses on pollution arising from operations. These permits provide limits on the types and quantities of emissions and requirements regarding pollution control devices, pollution prevention activities, and monitoring.

The May 2010 rule addresses concerns over which emitters will have obligations under the initial greenhouse gas regulations of stationary sources. It tailors the permitting programs so that they only cover the most significant greenhouse gas facilities (which produce seventy percent of greenhouse gas emissions from stationary sources) in order to avoid overburdening state regulators or smaller emitters. In December 2010, the EPA promulgated additional rules that refine these requirements further and address the differential regulatory conditions in different states. The EPA also proposed a schedule for establishing greenhouse gas National Source Performance Standards for power plants and petroleum refineries as part of its settlement of two additional lawsuits.

EPA's regulation of greenhouse gases has been challenged in both Congress and the courts, but has not yet been significantly undermined. The following excerpt provides an overview of the EPA's initial efforts to regulate stationary sources and these challenges.

Holly L. Pearson & Kevin Poloncarz, *With Legislation Stalled, EPA Presses Forward with Greenhouse Gas Regulatory Program Under the Clean Air Act as January 2, 2011 Trigger Date Approaches,* 587 PLI/REAL 105 (2011).

Ever since the U.S. Supreme Court's decision in *Massachusetts v. U.S. EPA*, 549 U.S. 497 (2007), when the Court held that GHGs fall within the definition of "air pollutant" for purposes of CAA section 202(a)(1), EPA has been figuring out how it is going to regulate GHGs under the CAA. In the past year, after issuing a number of proposals and receiving thousands of comments, EPA began to finalize its approach. In particular, EPA finalized four actions that the Agency believes, taken together, trigger PSD applicability for certain GHG sources.

Endangerment and Cause or Contribute Findings

First, EPA finalized two distinct findings regarding GHGs under section 202(a) of the CAA (74 Fed. Reg. 66,496 (Dec. 15, 2009)). In the "Endangerment Finding," EPA found that the current and projected concentrations of six key GHGs in the atmosphere – namely, carbon dioxide (CO2), methane (CH4), nitrous oxide (N2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF6) – may reasonably be anticipated to endanger public health and welfare of current and future generations. In the "Cause or Contribute Finding," EPA found that the combined emissions of these GHGs from new motor vehicles and new motor vehicle engines contribute to the GHG air pollution that endangers public health and welfare. These findings were a prerequisite for finalizing the light-duty vehicle GHG standards.

Johnson Memo Reconsideration

Second, EPA issued its final reconsideration of the Bush Administration's "Johnson Memo," a December 18, 2008 memorandum by former EPA Administrator Stephen L. Johnson that set forth a policy on when a pollutant is "subject to regulation" under the CAA (75 Fed. Reg. 17004 (Apr. 2, 2010)). EPA's reconsideration of the Johnson Memo affirmed the interpretation that "subject to regulation" for PSD permitting requirements includes only those pollutants subject to regulations that require actual control of emissions. In addition, EPA clarified that the date that a pollutant becomes "subject to regulation" is the date that a regulation "takes effect." Based on EPA's interpretations and the then-anticipated promulgation of the light-duty vehicle standards,

PSD permitting requirements would be triggered on January 2, 2011, the earliest date that model year 2012 vehicles meeting the GHG light-duty vehicle standards could be sold in the U.S.

Light-Duty Vehicle Rule

Third, in a joint final rulemaking with the National Highway Traffic Safety Administration (NHTSA), EPA issued the first national rule limiting GHG emissions from cars and light trucks (75 Fed. Reg. 25,324 (May 7, 2010)). Applicable to passenger cars, light-duty trucks, and medium-duty passenger vehicles, the standards will go into effect with model year 2012 and push NHTSA's corporate average fuel economy (CAFE) standards to a fleetwide average of 30.1 miles per gallon in 2012 to 35.5 miles per gallon in 2016, with corresponding CO2 emissions limits (in grams per mile).

The Final PSD Tailoring Rule

Finally, early … summer [2010], EPA finalized the "Tailoring Rule" to "tailor" the requirements of the CAA – namely, the statutory PSD and Title V thresholds – and phase in GHG permitting of stationary sources (75 Fed. Reg. 31,514 (June 3, 2010)). (*See*, "EPA Issues Final 'Tailoring Rule' Establishing Permitting Requirements for Greenhouse Gas Emissions," 3 *Climate Change Law & Pol'y Rptr* 86 (July 2010).) According to EPA, the Tailoring Rule is necessary because, without it, PSD and Title V requirements would apply at the statutory 100 and 250 tons per year (tpy) levels as of January 2, 2011, triggering a need for agencies to issue tens of thousands of PSD permits and millions of Title V permits. The Tailoring Rule established the first two steps of EPA's phase-in approach and outlined a third.

Under Step 1, from January 2, 2011 to June 30, 2011, PSD or Title V requirements will apply to a source's GHG emissions only if the source is subject to PSD or Title V anyway due to its non-GHG pollutants. For these so-called "anyway" sources, the applicable requirements of PSD, most notably, the BACT [Best Available Control Technology] requirement, will apply to projects that increase net GHG emissions by at least 75,000 tpy total GHGs (on a CO2e basis), but only if the PSD requirement is triggered by a non-GHG pollutant. For Title V, only existing sources with, or new sources obtaining, Title V permits for non-GHG pollutants will be required to address GHGs.

Under Step 2, from July 1, 2011 to June 30, 2013, PSD permitting requirements will apply for the first time to new construction projects that emit GHGs of at least 100,000 tpy even if a project's emissions do not exceed the permitting thresholds for any other pollutant. In addition, sources that emit or have the potential to emit at least 100,000 tpy CO2e and that undertake a modification that increases net GHG emissions by at least 75,000 tpy CO2e will be subject to PSD requirements. For Title V, new sources and existing sources not already subject to Title V that emit at least 100,000 tpy CO2e will become subject to Title V requirements. According to EPA estimates, approximately 900 additional PSD permitting actions and 550 Title V permitting actions will be required.

In addition, EPA outlined a third step, consisting of another rulemaking to begin in 2011 and conclude by July 1, 2012 that may subject smaller sources to permitting requirements beginning July 1, 2013. EPA also committed (i) to explore streamlining techniques, (ii) to not include

sources with emissions below 50,000 tpy CO2e and modifications with net GHG increases of 50,000 tpy CO2e before April 30, 2016, (iii) to complete a study by April 30, 2015 to evaluate the status of PSD and Title V permitting for GHG-emitting sources, and (iv) to complete further rulemaking based on the study by April 30, 2016 to address smaller sources.

Legal Challenges

Given the stakes involved, it is not surprising that each of EPA's four actions has been challenged. All told, more than 75 petitions for review filed by, among others, industry groups, businesses, states and governors, U.S. representatives, and environmental groups, are pending with the U.S. Court of Appeals for the D.C. Circuit.

After issuing its Endangerment and Cause or Contribute Findings, EPA received ten petitions for reconsideration that challenged the validity of the climate science used as a basis for EPA's findings. On July 29, 2010, EPA denied all ten petitions. Legal battles continue, however, through petitions for review filed with the D.C. Circuit Court of Appeals; a lawsuit filed by the U.S. Chamber of Commerce challenging the legality of EPA's rejection of its petition for reconsideration; and a petition to EPA under the Data Quality Act filed by Peabody Energy challenging the temperature data supporting EPA's findings.

Multiple pending petitions for review challenge EPA's other three actions. For the Johnson Memo Reconsideration and the Tailoring Rule, procedural motions were due by September 15, 2010, and dispositive motions and EPA's certified index of the administrative record were due by September 30, 2010. For the Light-Duty Vehicle Rule, procedural motions were due by September 10, 2010, and dispositive motions and EPA's certified index of the administrative record were due by September 24, 2010.

In addition, a group of industry associations filed a petition for reconsideration of the Tailoring Rule on grounds that only those pollutants for which EPA has established a national ambient air quality standard (NAAQS), *i.e.*, criteria pollutants, and for which the area is designated attainment or unclassifiable are able to trigger PSD permitting requirements. In other words, the approach that EPA is taking under Step 1 of the Tailoring Rule in regulating only “anyway” sources is the correct one under the CAA. EPA has not yet issued a decision on the petition for reconsideration.

NOTES AND QUESTIONS

1. Why did the Obama administration decide to confine its initial permitting efforts on greenhouse gases to the most significant emitters? What are the benefits and limitations of such a decision?

2. What makes greenhouse gas regulation so controversial? Are there any ways to frame regulations to make them less controversial, or is such contestation inherent to regulating these emissions?

3. States play a major role in the implementation of standards for stationary sources through their state implementation plans. Robert McKinstry, Jr., Thomas Peterson, Adam Rose, and Dan Wei have argued that state implementation plans under the Clean Air Act play a constructive role in cost-effective greenhouse gas emissions:

> States and regional organizations have been in the forefront of programs to address climate change in the United States. The Supreme Court's decision in *Massachusetts v. Environmental Protection Agency* means that a strong federal response is now also inevitable. Expeditious implementation of a federal program requires that existing state and regional programs be coordinated and incorporated into a federal program. The federal Clean Air Act provides a medium for accomplishing this. Scale up of the climate mitigation planning efforts of twenty states suggests that an effective federal response can be achieved expeditiously at economy-wide net cost savings, provided all socio-economic sectors are addressed and vertical and horizontal linkages are considered through a mixture of policy tools. Analysis of the portfolios of policy tools identified in state climate plans indicates that many essential policy tools fall exclusively within state jurisdiction. Planning and implementation at the state level is critical for identifying the mix of technical and policy approaches that will be most effective and coordinating mechanisms across sectors. The state implementation planning mechanism creates by the Clean Air Act can be adapted to allow federal coordination and oversight of the full range of state, local and federal policy mechanisms necessary for cost-effective reductions of greenhouse gas emissions.
>
> Robert McKinstry, Jr., Thomas Peterson, Adam Rose & Dan Wei, The New Climate World: Achieving Economic Efficiency in a Federal System for GHG Regulation through State Planning (Mar. 5, 2009) (working paper), *available at* http://ssrn.com/abstract=1354146.

Do you agree with them? How does this state role impact the appropriate strategies for federal efforts to regulate power plants, refineries, and other major industrial emitters?

4. *American Electric Power v. Connecticut*

In June 2010, the U.S. Supreme Court issued its second decision involving climate change. In this case, the petitioners directly challenged major corporate emitters rather than the decisions of governmental regulators. Unlike *Massachusetts*, the opinion was largely unanimous other than on the "threshold issues;" these issues explicitly included standing (where there is a 4–4 plurality following the *Massachusetts* approach) and implicitly included the political question doctrine, a major issue in the lower courts and oral argument, but not directly mentioned in the opinion.

Justice Ginsburg wrote an opinion that Justices Roberts, Scalia, Kennedy, Breyer, and Kagan joined. Justice Alito, joined by Justice Thomas, concurred in part and concurred in judgment. Justice Sotomayor, who was part of a lower court panel hearing the case, recused herself. The justices agreed that, assuming the EPA remained authorized to regulate greenhouse gas

emissions under the Clean Air Act, litigation should take place under those auspices rather than along a separate federal common law track.

The following excerpts from the majority and concurring opinion include a description of the case, the justices' views on threshold issues, its core analysis regarding why EPA Clean Air Act regulatory authority displaces common law federal public nuisance, and the issues which it chooses not to reach. Together, the holding and dicta reinforce the current U.S. regulatory path launched through the *Massachusetts* opinion and define its parameters.

AEP v. Connecticut, 131 S. Ct. 2527 (2011).

Justice GINSBURG delivered the opinion of the Court.

We address in this opinion the question whether the plaintiffs (several States, the city of New York, and three private land trusts) can maintain federal common law public nuisance claims against carbon-dioxide emitters (four private power companies and the federal Tennessee Valley Authority). As relief, the plaintiffs ask for a decree setting carbon-dioxide emissions for each defendant at an initial cap, to be further reduced annually. The Clean Air Act and the Environmental Protection Agency action the Act authorizes, we hold, displace the claims the plaintiffs seek to pursue.

I

In *Massachusetts v. EPA*, 549 U.S. 497, 127 S.Ct. 1438, 167 L.Ed.2d 248 (2007), this Court held that the Clean Air Act, 42 U.S.C. § 7401 *et seq.*, authorizes federal regulation of emissions of carbon dioxide and other greenhouse gases. "[N]aturally present in the atmosphere and ... also emitted by human activities," greenhouse gases are so named because they "trap ... heat that would otherwise escape from the [Earth's] atmosphere, and thus form the greenhouse effect that helps keep the Earth warm enough for life." 74 Fed.Reg. 66499 (2009). *Massachusetts* held that the Environmental Protection Agency (EPA) had misread the Clean Air Act when it denied a rulemaking petition seeking controls on greenhouse gas emissions from new motor vehicles. 549 U.S., at 510–511, 127 S.Ct. 1438. Greenhouse gases, we determined, qualify as "air pollutant[s]" within the meaning of the governing Clean Air Act provision, *id.*, at 528–529, 127 S.Ct. 1438 (quoting § 7602(g)); they are therefore within EPA's regulatory ken. Because EPA had authority to set greenhouse gas emission standards and had offered no "reasoned explanation" for failing to do so, we concluded that the agency had not acted "in accordance with law" when it denied the requested rulemaking. *Id.*, at 534–535, 127 S.Ct. 1438 (quoting § 7607(d)(9)(A)).

Responding to our decision in *Massachusetts*, EPA undertook greenhouse gas regulation. In December 2009, the agency concluded that greenhouse gas emissions from motor vehicles "cause, or contribute to, air pollution which may reasonably be anticipated to endanger public health or welfare," the Act's regulatory trigger. § 7521(a)(1); 74 Fed.Reg. 66496. The agency observed that "atmospheric greenhouse gas concentrations are now at elevated and essentially unprecedented levels," almost entirely "due to anthropogenic emissions," *id.*, at 66517; mean global temperatures, the agency continued, demonstrate an "unambiguous warming trend over the last 100 years," and particularly "over the past 30 years," *ibid*. Acknowledging that not all scientists agreed on the causes and consequences of the rise in global temperatures, *id.*, at 66506,

66518, 66523–66524, EPA concluded that "compelling" evidence supported the "attribution of observed climate change to anthropogenic" emissions of greenhouse gases, *id.*, at 66518. Consequent dangers of greenhouse gas emissions, EPA determined, included increases in heat-related deaths; coastal inundation and erosion caused by melting icecaps and rising sea levels; more frequent and intense hurricanes, floods, and other "extreme weather events" that cause death and destroy infrastructure; drought due to reductions in mountain snowpack and shifting precipitation patterns; destruction of ecosystems supporting animals and plants; and potentially "significant disruptions" of food production. *Id.*, at 66524–66535.

EPA and the Department of Transportation subsequently issued a joint final rule regulating emissions from light-duty vehicles, see 75 Fed.Reg. 25324 (2010), and initiated a joint rulemaking covering medium- and heavy-duty vehicles, see *id.*, at 74152. EPA also began phasing in requirements that new or modified "[m]ajor [greenhouse gas] emitting facilities" use the "best available control technology." § 7475(a)(4); 75 Fed.Reg. 31520–31521. Finally, EPA commenced a rulemaking under § 111 of the Act, 42 U.S.C. § 7411, to set limits on greenhouse gas emissions from new, modified, and existing fossil-fuel fired power plants. Pursuant to a settlement finalized in March 2011, EPA has committed to issuing a proposed rule by July 2011, and a final rule by May 2012. See 75 Fed.Reg. 82392; Reply Brief for Tennessee Valley Authority 18.

II

The lawsuits we consider here began well before EPA initiated the efforts to regulate greenhouse gases just described. In July 2004, two groups of plaintiffs filed separate complaints in the Southern District of New York against the same five major electric power companies. The first group of plaintiffs included eight States and New York City, the second joined three nonprofit land trusts; both groups are respondents here. The defendants, now petitioners, are four private companies and the Tennessee Valley Authority, a federally owned corporation that operates fossil-fuel fired power plants in several States. According to the complaints, the defendants "are the five largest emitters of carbon dioxide in the United States." App. 57, 118. Their collective annual emissions of 650 million tons constitute 25 percent of emissions from the domestic electric power sector, 10 percent of emissions from all domestic human activities, *ibid.*, and 2.5 percent of all anthropogenic emissions worldwide, App. to Pet. for Cert. 72a.

By contributing to global warming, the plaintiffs asserted, the defendants' carbon-dioxide emissions created a "substantial and unreasonable interference with public rights," in violation of the federal common law of interstate nuisance, or, in the alternative, of state tort law. App. 103–105, 145–147. The States and New York City alleged that public lands, infrastructure, and health were at risk from climate change. App. 88–93. The trusts urged that climate change would destroy habitats for animals and rare species of trees and plants on land the trusts owned and conserved. App. 139–145. All plaintiffs sought injunctive relief requiring each defendant "to cap its carbon dioxide emissions and then reduce them by a specified percentage each year for at least a decade." App. 110, 153.

The District Court dismissed both suits as presenting non-justiciable political questions, citing *Baker v. Carr*, 369 U.S. 186, 82 S.Ct. 691, 7 L.Ed.2d 663 (1962), but the Second Circuit reversed, 582 F.3d 309 (2009). On the threshold questions, the Court of Appeals held that the

suits were not barred by the political question doctrine, *id.*, at 332, and that the plaintiffs had adequately alleged Article III standing, *id.*, at 349.

Turning to the merits, the Second Circuit held that all plaintiffs had stated a claim under the "federal common law of nuisance." *Id.*, at 358, 371.... The Court of Appeals further determined that the Clean Air Act did not "displace" federal common law.

We granted certiorari. 562 U.S. ——, 131 S.Ct. 2527, —— L.Ed.2d ——, 2011 WL 2437011 (2010).

III

The petitioners contend that the federal courts lack authority to adjudicate this case. Four members of the Court would hold that at least some plaintiffs have Article III standing under *Massachusetts*, which permitted a State to challenge EPA's refusal to regulate greenhouse gas emissions, 549 U.S., at 520–526, 127 S.Ct. 1438; and, further, that no other threshold obstacle bars review. Four members of the Court, adhering to a dissenting opinion in *Massachusetts*, 549 U.S., at 535, 127 S.Ct. 1438, or regarding that decision as distinguishable, would hold that none of the plaintiffs have Article III standing. We therefore affirm, by an equally divided Court, the Second Circuit's exercise of jurisdiction and proceed to the merits. See *Nye v. United States*, 313 U.S. 33, 44, 61 S.Ct. 810, 85 L.Ed. 1172 (1941).

IV

A

"There is no federal general common law," *Erie R. Co. v. Tompkins*, 304 U.S. 64, 78, 58 S.Ct. 817, 82 L.Ed. 1188 (1938), famously recognized. In the wake of *Erie*, however, a keener understanding developed. See generally Friendly, In Praise of *Erie*—And of the New Federal Common Law, 39 N.Y.U.L.Rev. 383 (1964). *Erie* "le[ft] to the states what ought be left to them," *id.*, at 405, and thus required "federal courts [to] follow state decisions on matters of substantive law appropriately cognizable by the states," *id.*, at 422. *Erie* also sparked "the emergence of a federal decisional law in areas of national concern." *Id.*, at 405. The "new" federal common law addresses "subjects within national legislative power where Congress has so directed" or where the basic scheme of the Constitution so demands. *Id.*, at 408, n. 119, 421–422. Environmental protection is undoubtedly an area "within national legislative power," one in which federal courts may fill in "statutory interstices," and, if necessary, even "fashion federal law." *Id.*, at 421–422.

….

Recognition that a subject is meet for federal law governance, however, does not necessarily mean that federal courts should create the controlling law. Absent a demonstrated need for a federal rule of decision, the Court has taken "the prudent course" of "adopt[ing] the readymade body of state law as the federal rule of decision until Congress strikes a different accommodation."

….

We need not address the parties' dispute in this regard. For it is an academic question whether, in the absence of the Clean Air Act and the EPA actions the Act authorizes, the plaintiffs could state a federal common law claim for curtailment of greenhouse gas emissions because of their

contribution to global warming. Any such claim would be displaced by the federal legislation authorizing EPA to regulate carbon-dioxide emissions.

B

….

We hold that the Clean Air Act and the EPA actions it authorizes displace any federal common law right to seek abatement of carbon-dioxide emissions from fossil-fuel fired power plants. *Massachusetts* made plain that emissions of carbon dioxide qualify as air pollution subject to regulation under the Act. 549 U.S., at 528–529, 127 S.Ct. 1438. And we think it equally plain that the Act "speaks directly" to emissions of carbon dioxide from the defendants' plants.

….

If EPA does not *set* emissions limits for a particular pollutant or source of pollution, States and private parties may petition for a rulemaking on the matter, and EPA's response will be reviewable in federal court. See § 7607(b)(1); *Massachusetts*, 549 U.S., at 516–517, 529, 127 S.Ct. 1438. As earlier noted, see *supra*, at 2530 – 2531, EPA is currently engaged in a § 7411 rulemaking to set standards for greenhouse gas emissions from fossil-fuel fired power plants. To settle litigation brought under § 7607(b) by a group that included the majority of the plaintiffs in this very case, the agency agreed to complete that rulemaking by May 2012. 75 Fed.Reg. 82392. The Act itself thus provides a means to seek limits on emissions of carbon dioxide from domestic power plants—the same relief the plaintiffs seek by invoking federal common law. We see no room for a parallel track.

C

The plaintiffs argue, as the Second Circuit held, that federal common law is not displaced until EPA actually exercises its regulatory authority, *i.e.*, until it sets standards governing emissions from the defendants' plants. We disagree.

….

The critical point is that Congress delegated to EPA the decision whether and how to regulate carbon-dioxide emissions from power plants; the delegation is what displaces federal common law. Indeed, were EPA to decline to regulate carbon-dioxide emissions altogether at the conclusion of its ongoing § 7411 rulemaking, the federal courts would have no warrant to employ the federal common law of nuisance to upset the agency's expert determination.

EPA's judgment, we hasten to add, would not escape judicial review. Federal courts, we earlier observed, see *supra*, at 2537 – 2538, can review agency action (or a final rule declining to take action) to ensure compliance with the statute Congress enacted. As we have noted, see *supra*, at 2537, the Clean Air Act directs EPA to establish emissions standards for categories of stationary sources that, "in [the Administrator's] judgment," "caus[e], or contribut[e] significantly to, air pollution which may reasonably be anticipated to endanger public health or welfare." § 7411(b)(1)(A). "[T]he use of the word 'judgment,' " we explained in *Massachusetts*, "is not a roving license to ignore the statutory text." 549 U.S., at 533, 127 S.Ct. 1438. "It is but a direction to exercise discretion within defined statutory limits." *Ibid.* EPA may not decline to regulate carbon-dioxide emissions from power plants if refusal to act would be "arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law." § 7607(d)(9)(A). If

the plaintiffs in this case are dissatisfied with the outcome of EPA's forthcoming rulemaking, their recourse under federal law is to seek Court of Appeals review, and, ultimately, to petition for certiorari in this Court.

Indeed, this prescribed order of decision making—the first decider under the Act is the expert administrative agency, the second, federal judges—is yet another reason to resist setting emissions standards by judicial decree under federal tort law. The appropriate amount of regulation in any particular greenhouse gas-producing sector cannot be prescribed in a vacuum: as with other questions of national or international policy, informed assessment of competing interests is required. Along with the environmental benefit potentially achievable, our Nation's energy needs and the possibility of economic disruption must weigh in the balance.

….

It is altogether fitting that Congress designated an expert agency, here, EPA, as best suited to serve as primary regulator of greenhouse gas emissions. The expert agency is surely better equipped to do the job than individual district judges issuing ad hoc, case-by-case injunctions. Federal judges lack the scientific, economic, and technological resources an agency can utilize in coping with issues of this order. See generally *Chevron U.S.A. Inc. v. Natural Resources Defense Council, Inc.*, 467 U.S. 837, 865–866, 104 S.Ct. 2778, 81 L.Ed.2d 694 (1984). Judges may not commission scientific studies or convene groups of experts for advice, or issue rules under notice-and-comment procedures inviting input by any interested person, or seek the counsel of regulators in the States where the defendants are located. Rather, judges are confined by a record comprising the evidence the parties present. Moreover, federal district judges, sitting as sole adjudicators, lack authority to render precedential decisions binding other judges, even members of the same court.

Notwithstanding these disabilities, the plaintiffs propose that individual federal judges determine, in the first instance, what amount of carbon-dioxide emissions is "unreasonable," App. 103, 145, and then decide what level of reduction is "practical, feasible and economically viable," App. 58, 119. These determinations would be made for the defendants named in the two lawsuits launched by the plaintiffs. Similar suits could be mounted, counsel for the States and New York City estimated, against "thousands or hundreds or tens" of other defendants fitting the description "large contributors" to carbon-dioxide emissions. Tr. of Oral Arg. 57.

The judgments the plaintiffs would commit to federal judges, in suits that could be filed in any federal district, cannot be reconciled with the decisionmaking scheme Congress enacted. The Second Circuit erred, we hold, in ruling that federal judges may set limits on greenhouse gas emissions in face of a law empowering EPA to set the same limits, subject to judicial review only to ensure against action "arbitrary, capricious, ... or otherwise not in accordance with law." § 7607(d)(9).

V

The plaintiffs also sought relief under state law, in particular, the law of each State where the defendants operate power plants. See App. 105, 147. The Second Circuit did not reach the state law claims because it held that federal common law governed.…None of the parties have briefed preemption or otherwise addressed the availability of a claim under state nuisance law. We therefore leave the matter open for consideration on remand.

* * *

For the reasons stated, we reverse the judgment of the Second Circuit and remand the case for further proceedings consistent with this opinion.

It is so ordered.

Justice SOTOMAYOR took no part in the consideration or decision of this case.

Justice ALITO, with whom Justice THOMAS joins, concurring in part and concurring in the judgment.

I concur in the judgment, and I agree with the Court's displacement analysis on the assumption (which I make for the sake of argument because no party contends otherwise) that the interpretation of the Clean Air Act, 42 U.S.C. § 7401 *et seq.*, adopted by the majority in *Massachusetts v. EPA*, 549 U.S. 497, 127 S.Ct. 1438, 167 L.Ed.2d 248 (2007), is correct.

NOTES AND QUESTIONS

1. The Supreme Court chose to take a broad view of displacement rather than make it depend on the EPA actually regulating under its authority. What are the advantages and disadvantages of taking such a broad approach?

2. In an article that pre-dates the Supreme Court decision in *AEP*, Attorney James Shelson argues that public nuisance should not be applied to climate change because its standards are too hard to define and these claims are subject to abuse:

> The decisions that have not dismissed public nuisance claims in climate change cases sustain these claims on the naïve and incorrect assumption that common law provides sufficient standards to resolve climate change issues. The Fifth Circuit found that "common law tort rules provide long-established rules for adjudicating the nuisance, trespass and negligence claims at issue." The Second Circuit found that federal courts have successfully adjudicated complex public nuisance cases "for over a century." The decisions, however, fail to say what those standards are. Indeed, "[o]ne searches in vain ... for anything resembling a principle in the common law of nuisance." "There is perhaps no more impenetrable jungle in the entire law than that which surrounds the word 'nuisance.' It has meant all things to all people, and has been applied indiscriminately to everything from an alarming advertisement to a cockroach baked in a pie." Nuisance law "straddles the legal universe, virtually defies synthesis, and generates case law to suit every taste." The Fourth Circuit correctly got to the heart of the matter when it concluded that if we are to regulate greenhouse gas emissions "by the same principles we use to regulate prostitution, obstacles in highways, and bullfights, we will be hard pressed to derive any manageable criteria." Moreover, public nuisance claims in climate change cases are potentially subject to abuse. In other

> words, they "scapegoat the regulated community by extracting piecemeal relief from those entities for a regulatory failure that rests primarily with the federal government."

James W. Shelson, *The Misuse of Public Nuisance Law to Address Climate Change*, 78 DEF. COUNS. J. 195, 218–19 (2011).

Do you agree with Shelson? Does climate change as a problem have qualities that are different than other issues like tobacco about which public nuisance has been brought to influence public policy? If so, what are those differences? If not, what is your view of the value and limitations of public nuisance as a tool in social and environmental policy?

3. Professor Maxine Burkett has argued that the *AEP* decision poses serious climate justice concerns because it eliminates an avenue through which those injured by climate change can achieve corrective justice, in which the perpetrator compensates them for their harm. In that context, she explains the way in which public nuisance can serve as an important justice mechanism:

> Public nuisance theory, in particular, serves as a potentially effective corrective justice [CJ] mechanism for CJ claimants because it focuses on the nature of the harms plaintiffs suffered. *Native Village of Kivalina v. Exxon Mobil*, another pending public nuisance case that faces an uphill battle after *AEP*, is a paradigmatic example of CJ by virtue of its plaintiffs and the nature of their claims. Here, the Native Inupiat plaintiffs are among the most vulnerable to climate change, while producing insignificant emissions. For them, a viable tort claim is a means to achieve compensation for the loss of their property and facilitate their relocation. Public nuisance theory, with its emphasis on the unreasonableness of a plaintiff's *injury*, provides an appropriate focus for understanding climate impact claims. Instead of assessing the worth of defendant's actions—often riddled with the politics of wealth and power—nuisance law shines a spotlight on the unprecedented events climate change introduces. Public nuisance claims, as Professor Randall Abate explains, may succeed where disparate impact litigation failed in the environmental justice context. They can provide the specific relief—funding for physical relocation in this case—that these particular CJ plaintiffs deserve. Even with a comprehensive regulatory scheme for emissions reduction in place, public nuisance law should remain a means by which climate impacted communities can seek compensation from major-emitters.
>
> Maxine Burkett, *Climate Justice and the Elusive Climate Tort*, 121 Yale L.J. Online 115 (2011), http://yalelawjournal.org/2011/09/13/burkett.html.

What is the appropriate role for corrective justice in the context of climate change? To what extent should these justice concerns have entered into the Court's determination in *AEP*? In the aftermath of *AEP*, what are the best strategies for helping climate change victims achieve corrective justice?

Burkett's essay was part of a symposium published by *Yale Law Journal Online* that explored different aspects of the *AEP* opinion. The symposium contains analysis of implications for climate change litigation (Professor Hari Osofsky), standing (Professor Daniel Farber), political question doctrine (Professor Jim May), displacement (Professor Jonathan Adler), nuisance suits to address climate change (Professor Michael Gerrard), and climate justice (Professor Maxine Burkett). All of these essays can be accessed through the introductory essay of the symposium, Hari M. Osofsky, AEP v. Connecticut*'s Implications for the Future of Climate Change Litigation*, 121 Yale L.J. Online 101 (2011), http://yalelawjournal.org/2011/09/13/osofsky.html.

4. The Supreme Court left open the possibility that state law nuisance suits could proceed. In an article written prior to the *AEP* decision, Jonathan Zasloff argues that public nuisance climate change suits function as a form of judicial carbon tax. Jonathan Zasloff, *The Judicial Carbon Tax: Reconstructing Public Nuisance and Climate Change*, 55 UCLA L. REV. 1827 (2008). If he's correct, could these suits—if they are allowed to move forward in state courts when the preemption question is fully litigated—serve as a way of getting the efficiencies of taxation without a formal tax? Or, for those who oppose carbon taxation, is Zasloff's argument yet another reason to find these lawsuits problematic?

C. Other Relevant Federal Developments

Although the Clean Air Act currently serves as the primary federal regulatory vehicle for mitigating climate change in the United States, other important developments are shaping federal efforts to address climate change. First, the American Recovery and Reinvestment Act, passed in response to the U.S. financial crisis, has provided considerable funding for clean energy initiatives that help to mitigate climate change. Second, the federal government plays a role, through separate energy and environmental law regimes, in land use planning relevant to clean energy. Third, policymakers and commentators have begun to explore the role of the federal government in climate change adaptation. Finally, climate change litigation has continued its explosive growth in the years since *Massachusetts v. EPA*, and continues to have a significant regulatory influence. The following Section details each of these developments.

1. Legislative and Executive Funding of Clean Energy

Even as it failed to pass comprehensive climate change legislation, the U.S. Congress took a significant step in 2009 to address the financial crisis. The American Recovery and Reinvestment Act attempted to jumpstart the economy in a range of ways, which included major new funding for clean energy. The Act focused on transforming the electric power grid, supporting research into cleaner ways of using fossil fuel, energy efficiency, and renewable energy.

The following excerpt details the primary relevant provisions of this statute. It considers the goals of the Act and the components of its clean energy initiatives.

Sean O'Hara, *The Importance of the United States Staying the Course While Implementing Environmental Policy in Accordance with the American Recovery and Reinvestment Act of 2009*, 17 U. BALT. J. ENVTL. L. 85 (2009).

I. INTRODUCTION

The 111th United States Congress enacted the American Recovery and Reinvestment Act of 2009 (ARRA), which President Barack Obama signed into law on February 17, 2009. Congress enacted the ARRA in response to the economic recession currently felt by many Americans. The ARRA has many objectives, including preserving and creating jobs, providing assistance to those most impacted by the recession and investing in environmental protection that will provide long term economic benefits. The measures proposed by Congress amount to approximately 787 billion dollars and over the next ten years and will include 501 billion dollars in increased spending as well as 286 billion dollars in tax cuts. From these funds, approximately 60 billion dollars in loans are expected to be guaranteed to support renewable energy and electric transmission technologies.

II. ARRA OBJECTIVES

One of the main objectives of the ARRA is to lessen the United States dependence on foreign sources of energy by investing in the domestic renewable energy industry. Specifically, the ARRA seeks to provide long term economic benefits in four main areas: the national electric grid, fossil energy, renewable fuels and energy efficiency.

III. NATIONAL ELECTRIC GRID

Approximately 11 billion dollars of the funding from ARRA will go towards improving the national transmission system. This money will be spent on updating the power transmission system to what is referred to as a "Smart Grid" and building new high-voltage power lines. A "Smart Grid" is a modernized electricity network that is less centralized than a producer controlled network and more consumer-interactive. The transformation to a "Smart Grid" therefore "enables the industry's best ideas for grid modernization to reach their full potential." Of the 11 billion dollars allocated, approximately 4.5 billion dollars will go toward the development of the "Smart Grid" system. This initiative includes placing more "Smart Meters" in consumers' homes and businesses. "Smart Meters" are advanced meter systems that identify energy consumption in more detail than a conventional meter. This allows consumers to more easily manage their energy consumption and hopefully reduce consumer demand and energy bills.

The rest of the money allocated for improving the national electric grid, about 6.5 billion dollars, will go toward constructing new power lines. Most of the new power lines will transport energy output from renewable energy sources such as solar power collection devices and wind turbines. The focus of this construction will be in areas constrained by transmission access.

….

IV. FOSSIL ENERGIES

The ARRA dedicates approximately 3.4 billion dollars to the development of cleaner fossil energies. Coal makes up more than half of the United States energy portfolio and is a cheap power source. The funds allocated for fossil energies will be used to research and develop new ways for businesses to use coal technologies. These funds will go toward carbon capture and sequestration projects, also known as "clean coal." This policy will help to reduce the sulfur, nitrogen and mercury pollutants emitted from power plants.

The ARRA allocates 1.5 billion dollars for large-scale geological carbon capture projects. Carbon capturing and storage is a way to mitigate the effects of fossil fuel emissions on global warming. This is done by capturing carbon dioxide at large point sources, such as fossil fuel power plants, before they are released into the atmosphere.

In addition, about 1 billion dollars will go to research and development programs. Approximately 800 million dollars will be spent to enhance the United States Clean Coal Power Initiative and the government-funded FutureGen project. This project's goal is to construct a coal-fueled power plant, emitting almost no emissions, that produces electricity while utilizing carbon capture and storage.

….

V. RENEWABLE ENERGY

ARRA will provide an additional 13 billion dollars in loans and bonds and 18 billion dollars in estimated tax credits for the purpose of renewable energy. Providing money towards developing domestic renewable energy is important because renewable fuels and energy sources have recently experienced "unprecedented growth as an industry." From this funding, about 6 billion dollars will be allocated to support renewable energy projects under the Innovative Technology Loan Guarantees Program, and each project is limited to 500 million dollars. As part of the Energy Policy Act of 2005, and as required by the ARRA, the DOE [Department of Energy] must implement a Loan Guarantee Program, which will only provide loans to construction projects starting before September 30, 2011 that promote renewable energy systems, electric power transmission systems and leading-edge biofuel projects. This Energy Policy Act "provides broad authority for the DOE to guarantee loans that support early commercial use of advanced technologies."

Approximately 2 billion dollars has been allocated for new manufacturing and capacity testing of advanced battery technologies and another 1.25 billion dollars will be put toward biomass and geothermal projects. Additionally, through the creation of an Alternative Fueled Vehicles Pilot Grant Program, the government is providing 300 million dollars to buy hybrid vehicles for the federal fleet. Lastly, approximately 3 billion dollars will be allocated for pass-through grants that support the State Energy Program. This Program provides grants and directs funding to state energy offices from the DOE's Office of Energy Efficiency and Renewable Energy technology programs. States will use these grants "to address their energy priorities and program funding to adopt emerging renewable energy and energy efficiency technologies" locally.

The ARRA also estimates that approximately 18 billion dollars will be received in tax credits for individuals and companies utilizing renewable energy. One way the government plans to implement this policy is to extend the Federal Renewable Energy Production Tax Credit (PTC) for three years. PTC is a "per-kilowatt, per-hour tax credit for electricity generated by qualified energy sources." This should "mainly help spur wind projects" because a company will receive the largest credit for using this type of resource (2.1 cents per kilowatt-hour for wind). It is also

estimated that approximately 2.3 billion dollars in various competitive tax credits and bonds will be awarded for up to 30 percent of costs associated with alternative energy equipment manufacturing facilities. Finally, about 2 billion dollars will be applied towards "qualified hybrid vehicle purchases by individual taxpayers."

VI. ENERGY EFFICIENCY

ARRA's funding in relation to energy efficiency is likely to reduce the amount of energy that the nation's buildings consume. Since offices and homes are two of the "biggest sources of domestic power demand," owners of these buildings should receive the bulk of the funds and tax credits awarded. The remaining funds allocated from the ARRA to promote environmental protection towards the development of domestic energy efficiency are about 16 billion dollars, and an additional 2 billion dollars are estimated in tax credits.

The ARRA specifies that 4.5 billion dollars will be allotted towards the Federal Buildings Fund to make federal buildings greener. Approximately 3 billion dollars from the Energy Efficiency and Conservation Block Grants are for state and local governments to partake in energy efficiency investments and reductions in energy use and fossil fuels emissions. Additionally, about 5 billion dollars is going towards the Low Income Home Energy Assistance Program, which assists low income households that pay a high proportion of household income for home energy. Individual homeowners have the potential to receive a tax credit for up to 30 percent of costs incurred if they utilize certain energy efficient home improvements through 2010.

NOTES AND QUESTIONS

1. How do the clean energy incentives address the problem of climate change? More broadly, can the problem of climate change mitigation be addressed through a focus on clean energy, or are there aspects of needed change that would be missing?

2. Although climate change has become increasingly politically controversial in the years since President Obama took office, a broader consensus exists about the need to transition energy production and use in the United States in ways that promote conservation, efficiency, and cleaner sources. President Obama's 2011 State of the Union address did not mention climate change directly, but reiterated the administration's serious commitment to clean energy:

> The first step in winning the future is encouraging American innovation. …This is our generation's Sputnik moment. Two years ago, I said that we needed to reach a level of research and development we haven't seen since the height of the Space Race. And in a few weeks, I will be sending a budget to Congress that helps us meet that goal. We'll invest in biomedical research, information technology, and especially clean energy technology -– (applause) -- an investment that will strengthen our security, protect our planet, and create countless new jobs for our people.

> Already, we're seeing the promise of renewable energy. Robert and Gary Allen are brothers who run a small Michigan roofing company. After September 11th, they volunteered their best roofers to help repair the Pentagon. But half of their factory went unused, and the recession hit them hard. Today, with the help of a government loan, that empty space is being used to manufacture solar shingles that are being sold all across the country. In Robert's words, "We reinvented ourselves."
>
> That's what Americans have done for over 200 years: reinvented ourselves. And to spur on more success stories like the Allen Brothers, we've begun to reinvent our energy policy. We're not just handing out money. We're issuing a challenge. We're telling America's scientists and engineers that if they assemble teams of the best minds in their fields, and focus on the hardest problems in clean energy, we'll fund the Apollo projects of our time.
> ….
> So tonight, I challenge you to join me in setting a new goal: By 2035, 80 percent of America's electricity will come from clean energy sources.
>
> Some folks want wind and solar. Others want nuclear, clean coal and natural gas. To meet this goal, we will need them all -- and I urge Democrats and Republicans to work together to make it happen.
>
> The White House, Office of the Press Secretary, Remarks by the President in State of Union Address, United States Capitol, Washington, D.C., Jan. 25, 2011, *available at* http://www.whitehouse.gov/the-press-office/2011/01/25/remarks-president-state-union-address.

Why did President Obama focus on clean energy rather than climate change in his State of the Union address? Do you think that tying clean energy to innovation will make it more politically viable?

3. What role are the deep cuts to energy and environmental spending that emerged out of the debt crisis and compromise likely to play in the future of such incentives programs? What are the benefits and limitations of this fiscal austerity in the context of climate change?

2. Federal Interactions with Energy Siting and Land Use Planning

Transitioning to cleaner energy involves more than just funding innovative initiatives. Although much of energy regulation in the United States occurs at state and local levels, the Federal Energy Regulatory Commission's (FERC's) regulatory initiatives are also playing a role in transmission siting, more effective pricing of renewables in the energy market, and smart grid development. These regulatory steps by FERC, as a legal matter, are occurring separately from the EPA's efforts under the Clean Air Act and other environmental laws. However, because both regulatory regimes guide the behavior of utilities producing energy and the regional-level transmission organizations coordinating their interaction with each other and the grid, they together shape possibilities for energy transition.

These interactions among energy and environmental law and the agencies that implement them are further complicated by their relationship with land use planning, which is traditionally controlled by state and local government. The following excerpt from an article by Professor Uma Outka describes this intersection of substantive areas of law and levels of government.

Uma Outka, *The Renewable Energy Footprint,* 30 STAN. ENVTL. L.J. 241, 254–69 (2011).

Land use regulation is primarily a state and local function in the U.S. Although Congress may regulate land use to the extent permissible under the Commerce Clause, the authority to govern land use --" to define and limit property rights, including the right to use the land and its natural resources"--rests squarely within the states' police power. States have delegated much of this land use control to local governments. With over 39,000 local governments across the 50 states, it should come as no surprise that land use law is highly decentralized and variable. As Professor Tony Arnold aptly describes it, "the land use regulatory system is a system of 'regulatory patches' that are located in the United States primarily at the local level of governance and decision making, but operate in the shadows of: a) the super-dominance of private control of land, and b) overlays of federal and state land use regulations." Federal influence over land use is exerted, for example, through the National Environmental Policy Act (NEPA), which requires environmental analysis of federal actions including land development, and the Coastal Zone Management Act (CZMA), arguably "the first major federal land use model." In the context of electricity generation, federal agencies exert exclusive permitting authority over hydroelectric facilities, but this is the exception, not the rule. And even in that atypical setting, states traditional role is honored by the right to influence terms in the permits.

In recognition of the statewide and often regional importance of power plants and transmission lines, many states have taken a more active role in guiding energy siting than is typical for other, even industrial, land uses. Nonetheless, the regulatory context for siting energy infrastructure can vary significantly jurisdiction to jurisdiction. New law tailored to large-scale renewable projects necessarily modifies, supplements, or supplants a pre-existing and often long-standing regulatory context for energy siting.

1. Power plant siting.

Nearly all of the electricity consumed in the U.S. is generated at large-scale power plants, transmitted across high-voltage power lines, and delivered via substations for residential, commercial, and industrial end use. This model of "centralized" power production is decidedly dominant across the U.S. The alternative model, "distributed" generation of electricity, involves power produced onsite or in small-scale facilities close to end users. The model has potential, but its penetration of the energy market to date remains small. The siting frameworks discussed here are and have been an integral part of supplying nearly all of the nation's electricity.

Prior to the 1970s, siting power plants was an almost entirely local process. Many of the same complaints we hear today about local and environmental opposition to energy facilities are the same sentiments that forty years ago provided impetus for a shift toward siting at the state-level. In 1970, the National Association of Regulatory Utility Commissioners developed a model siting statute to promote "the provision of a reliable, abundant and economical energy supply

with due regard for the preservation and enhancement of the environment." Legislation emerged across many states to assign ultimate siting decisions to a state agency and to coordinate and expedite permitting, licensing, and streamline challenges to site approvals. State siting for large power plants is law, for example, in Arkansas, California, Connecticut, Florida, Iowa, Kentucky, Maine, Maryland, Massachusetts, Minnesota, Montana, Nevada, New Jersey, New York, Ohio, Oregon, Rhode Island, Vermont, Washington, Wisconsin. Despite significant variation state to state, these statutes taken together marked a departure from the traditional state-to-local delegation of land use authority, a move to prevent parochial preference from blocking new power plants.

Local influence remains strong, however, even under state siting law. Virtually all of the statutes provide a mechanism for local involvement in the siting process and strive for consistency with local regulation, though some allow the state to act against local objection when the "necessity" or the "public interest" justifies it. Still, roughly half the states did not alter the local land use process for energy siting, which can mean "a virtually unregulated siting process" in "rural areas where zoning, noise and land-use ordinances are not in place." These states are likely to limit their role in siting to the determination of "need" for a new facility. A need determination, when required, functions as generic state approval to build a large power plant, but not at a particular site-that is, the project is deemed necessary to meet demand as a prerequisite for construction, wherever that may occur.

2. Transmission line siting.

FERC has traditionally regulated interstate transmission and wholesale cost of electricity, but much as they have with non-hydroelectric power plants, "states have traditionally assumed all jurisdiction to approve or deny permits for the siting and construction of electric transmission facilities." Centralized state authority as described for the siting of power plants is more common still for siting transmission lines. Over half the states have adopted a "one stop shopping" regime for transmission siting--consolidated state powers in a centralized siting agency, exercised in a single forum in which the public can participate, applying "a single set of statewide policies for making siting decisions" that either preempts or allows for overruling local authorities. In the remaining states, siting is subject to local land use regulation.

Though generally regarded as sufficient for siting in-state, state frameworks are often blamed for inhibiting grid expansion across state lines. Since the 1970s, "chronic underinvestment" in transmission has led to "bottlenecks in the electric grid and congestion is worsening in many places." The difficulty of interstate siting has focused attention on two aspects of transmission siting law primed for reform. The first is the extent to which state law supports or hinders interstate coordination. A recent study by the National Council on Electricity Policy found that state statutes vary in the degree to which they address interstate transmission siting or encourage and provide guidance for planning with other states. At least twelve states were silent on these issues, and those that do have law structuring interstate relations are hardly uniform in their approach. To overcome these differences, many states participate in regional planning via a Regional Transmission Organization (RTO) as "an entry-point for addressing interstate siting complications," but a range of other models exist, from the formal end of the spectrum, such as interstate compacts, to informal models, such as advisory committees. Still, regulators can only act within the confines of state law.

The second aspect is the outdated conception of "need" that states use to determine if a transmission line should be built. Just as it is for power plants, the "need" determination is

typically the prerequisite to siting new transmission. Yet as Ashley Brown and Jim Rossi have argued, state definitions of "need" have not kept pace with changes in the electricity industry such as the shift away from vertically integrated monopolies to competitive energy markets, the disaggregation of generation, distribution, and transmission into separate enterprises. As they explain, state siting statutes have typically "envisioned a determination of need based on benefits to in-state customers" and limit state siting authorities' "ability to even consider, let alone rely on, export and import opportunities in the interstate wholesale markets as a basis for siting transmission lines." These impediments to interstate siting have been seen for some time as hindering grid expansion needed to remedy congestion as well as hobbling wholesale power markets.

The Energy Policy Act of 2005 altered the tradition of exclusive state authority by creating limited federal siting authority "for the first time in U.S. history." In response to concern over black-outs and grid congestion in highly populated areas, the Act authorized the U.S. Department of Energy (DOE) to designate "National Interest Electric Transmission Corridors" and granted the Federal Energy Regulatory Commission (FERC) limited jurisdiction to site power lines with those corridors if states "withheld approval [of a permit application] for more than 1 year." This shift of authority to federal agencies has been noted extensively in the legal literature and elsewhere, but so far it has done little to reduce state primacy. The DOE designated only two limited corridors, one in the mid-Atlantic and one in the Southwest. FERC initially interpreted its new authority as a broad grant of jurisdiction that allowed the agency to approve permits that a state affirmatively denied within one year. However, a closely watched case in the Fourth Circuit, Piedmont Environmental Council v. FERC, rejected FERC's position, holding that "the continuous act of withholding approval does not include the final administrative act of denying a permit." The Court reasoned that "[i]f Congress had intended to take the monumental step of preempting state jurisdiction every time a state commission denies a permit in a national interest corridor, it would surely have said so directly" (emphasis in original). Thus, it is a remedy for inaction only. States retain siting jurisdiction so long as they minimally keep state review processes on track to approve or disapprove a site within one year. Piedmont clarified that FERC has no authority at present to approve new "national interest" transmission lines that state regulators oppose.

3. NEPA and cumulative impacts.

NEPA dominates among the federal statutes that may affect siting decisions. Under NEPA, federal agencies have long been required to assess the environmental impacts of major federal actions and their alternatives. Where environmental effects of a proposed action will be significant, an environmental impact statement (EIS) must be prepared. Permitting energy projects on federal land is an obvious federal action that may require NEPA review by multiple agencies with an interest in a selected site. A less obvious NEPA trigger can be Department of Energy loan guarantees for renewable projects, whether on public or private land. When NEPA applies, a project will receive a much more thorough and comprehensive environmental review than it would under most state and local regimes. Indeed, considering "cumulative impacts" is explicitly required. What the NEPA review reveals, however, does not dictate a particular outcome--it is an "essentially procedural" overlay designed to inform, not direct, decisionmaking.

The "cumulative impacts" analysis under NEPA fundamentally recognizes that environmental review of a federal action in isolation leaves important questions unanswered.

NEPA regulations define "cumulative impacts" as "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions." This definition, read literally, is almost limitless in scope; in practice, the predecisional posture of the analysis inevitably binds it to the particular project proposed. Yet where to draw the line between relevant impacts and those that are too remote has been the source of confusion for agency analysts, NEPA practitioners, and courts reviewing the adequacy of NEPA documents. As one analyst put it, "the problem arises when an agency must decide how to address the cumulative impacts of a proposal in conjunction with 'reasonably foreseeable future actions.'" Nonetheless, case law and agency interpretation have leaned toward discerning this boundary in favor of reining in the geographic and forward-looking aspects of "cumulative impacts" under NEPA. The Supreme Court in Kleppe v. Sierra Club seemed to impose a temporal limitation on the concept by declaring that "when several proposals . . . will have cumulative or synergistic environmental impact upon a region are pending concurrently before an agency, their environmental consequences must be considered together." In 1997, the Council on Environmental Quality (CEQ), which is responsible for NEPA regulations, issued guidance to analysts focused on "the cause and effect relationships between the multiple actions and the resources, ecosystems, and human communities of concern." The guidance bounds the analysis by differentiating "project specific analyses," which are usually "conducted on the scale of counties, forest management units, or installation boundaries," with cumulative effects analyses, for which the geographic boundary is conceived of as a "project impact zone" and may include "human communities, landscapes, watersheds, or airsheds." Consistent with but preceding the CEQ guidance, the Fifth Circuit in Fritiofson v. Alexander identified at least the following factors as part of the EIS analysis of cumulative effects: "(1) the area in which the effects of the proposed project will be felt; (2) the impacts that are expected in that area from the proposed project; (3) other actions past, proposed, and reasonably foreseeable that have had or are expected to have impacts in the same area; (4) the impacts or expected impacts from these or other actions, and (5) the overall impact that can be expected if the individual impacts are allowed to accumulate."

A recent survey of NEPA "cumulative impacts" cases in the Ninth Circuit confirms adherence to the Fifth Circuit's emphasis on the immediate geographical surroundings of the project proposal. It is probably safe to assume that environmental plaintiffs challenging "cumulative impacts" analysis under NEPA must base their case on "the potential effects of several actions on one particular resource" ----a narrower but more manageable conception of "cumulative impacts" than the CEQ definition might suggest.

4. Renewable energy and existing frameworks.

Renewable energy is poorly matched with existing siting frameworks for at least four reasons. First, many of the states with centralized authorities afford one-stop permitting for very large facilities only. North Dakota and Massachusetts, for example, certify energy facilities greater than 100 MW, while New York's threshold is 80 MW, Florida's is 75 MW, Ohio's is 50 MW, and the list goes on. Although there are large-scale renewable energy facilities being constructed, many are often much smaller, 25 MW or less. Thus, even in states with centralized siting agencies, many projects are likely to fall below the MW threshold and require a long list of separate state and local permit applications with no single point of contact.

Second, the longstanding challenge of interstate transmission siting looms larger still in the renewable context because resource availability often determines where a renewable project can

be viable. The richest terrestrial wind resources, for example, are found in mid-western states, while large-scale geothermal energy is considered most viable in the west and southwest. Solar energy is ubiquitous but areas with the greatest intensity, such as the southwest, are considered the best locations for large-scale concentrated solar power plants. For this reason, the variability in state approaches to interstate relations may especially constrain transmission projects supporting renewables. The option to choose a site that avoids the need for interstate transmission is not always available as it might be for non-renewable projects. Likewise, given that most states make the "need" determination a siting prerequisite, statutes restricting the analysis to in-state need may exact the heaviest burden on remote renewable projects. As Jim Rossi has observed, these laws adhere to dated assumptions based on "indifference to the sources of energy, and primarily local environmental impacts"--they remain largely oblivious to the broader climate agenda to reduce greenhouse gas emissions that renewable energy serves.

Third, in states that rely on local governance for some or all energy siting, the local approval process can be lengthy, costly, and unpredictable. Much as state-by-state need determinations can neglect regional and national benefits of interstate transmission, local review typically fails to credit the extra-local benefits renewable projects offer. These benefits exceed the electricity made available to the immediate surrounding geographic area to include incremental reduction in GHG emissions from energy production. Renewable energy projects offer more than their non-renewable counterparts in the sense that the benefits are global rather than just local; however, their benefits are also long-term and abstract. These features play to the tendency to discount policies designed to address "delayed harm," as Professor Eric Biber puts it, of which renewable energy as a component of climate policy is a prime example.

Finally, the existing frameworks do not directly respond with sufficient urgency to site renewable projects quickly that is unique to this political moment. This urgency stems in some states from renewable portfolio standards and their timetables. For example, Colorado passed a bill in 2010 requiring 30 percent of the state's electricity to come from renewables by 2020. California's goal is 33 percent by 2020, New York's is 29 percent by 2015, while Nevada and Ohio are both aiming for 25 percent by 2025, and the list goes on. The urgency is also incentive-driven as federal loan guarantees under the Recovery Act, for example, are only available to projects that break ground by 2011. Similar pressure exists to site new power lines to support renewable energy development. The Edison Electric Institute (EEI) claims that nearly $37 billion has been invested in transmission infrastructure to support renewable energy development. Still, one of the most cited barriers to new transmission is insufficient investment, which the complexity of siting regulation only exacerbates. This is not a new concern, but frustration with current law is intensifying, as a "chicken-and-egg dilemma hinders the development" of remote renewable energy resources. The dilemma presents a critical planning problem: "transmission developers are hesitant to build transmission to a region without certainty that a power plant will be built to use the line, just as wind and solar developers are hesitant to build a power plant without certainty that a transmission line will be built."

The urgency to site new infrastructure has focused significant attention on these and other regulatory "barriers." In the face of pressure to break ground, existing frameworks can seem cumbersome and inadequate, hindering rather than facilitating the shift to renewable energy. The Solar Energy Industries Association (SEIA) cites "protracted permitting processes for generation projects" as a threat to "the momentum of utility-scale solar power." Under the existing regulatory structure, SEIA and the American Wind Energy Association (AWEA), assert that "it is almost impossible to build an interstate transmission network."

NOTES AND QUESTIONS

1. In light of the issues discussed by Professor Outka, what is the most effective way of addressing the problem of siting transmission lines? A forthcoming article by Professors Alexandra Klass and Elizabeth Wilson explore possibilities for addressing this problem. It concludes that some federal preemption of state siting authority over interstate transmission lines would be a good solution, but presents political feasibility concerns. In light of that, the article explores ways in which state and regional transmission organizations could use existing regional structures and cost allocation opportunities to address these problems. Alexandra B. Klass & Elizabeth Wilson, *Renewable Energy and Transmission Challenges*, __ VANDERBILT L. REV. __ (forthcoming 2012) (draft manuscript on file with authors).

2. Regional transmission organizations, which direct the production and distribution of power among participating utilities, are not only playing a role in addressing transmission problems. They also are innovating to bring renewable energy into their market structures. For example, the Midwestern regional transmission organization, MISO, introduced a new FERC-approved product designed to integrate wind more effectively into the market despite its intermittency. For a discussion of this new standard, see MISO, Wind Integration, https://www.midwestiso.org/WhatWeDo/StrategicInitiatives/Pages/WindIntegration.aspx (last visited Dec. 27, 2011); National Renewable Energy Laboratory, *MISO Further Wind Integration into Market*, Aug. 10, 2011, http://www.nrel.gov/wind/news/2011/1561.html (last visited Dec. 27, 2011).

3. The Role of the Federal Government in Adaptation

Climate change impacts are already happening in the United States. According to the latest IPCC assessments, even if mitigation efforts are successful, these impacts will only worsen in the coming years due to past and present emissions. As a result, efforts to adapt to climate change become ever more important.

In October 2009, President Obama created through executive order the Interagency Climate Change Adaptation Task Force, which is co-chaired by three crucial entities for federal adaptation planning: the Council on Environmental Quality, the National Oceanic and Atmospheric Administration, and the Office of Science and Technology Policy. The task force has begun meeting but is still in the beginning stages of its work.

While the focus in this chapter is on the federal government, addressing adaptation requires action by federal, state, and local governments, which raises difficult questions of how the federal government should invoke its authority in relation to these other levels of government. The following excerpt from an article by Professor Robert Glicksman explores the contours of these federalism dilemmas.

Robert L. Glicksman, *Climate Change Adaptation: A Collective Action Perspective on Federalism Considerations*, 40 ENVTL. L. 1159 (2010).

The longer Congress dithers and stumbles in its efforts to pass climate change legislation aimed at reducing greenhouse gas emissions, the greater will be the need for the adoption and implementation of climate change adaptation measures. As the Congressional Budget Office has recognized, "[t]he world is committed to some degree of warming from emissions that have already occurred, and even very aggressive emissions restrictions are unlikely to halt the growth of concentrations for many years to come." Most climate change scientists seem to agree. Although the exact nature, extent, and distribution of the adverse effects of climate change is unknowable, the climate change to which the world is already committed threatens to transform natural ecosystems and disrupt human social and economic systems that rely on them, perhaps to an unprecedented degree and within a relatively short time period. According to the Intergovernmental Panel on Climate Change (IPCC), the expected impacts of climate change include melting of glaciers, intensifying droughts and runoff, rising sea levels, and changes in the morphology, physiology, phenology, reproduction, species distribution, community structure, ecosystem processes, and species evolutionary processes among marine, freshwater, and terrestrial biological systems.

….

Despite the critical need for the development of adaptive responses to climate change, the federal government has done little to stake out its turf on adaptation policy or to coordinate the responses of lower levels of government. This Article takes the need for the development of an effective adaptation policy as a given and focuses on the proper allocation of decision making authority within our federal system of government. While much has been written about the federalism implications of climate change mitigation policy, relatively less has been written about the federalism issues arising from climate change adaptation policy. This disproportionate emphasis on mitigation is not because the problems facing adaptation policymakers are any simpler than those relating to adaptation, or because the government is further along in devising solutions. President Obama's Interagency Climate Change Task Force has posited that that "[a]daptation and resilience will require action from all segments of society--the public sector . . . the nonprofit sector and individuals. This challenge provides Federal, Tribal, State, and local governments with significant opportunities for innovation." The Task Force also stated that significant gaps in the United States government's approach to climate change adaptation and building resilience exist, including the absence of a unified strategic vision and approach, an understanding of the challenges at all levels of government, and an organized and coordinated effort among federal, state, local, and tribal actors.

One argument for devolving considerable control over the formulation and implementation of adaptation policy to the state and local levels is that the effects of climate change will vary by location, requiring different strategies. If a "one size fits all" approach was ill-suited to pollution control regimes, it is likely to be that much more problematic when addressing climate change adaptation issues. Accordingly, some have advocated placing the power and responsibility of dealing with adaptation issues principally in the hands of local governments. The German federal government has accepted this view, postulating that "[p]eople on the spot often know best what is good for their specific case . . . . The Federal Government is therefore relying on strengthening individual capacity and adaptive capacity at the local level."

On the other hand, federal participation and leadership is likely to be necessary for several reasons: state and local authorities may lack the resources to lead the adaptation effort, they are likely to have incentives to put their citizens at an advantage vis-à-vis those of other jurisdictions fighting for scarce resources such as water, the actions of one jurisdiction may have adverse

spillover effects in other places, and coordination of the policies of multiple jurisdictions may be needed to ensure effectiveness. These have long been the justifications offered for affording a prominent role to the federal government in many environmental regulatory programs. As one observer noted, "federal systems always seem to face substantial pressure to devolve implementing policy choices to the local level. On the other hand, joint action is the raison d'être for federalism, and hence, the lines of authority must facilitate unity."

….

II. The Design of Federal Climate Change Adaptation Policy

The options for the design of a federal policy for climate change adaptation range from affording state and local governments broad discretion to determine the nature of their responses, to divesting state and local power in favor of exclusive federal control. The appropriate option may differ depending on the strength of federal, state, and local interests in the traditional allocation of decision making authority over, and the nature of, the collective action problem implicated by the various resources and activities affected by climate change. The institutional considerations and federalism concerns are not necessarily the same for climate change adaptation as for mitigation policy. In particular, they may tilt more heavily in favor of an expansive role for state and localities in the adaptation context.

A. Models of Adaptation Federalism

The allocation of power among the federal government, states, and localities to determine the nature of governmental responses to the anticipated or actual effects of climate change can follow one of three models. First, the federal role could be confined to developing and providing information, or providing financial support for actions designed and implemented by state and local governments. The federal government could retain greater control while still leaving implementation authority primarily in state or local hands by conditioning the receipt of federal funds on adherence to federal standards or policies. Second, Congress could choose to follow the traditional cooperative federalism model in fashioning a climate change adaptation regime by setting goals, but delegating to the states the primary authority to achieve them through means selected by the states. Third, federal authority could displace state or local power, at least over certain aspects of the adaptation effort.

The first model is the one Congress used in the initial stages of the modern environmental area. Congress, during the 1960s, enacted legislation into the causes and effects of pollution, for example, but depended on the states to use that information to control the sources of pollution that created health and environmental risks. It also provided financial support for state regulatory efforts. Under the Clean Water Act, for example, the United States Environmental Protection Agency (EPA) has administered a program of grants and loans to state and local governments for the construction of sewage treatment plants. To this day, the federal environmental laws identify these kinds of information and resource-sharing efforts as critical statutory purposes. The Clean Air Act, for example, includes among its purposes the "initiat[ion] and accelerat[ion of] a national research and development program . . . [to] prevent[] and control air pollution," and the "provi[sion of] technical and financial assistance to State and local governments . . . [to] develop[] and execut[e] . . . their air pollution prevention and control programs." Other environmental statutes reflect similar goals. Although the federal role in controlling air and water pollution has moved well beyond providing federal technical and financial support to state and local programs, federal statutes specifically directed at climate change to date focus on

information gathering and distribution, not regulatory action. Other nations with federal systems have concluded that an appropriate role for the federal government is supplying information on climate change adaptation to lower level units of government.

One way to increase the federal government's role in the development of climate change adaptation strategies without displacing state and local authorities as the primary policymaking bodies would be to use Congress's authority under the Spending Clause to condition the provision of federal funds for adaptation planning on compliance with federal standards or criteria. In particular, federal funding could be conditioned on compliance with adaptation strategies that do not interfere with federal purposes or damage the national interest. This approach would leave state and local governments with the option of choosing not to follow the federal lead if they are willing to forego federal financial assistance. Some of the major climate change bills considered by Congress in 2009 and 2010 would have conditioned federal funds for adaptation planning in this way. The federal government could condition the receipt of federal flood insurance, funding for infrastructure projects, and agricultural subsidies, among other things, on the willingness of states and localities to comply with federal adaptation planning procedures and criteria. The imposition of conditions on the receipt of federal funds obviously results in a greater coercive impact than the distribution of unconditional federal grants for activities such as adaptation planning by the states. Depending on the nature and scope of the conditions, conditional funding may nevertheless impose a measure of federal oversight while retaining considerable state discretion.

A second model, which would increase the extent to which the federal government controls the design and implementation of climate adaptation policy without ousting state or local exercises of power, is the cooperative federalism model reflected in the major federal pollution control statutes such as the Clean Air and Clean Water Acts. In those contexts, cooperative federalism involves shared governmental responsibility for achieving federally prescribed environmental protection goals. Under the Clean Air Act, for example, the federal government retains the authority to set national ambient air quality standards, delegates to the states the authority to achieve those standards through the preparation of implementation plans which must be approved by EPA, allows states to administer the permit program through which emission controls are applied to individual sources, requires sources to comply with federal technology-based standards such as those that apply to new stationary sources or sources of hazardous air pollutants but allows states to adopt more stringent standards, and shares enforcement authority with the states. Some European nations, including the Netherlands, have created climate change adaptation strategies that build on the cooperative federalism model.

A third model involves displacement of state and local authority to devise and implement climate change adaptation policy. Such preemption of state and local authority is rare in the federal environment laws. Most statutes explicitly preserve state authority to adopt standards that are more stringent than the federal floor. In rare instances, however, Congress has barred the states from adopting standards or other regulatory approaches that differ from federal standards in any way. The most important example is the Clean Air Act's prohibition on adoption by the states of motor vehicle emission standards that differ from EPA's standard. Congress carved out an exception from that prohibition for California because of the severity of its air pollution problems and the fact that it began regulating motor vehicle emissions before Congress adopted the Clean Air Act. If EPA waives the prohibition on state standards for California, other states may adopt standards equivalent to California's. In similar fashion, Congress could decide that the

federal government should retain exclusive, or near-exclusive, control over certain aspects of climate change adaptation policy.

B. Mitigation and Adaptation Compared

It is unlikely that the same model is appropriate for all aspects of federal climate change adaptation policy. A federal information-sharing role may be best suited to some aspects, while others would accommodate conditional funding or traditional cooperative federalism arrangements. Even displacement of state and local authority may be appropriate in some areas. Some participants in the debate over climate change mitigation legislation have advocated displacement of state cap-and-trade programs for reducing GHG emissions. A federal trading program with a larger market than state schemes may enhance market liquidity, for example. In addition, leakage and race-to-the-bottom concerns may deter sufficient state level mitigation. Regardless of whether Congress decides to preempt state cap-and-trade programs, the considerations that bear on whether to preempt state and local measures relating to climate change mitigation policy are not necessarily the same as those relevant to the role of the states and localities in adapting to climate change.

Some of the analysis of whether the federal government should preempt state and local efforts to abate GHG emissions is likely to be applicable to analysis of adaptation federalism questions, too. As Professor Robin Craig has noted, for example, pollution control laws bear on adaptation as well as mitigation because a reduction in some forms of pollution will reduce ecological stressors and thus enhance ecosystem resilience to climate change. As a result, a legislative decision that federal mitigation policy demands a minimal level of controls on GHG emissions (and preemption of less stringent state measures) might also support federal displacement of state control over adaptation policies that seek to foster ecosystem resilience. Two aspects of climate change adaptation policy, however, suggest that preservation of a strong state and local role is even more important than it is in the mitigation context.

First, climate change adaptation policy will need to address a broader and more diffuse set of problems than the ones targeted by mitigation policy. As Professor J.B. Ruhl has noted, "Mitigation policy is . . . all about the same goal--cutting down greenhouse gas concentrations in the atmosphere. Adaptation, by contrast, is about many different effects, varied across the nation, operating at many different and sometimes competing scales." As a result, while the federal government will have an important role in formulating the broad goals of adaptation policy, effective adaptation strategies are likely to be site-specific. The problems will differ by location--drought may be the problem in one place, while another is prone to flooding-- and, even when the problems are similar, what is effective in preparing for and accommodating to the effects of climate change in one place, such as preparing for flooding resulting from rising sea levels along the coast, may be ineffective or even counterproductive in another, where flooding may be due to increased snowmelt in the spring due to rising temperatures. In short, effective adaptation policy may depend on knowledge of and the ability to respond to diverse local conditions. State and local policymakers may be able to make the necessary adjustments more effectively than the federal government can.

Second, climate change adaptation policy will involve areas in which law and policy have traditionally been set at the state and local level, and in which the federal government has been loath to intervene. Two obvious examples are land use control and water allocation law. Land use controls such as zoning are likely to be important parts of climate change adaptation strategies. It may be necessary to restrict development in areas vulnerable to flooding or to

preserve open space to provide connective corridors for migrating wildlife species unable to survive in existing habitat. Congress has almost always steered clear of establishing anything that remotely resembles a federal land use regulatory program--other than for lands and resources owned by the federal government--and has remained committed to protecting the sovereignty of state and local governments to control land use. This commitment, or the fear of the political backlash that the adoption of federal land use controls might cause, is a principal explanation, for example, of the Clean Water Act's failure to regulate nonpoint source pollution. It also at least partially explains why Congress has chosen not to regulate the construction of or access to structures that are magnets for automobiles--called indirect sources--under the Clean Air Act, even in areas of the country in which automotive pollution has contributed to persistent failures to attain the health-based primary national ambient air quality standards.

Climate change also will affect the distribution of water resources, providing too much water in some places and not enough in others. Adaptation policy can play a useful role in preventing waste in areas in which water is plentiful and assuring that water is diverted to areas in which shortages exist. Congress has been just as skittish about infringing on state authority to control water allocation as it has been to jump into the land use regulation business. As Robert Adler has explained, "since at least the middle of the nineteenth century, state water law has reigned supreme as the primary authority governing the allocation and use of water resources, as proclaimed by Congress, the executive branch, and the courts." Congress went to great lengths in the Clean Water Act to steer clear of any such infringement. Somewhat less absolutely, the Endangered Species Act declares a federal policy "that Federal agencies shall cooperate with State and local agencies to resolve water resources issues in concert with conservation of endangered species." These precedents suggest that Congress will, if possible, tread lightly on state and local authority to decide on climate change adaptation measures that entail decisions about land use and water allocation.

C. Resolving the Tension Between Historic Tradition and Current Need

The fact that states and localities have traditionally played a dominant role in controlling land use and water allocation does not mean they will or should continue to do so in addressing the risks posed by climate change. Changes are likely to occur. These traditions do mean, however, that efforts to enhance the federal government's authority to dictate land use and water [allocation] policy, or even to adopt minimal federal standards under a cooperative federalism-like regime, are likely to generate at least as much political opposition as the efforts to adopt mandatory controls on GHG emissions or to price carbon have generated. A tension between leaving sacrosanct state and local prerogatives in areas such as land and water use and recognizing the need for a larger federal role is therefore apt to shape the institutional design of federal climate change adaptation policy, whenever the federal government is prepared to tackle climate change adaptation. In striking the appropriate balance, collective action analysis may provide environmental policymakers with important insights on when it is appropriate for the federal government to establish a presence even in areas in which it has thus far been reluctant to stake out a significant role and on related institutional design questions.

….

IV. Conclusion

The uncertainty about the magnitude and distribution of the effects of climate change makes it impossible to predict exactly what kinds of adaptive measures will be needed in different parts of the country and when they will be needed. There seems to be a consensus among those who have focused on climate change adaptation policy that the effort will necessarily involve federal, state, and local government participation. In an optimal world, policymakers at different levels would coordinate their responses so that adaptation proceeds as efficiently and effectively as possible, the burdens resulting from climate change are minimized, and the unavoidable burdens are distributed as equitably as possible, even though climate change is likely to affect some areas of the country, such as coastal areas vulnerable to flooding and severe storm activity, more than others.

It is inevitable, however, that clashes of interest will develop between jurisdictions when desired goods, such as potable water, are scarce or efforts by one state or locality to avoid the undesirable aspects of climate change shift the burden of those changes to other jurisdictions. Collective action analysis can help avoid or resolve such conflicts by assigning the authority to control the development of climate change adaptation policy to the level of government best situated to address a problem without exacerbating the adverse consequences of climate change for others. The conflicts are likely to arise both when states and localities fail to do enough to anticipate and react to climate change and when they do "too much." As the analysis above indicates, collective action analysis supports the exercise of federal power to create minimal protections against the ravages of climate change in the face of state or local reluctance to react to its consequences. The federal role, which would exist concurrently with the exercise of state and local power to respond to climate change, could involve providing technical and financial assistance to state and local governments or the creation of the kinds of cooperative federalism regulatory programs that have become entrenched in U.S. environmental law over the last forty years. In limited contexts, collective action analysis also supports displacement of the aggressive exercise of state and local authority to adapt to climate change in favor of exclusive federal control. These situations are most likely to involve state and local efforts that result in interstate externalities.

NOTES AND QUESTIONS

1. How do the regulatory challenges of adaptation compare to those of mitigation? What are the key similarities and differences?

2. Why does the federal government have a role to play in climate change adaptation? Do you agree with Professor Glicksman's conclusions about how the balance among federal, state, and local government should be struck in this context?

3. One role that the federal government has taken on in addition to the taskforce is funding state and local adaptation efforts. For an overview of current preparations by smaller scale governments and of federal funding for state and local adaptation planning under President Clinton, see PEW CTR. ON GLOBAL CLIMATE CHANGE, ADAPTATION PLANNING CLIMATE CHANGE, ADAPTATION PLANNING—WHAT U.S. STATES AND LOCALITIES ARE DOING (2008), *available at* http://www.pewclimate.org/docUploads/State_Adapation_Planning_02_11_08.pdf.

4. Ongoing Influence of Litigation

The U.S. Supreme Court has thus far decided two climate change cases, *Massachusetts v. EPA* and *Connecticut v. EPA*, which are discussed in depth above. However, these two only represent a small piece of the ways in which courts have been used to debate the problem of climate change. Over the past several years, this litigation has evolved from a few cases to a major emerging field. The following excerpt from an article by Professors David Markell and J.B. Ruhl provides a comprehensive empirical assessment of the cases that have been brought in U.S. federal and state courts.

David Markell & J.B. Ruhl, *An Empirical Survey of Climate Change Litigation in the United States*, 40 ENVTL. L. REP. NEWS & ANALYSIS 10644 (2010).

The foundational gap we seek to begin to fill in this Article is a chronicling of developments in the judicial arena. In performing this chronicling function, we hope to contribute in two important respects to understanding of the climate change action in the courts to date. First, we compile and present basic information about the cases brought to date, e.g., the types of cases, where they have been brought, the types of plaintiffs and defendants involved, and the outcomes. In addition, we provide a further layer of analysis through our synthesis of this basic information and our identification of trends that have emerged thus far.

Some commentators have suggested that the courts are already significant drivers of climate change policy, and their role is likely to increase. Carol Browner, Director of the White House Office of Energy and Climate Change Policy, for example, has suggested that "the courts are starting to take control" of climate change. A December 2009 *Wall Street Journal* op-ed contends that, because of the lack of progress internationally and in domestic legislation, the "climate-change lobby is already shifting to Plan B ... Meet the carbon tort." A recent *New York Times* article similarly concludes that we are likely to see increasing numbers of common-law nuisance cases in the climate change arena:

In a report issued last year, Swiss Re, an insurance giant, compared the [common-law nuisance] suits to those that led dozens of companies in asbestos industries to file for bankruptcy, and predicted that "climate change-related liability will develop more quickly than asbestos-related claims." The pressure from such suits, the report stated, "could become a significant issue within the next couple of years."

Echoing this theme, Prof. Hari Osofsky suggests in a forthcoming article that courts have "become a critical forum in which the future of greenhouse gas emissions regulation and responsibility are debated."

Judicial action is not important solely because of the direction courts provide through their decisions, though that direction itself is of substantial significance. Scholars, policymakers, and others have begun to think about the implications of judicial decisions on the work of other branches. Prof. Richard Lazarus, for example, following the U.S. Court of Appeals for the Second Circuit's recent decision in *Connecticut v. American Electric Power*, a significant victory for activists because of its favorable holdings on standing and justiciability grounds, notes that a major challenge for "environmentalists" is "how best to use this win to help promote meaningful climate change legislation in Congress and regulatory action by EPA, where the issues will best

be addressed." White House Director Browner similarly suggests that recent court decisions have "increased the pressure on Congress to pass legislation to curb heat-trapping gases."

This Article unpacks the realities of what one *New York Times* headline describes as courts serving as "battlefields" in "climate fights." We have read and coded every climate change case that has been resolved to date; and, if a case has been filed but no resolution has yet been reached, we have reviewed (and coded) the complaint and other documents in the court docket.

Some of what we have found is in line with our expectations, while other findings frankly took us by surprise. Briefly, with more detail and description following in later sections, eight of our findings include:

• Most of the cases brought to date are suits that environmental nongovernmental organizations (NGOs) have brought against the federal and/or state government, with a handful of "professional" environmental NGOs serving as plaintiffs in many of the cases;

• Most of the cases have been brought in federal court;

• Most of the cases are based on statutory causes of action (rather than constitutional or common-law claims);

• Many of the cases are based on National Environmental Policy Act (NEPA) or state "Little NEPA" claims and are focused on stopping coal-fired power plants;

• Adaptation is not on the litigation radar screen;

• Common-law nuisance cases are a very small component of the case mix, despite the significant attention they have received;

• Of the relatively small number of cases that have been resolved, the success rate for plaintiffs is roughly 50%; and

• The use of the courts to raise climate change issues really gained steam in 2006; before that year, climate change litigation was quite rare.

In the following section, we explain the methodology we used in this initial effort to provide a comprehensive picture of the role of the courts to date in the development of the law on climate change.

II. Study Method

The goal of this study is to evaluate what is happening on the ground in the world of climate change litigation. As we indicate in the introductory section of this Article, there are a number of articles about different facets of climate change litigation, but we believe that ours is the first to attempt a comprehensive empirical description of all of the climate change litigation initiated to date. In this section, we explain how we defined climate change litigation, identified cases that met the criteria, and coded each case for relevant attributes.

A. Defining Climate Change Litigation

….

We decided, therefore, to define climate change litigation as any piece of federal, state, tribal, or local administrative or judicial litigation in which the party filings or tribunal decisions directly and expressly raise an issue of fact or law regarding the substance or policy of climate change causes and impacts. So, in the power plant example, if the claim were that the environmental impact analysis failed to take into account GHG emissions, or that the permit hearing was defective because the tribunal refused to allow evidence of GHG emissions, that would qualify the case as climate change litigation.

….

To help add details to our general definition of climate change, we also developed a typology of different claims that might be expected to arise in the climate change litigation world (see Table 1). The typology includes claims that are actively being litigated in numerous cases, such as claims that a species should be listed under the ESA [Endangered Species Act] because of threats stemming from climate change, as well as claims not yet likely to arise in litigation but which could arise as policy develops, such as disputes over offset contracts and claims that a property owner failed to take adequate adaptation measures to respond to sea-level rise. This typology proved robust, accounting for all but a few of the cases we ultimately deemed to qualify as climate change litigation (see Table 1, Case Type 18, "Other").

Table 1. Case Typology

Category	Case Type	Cases # (%)
Substantive Mitigation Regulation	1. Action to prevent or limit a legislative or agency decision to carry out, fund, or authorize a direct or indirect source of GHG emissions, e.g., building, funding, or permitting a coal power plant.	25 (18%)
	2. Action challenging a legislative or agency decision to refuse or place limits on proposals to carry out, fund, or authorize a direct or indirect source of GHG emissions, e.g., to overturn denial of a power plant permit.	5 (3.5%)
	3. Action to require a legislature or agency to promulgate a statute, rule, or policy establishing new or more stringent limits on GHG emissions by regulating direct or indirect sources, e.g., to force EPA to regulate GHG emissions; to force local government to impose green building requirements.	10 (6.5%)
	4. Action challenging legislative or agency promulgation of statute, rule, or policy establishing new or more stringent limits on [GHG] emissions that regulate direct or indirect sources, e.g., to prevent EPA from regulating GHG emissions; to challenge local decisions to require green building.	13 (9.5%)
	5. Government enforcement action against direct or indirect GHG emissions source alleging violation of regulatory or permit limits.	0
	6. Citizen enforcement action against direct or indirect GHG emissions source alleging violation of regulatory or permit limits.	4 (3%)
Substantive Adaptation Measures	7. Action to require legislative or agency action on statute, rule, policy, or permit to require new or more extensive climate change adaptation actions, e.g., to require a coastal development permittee to retain wetlands as sea level buffer.	0
	8. Action to prevent legislative or agency action on statute, rule, policy, or permit that proposes to require new or more extensive climate change adaptation actions, e.g., to challenge proposed sea wall.	0
	9. Government enforcement action against public or private	0

	entity alleging violation of regulatory or permit condition related to climate change adaptation.	
	10. Citizen enforcement action against public or private entity alleging violation of regulatory or permit condition related to climate change adaptation.	0
Procedural Monitoring, Impact Assessment, and Information Reporting	**11.** Action to impose on public or private entities a new or more extensive monitoring, impact assessment, or information disclosure requirement focused on GHG emissions, impacts of climate change, or means and success of climate change adaptation, e.g., to require NEPA documentation for coastal development to account for sea-level rise in EIS; to require public companies to disclose GHG emissions.	57 (41%)
	12. Action to prevent imposition on public or private entities a new or more extensive monitoring, impact assessment, or information disclosure requirement focused on GHG emissions, impacts of climate change, or means and success of climate change adaptation, e.g., to challenge proposed GHG emissions monitoring requirement.	0
Rights & Liabilities	**13.** Action to extend scope of human rights, property rights, or civil rights to provide protection of individual or public against effects of or responses to climate change, e.g., claim that GHG source violates civil rights; claim that immigration policy for climate refuges violates human rights.	0
	14. Action to impose statutory, tort, nuisance, or other property damage or personal injury liability on source of GHG emissions or for inadequate climate change mitigation or adaptation measures, e.g., public-nuisance action against GHG emission sources; public-nuisance claim for destruction of coastal dunes.	6 (4.5%)
	15. Action to impose contract, insurance, securities, fraud, failure to disclose, or other business or economic injury liability on source of GHG emissions or for inadequate climate change mitigation or adaptation measures, e.g., insurance recovery claim for effects of sea-level rise; dispute over carbon credit market transaction.	2 (1.5%)
Identification of Climate-Threatened Resources	**16.** Action to force agency to identify species or other resource as climate-threatened and list under federal or state ESA or other statute.	7 (5%)
	17. Action to reverse decision by agency to identify species or other resource as climate-threatened and list under federal or state ESA or other statute.	2 (1.5%)
Other	**18**. Other--not defined by other categories.	8 (6%)

….

III. Findings

Based on sheer number of cases, the prototype of climate change litigation in the United States involves an environmental NGO suing a federal agency in federal court to prevent the agency from taking an action by alleging that the agency violated NEPA. Yet, this configuration by no means defines the breadth and depth of the cases in our study. Indeed, the rich diversity of attributes in the cases suggests the future holds a broadening of litigation themes over time. In this section, we delve into some of those attributes by examining the full scope of: (1) parties and forums; (2) types of claims and litigation objectives; and (3) the outcomes, status, and trends of the cases.

A. Parties and Forums

One clear finding of our study is that NGOs are driving climate change litigation as plaintiffs, and their primary targets are the federal government and states. As Figure 1 shows, environmental NGOs were plaintiffs in almost two thirds of the cases, and industry NGOs were involved in over 10%, meaning NGOs were involved as plaintiffs in almost three-quarters of the cases. Companies and state and local governments were also frequently involved as plaintiffs. On the defendant side, Figure 2 shows that the federal government was a named defendant in over one-third of the cases, and states were defendants in over one-quarter of the cases. Companies and local governments were also frequently named as defendants.
….

Intergovernmental litigation was not a common occurrence. The federal government was not a plaintiff in any case. States were named plaintiffs in 11 suits against the federal government, and local governments were named plaintiffs in eight such cases. Also, in one case, a state government sued a local government. There were no other examples of intergovernmental litigation. Of course, as *Massachusetts v. EPA* demonstrates, small numbers in this sense do not necessarily mean small impact.
As Figure 3 shows, over one-half of climate change cases have been filed in federal court, and over one-quarter in state court. Litigation in federal and state agencies accounted for just over 10% of the cases, while we found no examples of local court or agency litigation.
….

B. Types of Cases and Litigation Objectives

Table 1 shows our typology of cases and the number of cases in our study fitting each category. As noted above, we developed the typology based on our review of literature about the status and future of climate change litigation. Thus, some of the litigation types had no matching cases. This is a significant finding, in that it shows that some forms of climate change litigation remain anticipated. For example, no case involved a claim regarding substantive climate change adaptation measures, whereas over 40% of the cases focused on substantive mitigation measures. The other major category, also accounting for over 40% of the cases, involved claims that causes or effects of climate change had not adequately been incorporated into impact assessment or information disclosure procedures, such as NEPA. The rest of the cases involved a range including ESA listing litigation and tort and contract liability litigation.

Table 2 digs a little deeper into the attributes of cases in the two major litigation thrusts--substantive mitigation and procedural defects. The patterns are quite similar in both categories,

but a few noteworthy differences are apparent. For example, most industry NGO and company-initiated litigation is focused on substantive mitigation issues, whereas most environmental NGO litigation is focused on procedural claims. Also, state governments are the most frequent defendant in substantive mitigation cases, whereas the federal government is the most frequent defendant in the procedural cases.

Table 2. Attributes of Substantive Mitigation and Procedural Cases

Category	Attribute	Substantive Cases (#)	Procedural Cases (#)
Plaintiff	Federal	0	0
	State	5	4
	Local	3	5
	Tribal	0	3
	Env. NGO	40	52
	Ind. NGO	11	2
	Company	11	1
	Individual	0	2
Defendant	Federal	17	38
	State	28	14
	Local	7	11
	Tribal	0	0
	Company	20	11
	Individual	2	0
Forum	Federal Court	27	36
	State Court	16	19
	Local Court	0	0
	U.S. EPA	8	1
	Other Federal Agency	0	0
	State Agency	6	1
	Local Agency	0	0
Source of Law	Constitutional	7	3
	Statutory	50	55
	Common Law	1	0

We designed the typology also to allow us to differentiate between what we refer to as “pro” and “anti” cases, with “pro” cases having the objective of increasing regulation or liability associated with climate change, and “anti” cases being aimed in the opposite direction. As Figure 4 shows, with 85% of the cases, “pro” litigation is the dominant thrust. Not surprisingly, our data show that “pro” litigation is most associated with environmental NGO plaintiffs, and “anti” litigation is most associated with industry NGO and company-initiated litigation.

….

Clearly, cases designed to prevent government action predominate, with NEPA and similar state statutes accounting for over one-third of the claims. Litigation to prevent issuance of permits to coal-fired power plants is also a significant component of this category, as are cases to prevent issuance of permits to other industrial facilities. In the much smaller category of cases to force government action, ESA listing cases accounted for the largest number, though other statutes were not far behind.

….

C. Outcomes, Status, and Trends

[C]limate change litigation is a relatively recent phenomenon, with only 18 cases having been filed prior to 2006. Not surprisingly, therefore, most of the federal cases are pending or reached final resolution in district courts, … with a small percentage reaching appellate stages.

….

[H]owever, … many cases have attained some degree of success on the merits. Almost one-third of all "pro" cases and a little over 10% of all "anti" cases have achieved partial or total success on the climate change-related claims. More cases in both categories, however, have been unsuccessful, either due to procedural defects or on the substantive merits--the climate change claims in over one-third of the "pro" cases and just under one-quarter of the "anti" cases have failed for one or the other reason.

Overall, the distribution of types of cases, their outcomes, and the relative recency of the filings suggests that the profile of climate change litigation is likely to be dynamic over the next decade. Over one-half of the cases in our study were filed in 2007 or later. Only 5% of cases have reached the appeals stage. No claims involving adaptation have been filed, and very few cases have involved tort, contract, human rights, or property rights claims. Moreover, one has to bear in mind that there is no comprehensive federal climate change legislation to begin with, thus accounting for the complete lack of federal enforcement litigation. Hence, climate change litigation has the potential to broaden in scope on many fronts and intensify across the board, including in areas where it is already quite active. In all likelihood, therefore, the findings of our study of cases filed through 2009 will be much different in many respects from our updated study in, say, 2015.

NOTES AND QUESTIONS

1. What are primary forms that climate change litigation takes? What is the appropriate role of courts in resolving these different types of controversies?

2. By far the most common type of climate change litigation is cases focused on increased consideration of climate change in procedural decision-making, especially in the context of coal power plants. Why do you think these cases are the most common and what influence do you think they will have?

3. What is the likely future of litigation? Do you think these cases' significance primarily rests in their direct regulatory influence, or in the indirect ways in which they change the discourse and put pressure on regulators and major emitters? For more discussion of this issue, see

Hari M. Osofsky, *The Continuing Importance of Climate Change Litigation*, 1 CLIMATE LAW 3 (2010).