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Jurisdictional Mismatch in Environmental Federalism

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JURISDICTIONAL MISMATCH IN ENVIRONMENTAL FEDERALISM

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ABSTRACT

Jurisdictional mismatch plagues contemporary environmental law and policy. The division of authority and responsibility for environmental protection between the federal and state governments lacks any cohesive rationale or justification. The federal government regulates in many areas where there is no clear analytical basis for federal involvement. At the same time, the federal government is relatively absent where a stronger federal presence could be justified. Conversely, states are precluded, discouraged, or otherwise inhibited from adopting environmental protections where state efforts would be worthwhile. In addition, state intervention seeps into areas where a dominant federal role would be more defensible. This jurisdictional mismatch produces sub-optimal levels of environmental protection, wastes regulatory resources, discourages innovation, and inhibits the adoption and evolution of more effective environmental protection measures. Environmental protections would be more successful were responsibility divided between the federal and state governments in a more justifiable manner. To address the current mismatch, the federal government should reorient its efforts toward those areas in which the federal government possesses an institutional advantage, due to economies of scale or where state and local governments are incapable of addressing environmental problems, such as where there are substantial interstate spillovers.

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TABLE OF CONTENTS

INTRODUCTION

Contemporary federal environmental regulations are often faulted for their excessive rigidity and centralization.[1] An equal, if less commonly analyzed, problem with current environmental protection efforts is the mismatch between the nature and scope of environmental problems and the nature and scope of those institutions charged with solving them. That is, setting aside the choice of specific policy instruments, the current division of authority and responsibility for environmental protection between the federal and state governments lacks a coherent rationale. No

[1] This critique is summarized in Jonathan H. Adler, *Letting Fifty Flowers Bloom: Using Federalism to Spur Environmental Innovation*, *in* THE JURISDYNAMICS OF ENVIRONMENTAL PROTECTION: CHANGE AND THE PRAGMATIC VOICE IN ENVIRONMENTAL LAW 263–64 (Jim Chen ed., 2004); *see also* Richard B. Stewart, *Controlling Environmental Risks Through Economic Incentives*, 13 COLUM. J. ENVTL. L. 153, 154 (1988) ("[T]he system has grown to the point where it amounts to nothing less than a massive effort at Soviet-style central planning of the economy to achieve environmental goals."); DANIEL A. FARBER, ECO-PRAGMATISM: MAKING SENSIBLE ENVIRONMENTAL DECISIONS IN AN UNCERTAIN WORLD 179–83 (1999) (summarizing problems of overly centralized environmental regulation).

particular theory of the proper role of varying levels of government in environmental policy can explain the current division. The result is a jurisdictional mismatch in environmental policy that compromises the effectiveness of measures intended to protect the environment.

The federal government regulates in many areas where there is no clear analytical basis for federal regulation. At the same time, the federal government is relatively absent where a stronger federal presence could be justified. Conversely, existing federal statutes and regulations often preclude, discourage, or otherwise inhibit state and local governments from adopting environmental protections where state efforts would be worthwhile. Yet states are not inactive. Rather, it appears that state policymakers increasingly seek to satisfy their constituents' demand for environmental protection by intervening in areas better left in the hands of the federal government. This mismatch between environmental problems and regulatory responsibility undermines environmental protection and compounds the problems of instrument choice and implementation. It also erodes political accountability for environmental policy.

A claim of jurisdictional mismatch should be premised upon some account of the proper state and federal roles in environmental protection. Accordingly, Part I outlines why "ecologies of scale" suggest that many environmental problems should be left in state or local hands. It further identifies some of the benefits of decentralized environmental decision-making. Not all environmental concerns are best handled at the state or local level, however. Part II identifies and evaluates those considerations which might justify a preference for federal authority over environmental matters. While federalism principles suggest a general presumption in favor of state responsibility for various policy concerns, this presumption may be overcome where there is a distinct and readily identifiable federal interest, such as an interstate spillover or economies of scale that provide the federal government with an institutional advantage in addressing particular concerns. Absent such considerations, however, most environmental matters are best left in state and local hands.

Part III contrasts the proper division of state and federal responsibilities with current practice, revealing a widespread "institutional mismatch." While there is a principled case for an active federal role in many aspects of environmental policy, the

federal government is relatively absent from those areas. At the same time, the federal government is heavily involved in many areas better left in state and local hands. One potential impact of such mismatch is greater state involvement in matters properly addressed at the federal level.

The institutional mismatch within environmental policy cannot be fixed overnight. This article concludes by suggesting some modest steps that could be taken to begin reorienting federal efforts toward those areas in which federal action is most needed and that match federal environmental authority with the greatest environmental need.

I. ECOLOGIES OF SCALE

As a general structural matter, it is more efficient and effective to address environmental problems through institutions of equivalent scope as the problem in question.[2] As Professor Esty notes, where the scope of a problem does not match the responsible institution's jurisdiction, "the cost-benefit calculus will be skewed and either too little or too much environmental protection will be provided."[3] By matching jurisdiction with the scope of a given problem, the institutional structure can ensure the greatest "match" between a given problem and the institutional response. Environmental protection efforts are most likely to be optimal where those who bear the costs and reap the benefits of a given policy determine how best, and even whether, to address a given environmental concern. This does not mean that all environmental problems should be addressed at the same level, however. Rather, the varying scopes of various environmental problems suggest the need for a "multitier regulatory structure that

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[2] *See* HENRY N. BUTLER & JONATHAN R. MACEY, USING FEDERALISM TO IMPROVE ENVIRONMENTAL POLICY 2 (1996) ("[T]he size of a geographic area affected by a specific pollution source should determine the appropriate governmental level for responding to the pollution.").

[3] Daniel C. Esty, *Revitalizing Environmental Federalism*, 95 MICH. L. REV. 570, 587 (1996). Such a jurisdictional mismatch can also create a "regulatory commons." *See* William W. Buzbee, *Recognizing the Regulatory Commons: A Theory of Regulatory Gaps*, 89 IOWA L. REV. 27 (2003) ("Regulatory commons problems arise where a social ill does not fall squarely within any particular political-legal regime's turf."). Professor Buzbee suggests that the "'regulatory commons problem' creates predictable incentives in complex, multi-layered political-legal contexts for social ills not to be overregulated, but to remain unaddressed, to remain gaps in regulation." *Id.* at 5.

tracks the complexity and diversity of environmental problems."[4]

The federalist structure of American government supports a general, albeit rebuttable, presumption that any given policy question should be addressed by state governments.[5] This presumption is embodied in the structure of the Federal Constitution, which grants the federal government limited and enumerated powers while reserving all other matters to the states.[6] For the federal government to act, it must demonstrate that a given policy is within the scope of its enumerated powers.[7] Where the federal government does not act, matters will remain in state hands.[8]

This basic Constitutional structure suggests a principle of "subsidiarity"[9]—the principle that problems should be addressed at

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[4] Esty, *supra* note 3, at 571.

[5] *See* James L. Huffman, *Making Environmental Regulation More Adaptive Through Decentralization: The Case for Subsidiarity*, 52 U. KAN. L. REV. 1377, 1379 (2005) ("[O]ther core values of American government are served by decentralization."). *See also, e.g.*, Richard L. Revesz, *The Race to the Bottom and Federal Environmental Regulation: A Response to Critics*, 82 MINN. L. REV. 535, 536–38 (1997) (arguing for a "rebuttable presumption in favor of decentralization" in environmental policy).

[6] Those powers not expressly delegated are, as the Tenth Amendment makes explicit, "reserved to the States, respectively, or to the people." U.S. CONST. amend. X. *See also* THE FEDERALIST No. 45, at 292 (James Madison) (Clinton Rossiter ed., 1961) ("The powers delegated by the proposed Constitution to the federal government are few and defined. Those which are to remain in the State governments are numerous and indefinite.").

[7] *See, e.g.*, Marbury v. Madison, 5 U.S. (1 Cranch) 137, 176 (1803) ("The powers of the legislature are defined, and limited; and that those limits may not be mistaken, or forgotten, the constitution is written.").

[8] For further discussion of the application of constitutional federalism principles to environmental policy, see Jonathan H. Adler, *Judicial Federalism and the Future of Federal Environmental Regulation*, 90 IOWA L. REV. 377 (2005). For a somewhat different perspective on this question, see Robert V. Percival, *"Greening" the Constitution—Harmonizing Environmental and Constitutional Values*, 32 ENVTL. L. 809 (2002).

[9] *See* George A. Bermann, *Taking Subsidiarity Seriously: Federalism in the European Community and the United States*, 94 COLUM. L. REV. 331, 338–39 (1994) (defining "subsidiarity" as the "notion that action should be taken at the lowest level of government at which particular objectives can adequately be achieved"); Huffman, *supra* note 5, at 1381 (subsidiarity is "the idea that social decision-making should take place at the least centralized level appropriate to the decision in question"). This principle is endorsed in the principles for sustainability of Agenda 21. U.N. Conference on Environment & Development, Rio de Janerio, Brazil, June 3–14, 1992, *Agenda 21*, ¶ 8.5(g), U.N. Doc. A/CONF.151/26 (calling for national governments to delegate environmental responsibilities "to the lowest level of public authority consistent with effective

the lowest level at which they can be practically addressed. Subsidiarity is particularly appropriate in the context of environmental policy, and leads to the sort of "multitier regulatory structure" that Professor Esty suggests.[10] Because most environmental problems are local or regional in nature,[11] there is a strong case that most (though not all) environmental problems should be addressed at the state and local level.[12] Given the nature of this nation's federalist system, this approach would entail allocating responsibility for most environmental problems to state governments with the hope, if not the expectation, that state governments would leave many concerns to local or regional authorities.[13]

There are additional policy reasons to support a general presumption in favor of state and local responsibility for environmental concerns.[14] An overly centralized environmental

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action").

[10] This is not meant to suggest that Professor Esty would endorse all of this author's analysis. To the contrary, while Professor Esty endorses a similar framework, he endorses a greater level of federal environmental regulation than does this author. *Compare* Esty, *supra* note 3, at 571, *and* Adler, *supra* note 1.

[11] *See, e.g.*, BUTLER & MACEY, *supra* note 2, at 27 ("The environmental harm caused by the emission of the same amount of pollution can vary widely, depending on local environmental conditions.").

[12] *See* Bradley C. Karkkainen, *Collaborative Ecosystem Governance: Scale, Complexity, and Dynamism*, 21 VA. ENVTL. L.J. 189, 206 (2002) ("[T]here is growing recognition that ecologically sound management must be local and/or regional in character, tailored to the ecosystem context."); Wallace E. Oates, *A Reconsideration of Environmental Federalism*, *in* RECENT ADVANCES IN ENVIRONMENTAL ECONOMICS 22 (John A. List & Aart de Zeeuw eds., 2002) ("[W]here environmental quality is basically a local public good, the case for the setting of environmental standards at an appropriately decentralized level of government is quite compelling.").

[13] *See, e.g.*, DAVID SCHOENBROD, SAVING OUR ENVIRONMENT FROM WASHINGTON 223 (2005) ("State governments should similarly leave the making of most pollution-control laws to local governments unless the latter lack institutional competence."). It is fair to note that environmental problems rarely respect jurisdictional boundaries, and existing political subdivisions do not track ecological boundaries. *See* Karkkainen, *supra* note 12, at 212 ("Conventional territorially delimited lines of authority are, almost without exception, drawn in near total disregard of ecological boundaries . . . ."). Moreover, the relevant ecological boundaries will vary given the particular ecological concern. Airsheds, watersheds, and terrestrial ecosystem will rarely be mutually overlapping. As a legal and political matter, however, we are in some sense "stuck" with existing political subdivisions although states and local governments may, in some cases, be capable to create intermediary institutions with jurisdictional authority that traces given environmental concerns.

[14] *See* Huffman, *supra* note 5, at 1381 (Although "the principle of

regulatory system is itself an "affront to nature."[15] Ecological systems vary tremendously from one place to the next. The failure to take into account local environmental conditions—let alone local tastes, preferences, and economic conditions—leads to "one size fits all" policies that fit few areas well, if at all.[16] For example, an apple orchard in Washington State has different requirements than an orchard in upstate New York because effective pest control strategies will vary depending with differences in climate, topography and local conditions.[17] Federal mandates that municipalities treat stormwater like industrial pollution discharges or require double liners for landfills may make sense in the northeast, but such requirements are "ill-suited to arid regions" with little rainfall or clay-based soils.[18] Requiring secondary wastewater treatment makes sense in many cities, but adds little value in coastal communities.[19] Even where states and localities have flexibility in selecting the means of meeting a given

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subsidiarity . . . does not insist that centralization is never appropriate," it also "reflects a presumption in favor of decentralization."); Revesz, *supra* note 5, at 536–38 (providing reasons for a "rebuttable presumption in favor of decentralization" in environmental policy).

[15] SCHOENBROD, *supra* note 13, at 228; *see also* PIETRO S. NIVOLA & JON A. SHIELDS, MANAGING GREEN MANDATES: LOCAL RIGORS OF U.S. ENVIRONMENTAL REGULATION 36 (2001) (noting that ecosystem-based regulation may require greater reliance upon local judgments); Karkkainen, *supra* note 12, at 194 (2002) ("[T]he environmental consequences of our actions may also vary widely, depending upon the particular ecosystem context in which the action occurs.").

[16] *See* Karol Ceplo & Bruce Yandle, *Western States and Environmental Federalism: An Examination of Institutional Viability*, *in* ENVIRONMENTAL FEDERALISM 225, 225–26 (Terry L. Anderson & Peter J. Hill eds., 1997) ("There is recognition that homogenous solutions applied to heterogeneous problems often yield high costs and weak results."). While, as a theoretical matter, federal regulation could take into account regional variation, "federal regulation generally imposes uniform requirements throughout the country" and, where variable standards exist, it is not due to regional environmental differences. Revesz, *supra* note 5, at 537.

[17] *See* SCHOENBROD, *supra* note 13, at 209–10; *see also* Andrew P. Morriss, *Pesticides and Environmental Federalism: An Empirical and Qualitative Analysis of § 24(c) Registrations*, *in* ENVIRONMENTAL FEDERALISM, *supra* note 16, at 133, 167 ("The information problems for a national regulator attempting to license every use of every pesticide are so overwhelming that the national government can never hope to meaningfully solve them.").

[18] NIVOLA & SHIELDS, *supra* note 15, at 3–4.

[19] *See id.* at 4 (citing COMM. ON WASTEWATER MGMT. FOR COASTAL URBAN AREAS, NAT'L RESEARCH COUNCIL, MANAGING WASTEWATER IN COASTAL URBAN AREAS (1993), *available at* http://www.nap.edu/books/0309048265/html/index.html).

federal environmental goal, the imposition of uniform environmental standards may still "conflict with practicalities on the ground in particular jurisdictions."[20]

In addition to allowing for a closer fit between local ecological conditions and environmental policies, a suitably decentralized regulatory system provides several other advantages.[21] First, the ecological and economic diversity of the nation requires local knowledge and expertise that is often unavailable at the federal level.[22] A more decentralized system is better able to overcome this "knowledge problem,"[23] and ensure that regulatory measures take account of local conditions.[24] Second, decentralization, and the resulting policy experimentation and interjurisdictional competition, can encourage policy innovation as policymakers seek to meet the economic, environmental, and other demands of their constituents.[25] As a result of such competition, states are able to learn from each others' successes and failures.[26] This competition allows states to act as environmental "laboratories" developing new and improved ways of addressing environmental concerns.[27]

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[20] NIVOLA & SHIELDS, *supra* note 15, at 34.

[21] These advantages are discussed in greater detail in Adler, *supra* note 1, at 265–70. *See also* PAUL TESKE, REGULATION IN THE STATES 23 (2004).

[22] *See* BUTLER & MACEY, *supra* note 2, at 27 ("Federal regulators never have been and never will be able to acquire and assimilate the enormous amount of information necessary to make optimal regulatory judgments that reflect the technical requirements of particular locations and pollution sources."); John Dwyer, *The Practice of Federalism Under the Clean Air Act*, 54 MD. L. REV. 1183, 1218 (1995) (noting that "[t]he knowledge necessary to administer any air pollution control program . . . can be found only at the local level").

[23] *See generally* F. A. Hayek, *The Use of Knowledge in Society*, 35 AM. ECON. REV. 519, 519–20 (1945) (detailing the economic problem resulting from "the fact that the knowledge of the circumstances of which we must make use never exists in concentrated or integrated form but solely as the dispersed bits of incomplete and frequently contradictory knowledge which all the separate individuals possess").

[24] *See* FARBER, *supra* note 1, at 180 ("By decentralizing environmental decision-making, we may be able to obtain improved responsiveness to changing circumstances and new information.").

[25] *See generally* Charles M. Tiebout, *A Pure Theory of Local Expenditures*, 64 J. POL. ECON. 416 (1956) (describing the dynamic between the "consumer-voter" and their representative local government).

[26] *See* FARBER, *supra* note 1, at 182–83; *see also* TESKE, *supra* note 21, at 240 (noting that "[e]ven when [state experiments] fail, they provide important information for other states and for national policy").

[27] *See* New State Ice Co. v. Liebmann, 285 U.S. 262, 311 (1932) (Brandeis,

In a decentralized system there is more likely to be a "fit" between a given jurisdiction's policies and the preferences of local residents.[28] Environmental matters often implicate subjective value preferences which may be quite variable across the nation. As a result, there is not always a single "right" answer to a given environmental question, such as whether the national ambient air quality standard for ozone should be 0.08 or 0.075 parts per million. Each potential standard imposes a different trade-off between competing values and interests. Relatedly, decentralization can enhance accountability; as Marci Hamilton observes, "[t]he smaller the polity in geography and in population, the easier it is for the people (1) to monitor what their government is doing, (2) to criticize or praise, and therefore (3) to affect public policy."[29] Decentralized systems are also less prone to rent-seeking.[30]

In sum, there is a strong case for a general presumption in favor of decentralization—a presumption that can be overcome in any specific policy context by demonstrating the need for federal intervention. Where such a justification for federal action is lacking, however, localized control of environmental policy will produce environmental measures that are more likely to reflect the preferences and needs of those who will be most affected by them.

J., dissenting) ("It is one of the happy incidents of the federal system that a single courageous State may, if its citizens choose, serve as a laboratory; and try novel social and economic experiments without risk to the rest of the country."). *See also* David A. Dana, *State Brownfields Programs as Laboratories of Democracy?*, 14 N.Y.U. ENVTL. L.J. 86, 97–104 (2005).

[28] *See* Michael W. McConnell, *Federalism: Evaluating the Founders' Design*, 54 U. CHI. L. REV. 1484, 1493–94 (1987) ("The first, and most axiomatic, advantage of decentralized government is that local laws can be adapted to local conditions and local tastes, while a national government must take a uniform—and hence less desirable—approach.").

[29] Marci Hamilton, *Federalism and the Public Good: The True Story Behind the Religious Land Use and Institutionalized Persons Act*, 78 IND. L.J. 311, 321 (2003); *see also* Huffman, *supra* note 5, at 1393 ("As a simple matter of arithmetic, an individual vote carries more weight in a small democratic polity than in a large one."); BUTLER & MACEY, *supra* note 2, at 7 ("Allocation to local governments of regulatory authority over local externalities allows decisions to be made by the representatives of the decisions who benefit the most and pay the most for higher environmental quality.").

[30] *See* Barry R. Weingast, *The Economic Role of Political Institutions: Market-Preserving Federalism and Economic Development*, 11 J.L. ECON. & ORG. 1, 6 (1995). Of course, this is not to deny the existence of rent-seeking, as well as political corruption in state and local government. Such phenomena exist, to one degree or another, in all levels of government.

A default rule in favor of decentralization takes advantage of the "ecologies of scale" in environmental policy. Yet such a preference is only a default rule, and there are several potential justifications for federal intervention, to which this article now turns.

II. BASES FOR FEDERAL INTERVENTION

A preference for subsidiarity does not mean there should be no federal environmental regulation. At most it creates a rebuttable presumption toward decentralization—a presumption that can be overcome with a demonstration that more centralized action is necessary or likely to produce a more optimal result.[31] Specifically, it suggests that there should be an identifiable *federal* interest, or some reason to believe that state and local governments will be systematically incapable or unwilling to adopt publicly desired environmental measures, before the federal government gets involved. Although such a division of authority is not mandated by the Constitution, it is generally consistent with the federalist principles embodied in the nation's founding document.[32]

Following are some of the bases upon which one could argue for federal intervention in environmental matters. Each is analytically distinct and, as detailed below, some bases are far stronger than others. For instance, while the argument for federal action to address interstate spillovers is unimpeachable, claims that federal regulation is necessary to prevent a "race to the bottom" are questionable on both theoretical and empirical grounds. While there is some overlap in the categories below, they are nonetheless helpful in evaluating the relative strength of arguments for federal involvement in various environmental concerns. Further, they can be used to help identify what sort of federal intervention is most likely to produce, or at least approach, the optimal environmental result. The sort of federal intervention best suited to controlling

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[31] *See* Revesz, *supra* note 5, at 536–38.

[32] As noted earlier, this principle underlies the basic federalist structure of the Constitution, under which the federal government is delegated limited, enumerated powers, whereas the states retain all powers not delegated to the federal government or barred by other constitutional provisions. *See supra* note 6 and accompanying text. For example, state governments retain a plenary police power to prevent nuisances and protect the health, welfare and morals of their citizenry, whereas the federal government has no such power.

interstate spillovers, for example, may not be the sort of federal intervention most likely to prevent a welfare-reducing "race-to-the-bottom," and vice-versa.

A. *Interstate Spillovers*

The strongest case for federal involvement comes in the context of interstate spillovers, such as when pollution crosses state lines and the affected states are unable to resolve the conflict on their own.[33] Where activity in State A causes pollution in State B, there is an almost unimpeachable case for federal involvement, even if only to adjudicate the relevant dispute.[34] While one may reasonably expect State A to adopt measures to control the environmental costs of economic activity within State A, policymakers have little reason to be concerned with the harms imposed on other jurisdictions. In such a context, State A is unlikely to adopt sufficient controls because it would bear the primary costs of any such regulatory measures, whereas the primary beneficiaries of such controls would be in State B. Indeed, absent some external controls or dispute resolution system, the presence of interstate spillovers can actually encourage polices that externalize environmental harms, such as subsidizing development near jurisdictional borders so as to ensure that environmental harms fall disproportionately "downstream."[35] Policymakers in State B may wish to take action, but they will be

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[33] This analysis deliberately excludes non-physical externalities, such as aesthetic or moral harms resulting from disapproval of another region's environmental policies. If the costs resulting purely from such subjective value preferences are a suitable basis for federal intervention, there is no limit to the potential justifications for federal involvement. For this reason, the analysis is focused on physical or otherwise tangible spillovers, such as those that would have been actionable under common law. This not only includes emitting pollution, but also obstructing or modifying water currents and the like.

[34] *See, e.g.*, Thomas W. Merrill, *Golden Rules for Transboundary Pollution*, 46 DUKE L.J. 931, 932 (1997) ("Given the inherent difficulties in regulation by any single state, transboundary pollution would seem to present a clear case for shifting regulatory authority from local to more centralized levels of governance."). *But see* David D. Haddock, *Sizing Up Sovereigns: Federal Systems, Their Origin, Their Decline, Their Prospects*, *in* ENVIRONMENTAL FEDERALISM, *supra* note 16, at 1, 15 ("[T]o call for national intervention whenever an externality crosses a state line is to commit the fallacy of the publicly interested government."). Haddock notes that the costs from some interstate spillovers may be less than those imposed by "a grasping, inept, or apathetic regulator." *Id.*

[35] *See* Revesz, *supra* note 5, at 541–42.

unable to control pollution created in State A without the cooperation of State A. Even where polluting activity imposes substantial environmental harm within State A, the externalization of a portion of the harm is likely to result in the adoption of less stringent environmental controls.[36] Therefore, federal intervention of some kind is justified.

While interstate spillovers are a real concern, a caveat is in order. Most transboundary pollution problems remain rather localized in scope. Ozone-forming emissions in southeastern Pennsylvania certainly affect air quality in parts of New Jersey, but they do not affect Fort Lauderdale, Florida. Sulfur dioxide emissions from coal-fired utilities in Ohio may increase pollution in upstate New York and Vermont, but they do not harm Tacoma, Washington. Such interstate spillovers may constitute a regional problem, but this does not inherently justify *national* regulation.[37] In such cases, regional solutions, such as the creation of regional entities or congressionally authorized interstate compacts, may be in order.[38] The same is true in the context of water pollution, where pollution may permeate a regional watershed without affecting the nation as a whole. Adopting uniform national regulations in such contexts can produce the same type of jurisdictional mismatch that occurs when local problems are nationalized.

Not all spillovers take the form of State A externalizing the costs of polluting activities onto State B. In some cases, States A and B share in a common resource, such as a watershed or airshed. The Chesapeake Bay watershed, for example, spans from southern New York down through Virginia and the southern tip of

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[36] An exception to this problem may be where the harms are reciprocal. In this case, the two jurisdictions each have an incentive to negotiate environmental controls.

[37] *See* Haddock, *supra* note 34, at 15; *see also* Revesz, *supra* note 5, at 541 ("[T]he [interstate externality] rationale calls only for a response specific to the problem.").

[38] Examples of such entities would include the Ozone Transport Commission, created under the Clean Air Act of 1970 § 176(a), 42 U.S.C. § 7506(a) (2000), to address interstate ozone transport concerns in the eastern half of the United States, and the Tahoe Regional Planning Agency, authorized under the Tahoe Regional Planning Compact, Pub. L. No. 96-551, 94 Stat. 3233, 3235 (1980). *See also*, JEROME C. MUYS, NAT'L WATER COMM'N, LEGAL STUDY NO. 14, INTERSTATE WATER COMPACTS: THE INTERSTATE COMPACT AND FEDERAL-INTERSTATE COMPACT (1971).

Maryland.[39] In such contexts the spillover effect is reciprocal, insofar as each state that shares in the common resource has the ability to externalize the effects of its polluting or resource-depleting activities on the others, and a "tragedy of the commons" is likely to result.[40]

As with the more direct spillover, however, one cannot reasonably expect states, acting alone, to adopt welfare-enhancing environmental protections as the regulating state will bear a disproportionate share of the costs from such regulation with no guarantee of reaping proportionate benefits. Some form of federal intervention, whether it be direct regulation or dispute resolution in federal court or some other forum, is necessary to ensure the proper level of environmental protection. Even if the relevant states are capable of negotiating an interstate compact to protect the common resource,[41] federal action would be required to authorize the compact.[42]

Similarly, where spillovers are not only interstate, but international, there is a justification for federal involvement. Indeed, there would be a justification for international intervention but for the relative absence of effective international institutions.

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[39] *See* Chesapeake Bay Program, Watersheds, http://www.chesapeakebay.net/wshed.htm (last visited Oct. 17, 2005).

[40] *See* Garrett Hardin, *The Tragedy of the Commons*, 162 SCIENCE 1243 (1968). While Hardin is usually credited with identifying the "tragedy of the commons," the tragic dynamic of open-access common pool resources was identified earlier by fishery economists H. Scott Gordon and Anthony Scott. *See* H. Scott Gordon, *The Economic Theory of a Common-Property Resource: The Fishery*, 62 J. POL. ECON. 124, 124 (1954); Anthony Scott, *The Fishery: The Objectives of Sole Ownership*, 63 J. POL. ECON. 116, 116 (1955). Gordon and Scott themselves were not the first to make this observation. Aristotle made the same point quite a bit earlier. *See* ARISTOTLE, THE POLITICS § 1261b, at 44 (Ernest Barker trans., Oxford Univ. Press 1952) ("[T]hat which is common to the greatest number has the least care bestowed upon it.").

[41] *See, e.g.*, Oates, *supra* note 12, at 4 (noting theoretical possibility of "Coasean-type negotiations" to resolve interstate spillover problems); Ilya Somin, *Closing the Pandora's Box of Federalism: The Case for Judicial Restriction of Federal Subsidies to State Governments*, 90 GEO. L.J. 461, 475–76 (2002) (suggesting that states can bargain to resolve such spillovers).

[42] The "compacts clause" requires congressional approval of interstate compacts. *See* U.S. CONST. art. I, § 10, cl. 3 ("No State shall, without the Consent of Congress . . . enter into any Agreement or Compact with another State.").

B. *National Public Goods*

Not all interstate externalities are the result of pollution spillovers. There are also externalities created by the existence of interstate or national "public goods." Insofar as certain ecological resources located in some states provide non-excludable benefits to residents in other states, these goods are likely to be underprovided. Just as private firms in a competitive market may undersupply goods that produce benefits for which they cannot charge, individual states may underproduce environmental goods, such as national parks or species habitat, that provide substantial uncompensated benefits to residents in other states. For example, prairie potholes in South Dakota perform various ecological functions. Some of these functions, such as providing habitat for migratory waterfowl, may provide substantial benefits to residents of other states for which South Dakota is not compensated. As a result, South Dakota lacks the incentive to provide sufficient protection for prairie potholes. Similarly, insofar as the existence of Yellowstone National Park provides benefits to all American citizens for which Wyoming and Montana are not compensated, Wyoming and Montana lack sufficient incentive to invest in conserving the park.[43] Recent empirical research finds some evidence that states free-ride and underinvest in conservation of species habitat where the benefits of such action would accrue, at least in part, to other states.[44]

The existence of national public goods may justify federal action. Yet beyond that which might be necessary to protect a public good from external harm,[45] the mere existence of such a public good does not necessarily justify federal *regulation*. The traditional means by which governments at any level provide for public goods is through their power to tax and spend. As a general matter, governments do not require individual landowners to donate their land for use as military installations or parks.[46]

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[43] Of course, to the extent that out-of-state residents benefit from the existence of a park by visiting it, and states can charge for access, this problem is reduced.

[44] *See* John A. List et al., *"Beggar Thy Neighbor:" Testing for Free Riding in State-Level Endangered Species Expenditures*, 111 PUB. CHOICE 303, 312–13 (2002).

[45] *See, e.g.*, 42 U.S.C. § 7470(2) (2000) (provisions to "to preserve, protect, and enhance the air quality in national parks").

[46] Of course, part of the controversy surrounding "regulatory takings" arises

Rather, the government generates revenue through taxes, bond issues, or some other mechanism and uses some portion of these funds to pay for the provision of the public good in question by acquiring the relevant land parcel, protecting its boundaries, maintaining it, and so on.[47]

It should be noted that just because a given environmental amenity meets the traditional economic definition of a public good does not mean that it will not be provided privately, or that governments at any level can be relied upon to provide an optimal amount of the good in question. Even textbook examples of public goods, such as lighthouses, have been provided privately,[48] as have many environmental amenities, including species habitat.[49] Ducks Unlimited, for example, has conserved over eleven million acres of migratory bird habitat, relying primarily on private donations.[50] The point here is simply that the interstate character of some environmental public goods can provide a theoretical justification

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from the claim that government regulations require individual landowners to provide public goods, such as open space or species habitat, at private expense. *See, e.g.*, Andrew P. Morriss & Richard L. Stroup, *Quartering Species: The "Living Constitution," the Third Amendment, and the Endangered Species Act*, 30 ENVTL. L. 769, 786 (2000); Ike C. Sugg, *Caught in the Act: Evaluating the Endangered Species Act, Its Effects on Man and Prospects for Reform*, 24 CUMB. L. REV. 1, 60–66 (1993); Brian F. Mannix, *The Origin of Endangered Species and the Descent of Man (With Apologies to Mr. Darwin)*, AM. ENTERPRISE, Nov.–Dec. 1992, at 56, 59; Robert J. Smith, *The Endangered Species Act: Saving Species or Stopping Growth?*, REGULATION, Winter 1992, at 83.

[47] *See* Jonathan H. Adler, *The Ducks Stop Here? The Environmental Challenge to Federalism*, 9 SUP. CT. ECON. REV. 205, 235–36 (2001) (providing examples of federal funding for interstate environmental public goods, such as habitat for migratory birds).

[48] *See* Ronald H. Coase, *The Lighthouse in Economics*, 17 J.L. & ECON. 357, 363–65 (1974). *See also* RANDY E. BARNETT, THE STRUCTURE OF LIBERTY: JUSTICE AND THE RULE OF LAW 160–67 (1998) (discussing the private provision of public goods). For examples specific to the environmental context, see Robert J. Smith, *Private Solutions to Conservation Problems*, *in* THE THEORY OF MARKET FAILURE: A CRITICAL EXAMINATION 341 (Tyler Cowen ed., 1988).

[49] *See* Jonathan H. Adler, *Wetlands, Waterfowl, and the Menace of Mr. Wilson: Commerce Clause Jurisprudence and the Limits of Federal Wetland Regulation*, 29 ENVTL. L. 1, 59–62 (1999) [hereinafter Adler, *Wetlands*] (discussing non-governmental provision of wetlands and species habitat); Jonathan H. Adler, *Back to the Future of Conservation: Changing Perceptions of Property Rights & Environmental Protection*, 1 N.Y.U. J.L. & LIBERTY (forthcoming 2006).

[50] DUCKS UNLIMITED, DUCKS UNLIMITED ANNUAL REPORT 2004, at 1 (2004), *available at* http://www.ducks.org/about/2004AnnualReport/05%20Annual%20Report-%20Main.pdf.

for some form of federal intervention.

C. *Economies of Scale*

Another argument for federal involvement in environmental policy is that there are economies of scale in the provision of certain government functions.[51] The claim is that it may be more efficient to perform certain functions at the federal level, for the country as a whole, rather than separately in each state. Yet there do not appear to be economies of scale in environmental regulation. Regulations have to be implemented and enforced at the state and local level irrespective of whether they are developed and designed in Washington, D.C.[52] As Professors Butler and Macey conclude, "whatever the economies of scale associated with the centralization of environmental policy, they are surely overwhelmed by the diseconomies of scale in centralized administration."[53] Nonetheless, there may well be economies of scale in other aspects of environmental protection. There are two readily apparent contexts in which economies of scale may justify federal action. First, economies of scale could justify substantial federal support of scientific research, data collection, and technical analyses on environmental issues. Second, economies of scale may justify federal regulation of products bought and sold in interstate commerce.

1. *Scientific Research*

There are definite economies of scale in some types of scientific research that can inform the development of environmental policy at all levels of government. While much of the information required for effective environmental protection is local in nature, much of the relevant scientific knowledge will have nationwide utility.[54] In this respect, much scientific research

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[51] Economies of scale are a reduction in the per-unit cost of producing a good (or providing a service) due an increase in production. *See* MIT DICTIONARY OF MODERN ECONOMICS 122 (David Pearce ed., 1992) (defining "economies of scale" as "[r]eductions in the AVERAGE COST of a product in the LONG RUN, resulting from an expanded level of output").

[52] As Huffman observes, "[e]nforcement is inherently local." Huffman, *supra* note 5, at 1378.

[53] BUTLER & MACEY, *supra* note 2, at 27.

[54] *See* COMM. ON ASSESSMENT OF WATER RES. RESEARCH, NAT'L RESEARCH COUNCIL, CONFRONTING THE NATION'S WATER PROBLEMS: THE ROLE OF RESEARCH 68 (2004), *available at* http://www.nap.edu/books/0309092582/

generated for environmental protection has aspects of a public good.[55] For example, the weather conditions and topographical features that influence ozone formation will vary from place-to-place, but the underlying chemical reactions and effects of ozone on human respiratory systems and other living organisms will not. Insofar as the latter is relevant for environmental policy decisions in all areas affected by ozone pollution, it may be more efficient to conduct such research at the federal level and make it available to those jurisdictions where such information can be put to good use. Were each state required to conduct its own environmental scientific research, there could be much duplication and inefficiency.[56] In addition, there are likely to be scale economies in the resources and technical expertise required for some forms of scientific research.

Even where a given problem is particularly local in nature, such as the protection of a municipal drinking water system, there is still a case for federal research—or at least federally supported and coordinated research—into the risks posed by various contaminants, likely sources of contamination, means of decontamination, and the like.[57] It further makes sense for the federal government to provide at least some "expertise" on the

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html/R1.html ("A federal role is appropriate in those research areas where the benefits of such research are widely dispersed and do not accrue only to those who fund the research.").

[55] *See* Oates, *supra* note 12, at 20–21 ("Basic knowledge concerning the nature and extent of environmental damages from polluting activities and methods of pollution control are pure public goods on a national (and international) scale . . . . The basic research function and, in addition, the dissemination of information on environmental damages and pollution-control techniques thus has a public-good character that points to a fundamental role for the central government.").

[56] *See* Esty, *supra* note 3, at 614–15 ("Absent centralized functions, independent state regulators will either duplicate each other's analytic work or engage in time-consuming and complex negotiations to establish an efficient division of technical labor."). Of course it is possible that "competition" could improve scientific research insofar as different entities pursue different research methodologies to address emerging environmental problems.

[57] *See* Revesz, *supra* note 5, at 543 ("The economies-of-scale argument is most plausible in the early stages of the regulatory process, particularly with respect to the determination of the adverse effects of particular pollutants through risk assessment."); *see also*, Terry M. Dinan et al., *Environmental Federalism: Welfare Losses from Uniform National Drinking Water Standards*, *in* ENVIRONMENTAL AND PUBLIC ECONOMICS: ESSAYS IN HONOR OF WALLACE E. OATES 29 (Arvind Panagariya et al. eds., 1999).

technical aspects of regulation,[58] investigating such matters as regulatory design and implementation.[59] Duplicating this sort of research at the state level would serve little purpose and divert resources from other environmental priorities.

Not all research and data collection should be conducted at the federal level, however. Some research and data collection is probably best left in state and local hands. In some cases, over-centralization of scientific research may increase the risks of political manipulation of science. Professor Esty, for one, makes the case for broad federal involvement in this area, stating that "[i]t makes no sense to ask every state, city, or town to measure the level, size, and type of particulates in the air, determine their connection to respiratory failure and other health problems, identify the safe level of emissions, and design cost-effective policy responses."[60]

As a general matter, his argument holds true. However, this argument may also conflate research in which there are likely to be scale economies with local data collection, where the case for federal action will be less strong. Unless one assumes that all localities should adopt the same environmental measures irrespective of their local conditions, it may well make sense for each local jurisdiction to "measure the level, size, and type of particulates in the air,"[61] as such data are necessary to help determine whether and what kind of pollution control is warranted. This is not duplicative insofar as different regions have different ecological conditions. Yet even though there is a case for the local collection of data about local conditions, Professor Esty is correct that local research into health effects, safe exposure thresholds, and potential control strategies could be duplicative. Accordingly, such research may be conducted more efficiently at the federal level. Moreover, federal efforts to ensure the consistency and reliability of state and local data collection efforts would maximize the national benefits from such local research, further justifying federal support of local research and data collection.

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[58] Oates, *supra* note 12, at 22.

[59] *See* Esty, *supra* note 3, at 615 ("[T]he smaller the regulating entity, the more likely it is to suffer from the absence of scientific scale economies.").

[60] *Id.* at 614.

[61] *Id.*

2. *Product Standards*

There may be economies of scale in some types of regulation that make a single federal standard more efficient than a multiplicity of state standards. Specifically, a single set of regulations may make more sense for a single, integrated national economy.[62] This argument is strongest in the case of product regulation.[63] Where a given product is bought and sold in national markets, and will travel throughout interstate commerce, it is less costly to design and produce the product so as to conform with a single national standard.[64] While it is not clear why pulp mill siting standards in Vermont should match those in Oregon or Mississippi, if commercial goods are going to be produced on a national scale for national markets, producers may be best served if there is a single product standard that applies nationwide.[65] Facility siting and construction will always be subject to local requirements, but that is not necessarily the case with consumer products. In addition, consumers may benefit from national product standards, insofar as lower compliance costs result in lower consumer prices. Allowing states to adopt more stringent product standards of their own poses the risk of one state externalizing the costs of its environmental preferences onto out-of-state market participants. For instance, if California and several northeastern states adopt more stringent emission standards for

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[62] *See, e.g.*, NIVOLA & SHIELDS, *supra* note 15, at 17 ("Business interests, not without justification, often prefer nationwide regulatory standards to a hodgepodge of local rules: broad scope and standardization may lower uncertainty and increase efficiency."); SCHOENBROD, *supra* note 13, at 218 (defending federal regulation of pesticide safety because pesticides are "nationally distributed").

[63] Kirsten Engel & Susan Rose-Ackerman, *Environmental Federalism in the United States: The Risks of Devolution*, *in* REGULATORY COMPETITION AND ECONOMIC INTEGRATION: COMPARATIVE PERSPECTIVES 137 (Daniel C. Esty & Damien Geradin eds., 2001) ("Uniform national regulation may produce economies of scale of production and distribution for firms selling nationally.").

[64] *See, e.g.*, Oates, *supra* note 12, at 21 ("It would obviously be very costly for auto manufacturers to have to produce 50 different variants of cars to satisfy the particular emissions standards of each state.").

[65] *See* TESKE, *supra* note 21, at 173 ("[W]hile automakers and fuel producers prefer national regulatory uniformity, stationary sources have just the opposite interest."). *But see*, Revesz, *supra* note 5, at 544 (noting that the argument for uniformity is "less compelling in the case of process standards"); Esty, *supra* note 3, at 618 (noting federal uniform product standards, but not process standards, "can create important economies of scale for businesses selling these products").

automobiles, and this produces a de facto national standard that increases production costs, consumers in other states may end up bearing a portion of the costs of more polluted states' preference for cleaner vehicles.[66]

While this argument has some force, it is likely that it has been oversold. If anything, the costs of meeting a multiplicity of product standards has declined over time. In the 1970s it was certainly the case that varied state tailpipe emission standards would have increased the cost of automobiles nationwide. At the time, it would have been difficult for a single factory in Detroit to turn out vehicles matching the preferences and requirements of each state. Today, however, in an era of just-in-time inventory and customized manufacturing, it is not clear that these premises apply. Product customization is increasingly common in many major industries, including automobile manufacture.[67] Consumers regularly order products, such as home computers, tailor-made to their specifications.[68] If products can be produced for individual consumers, production to meet a dozen or more different state standards cannot be much of a problem.[69] Tailoring products to meet state standards does not necessarily require manufacturing

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[66] *See* TESKE, *supra* note 21, at 17 (noting adoption of emission regulations in California may "force" automakers to comply with the standard nationwide "since it is not feasible to produce two separate sets of cars").

[67] *See* B. JOSEPH PINE II, MASS CUSTOMIZATION: THE NEW FRONTIER IN BUSINESS COMPETITION 36 (1993) ("The entire [automobile production] process, from order to delivery—*including* production, not just movement from inventory—is heading toward full customization."). "Mass customization generally refers to the manufacture of one-of-a-kind, 'custom' products via the use of flexible, computer-controlled mass-production machinery." Eric von Hippel, *Economics of Product Development by Users: The Impact of "Sticky" Local Information*, 44 MGMT. SCI. 629, 631 (1998).

[68] The most obvious example of this is Dell Computers Dell is "THE model for mass customization." Matthew J. Turosz, *Mass Customization a Long Winding Road*, KIPLINGER BUS. FORECASTS, Jul. 30, 2001, http://www.kiplingerforecasts.com. Other industries in which mass customization is increasing range from clothing to candy. *See* Diane Brady, *Customizing for the Masses*, BUS. WK., Mar. 20, 2000, at 130B; Julie Scholosser, *Cashing in on the New World of Me*, FORTUNE, Dec. 13, 2004, at 244.

[69] This does not mean that mass production of standardized products isn't less expensive due to economies of scale; it certainly is. *See* PINE, *supra* note 67, at 47–48 (noting that "the benefits of low prices owing to economies of scale and other cost advantages of mass production are never overcome"). Rather, it is that the marginal cost of tailoring products to different market segments has dropped dramatically, and that the technologies and management structures that allow for mass customization make it feasible and cost-effective to produce state-specific products in many industries.

items from scratch. The emergence of electronic emission controls, for example, could allow manufacturers to tailor vehicle emissions to the particular demands of specific regional markets.[70] Given these technological advances and resulting changes in product markets, state-specific product standards may not necessarily allow one state to externalize the costs of its environmental preferences on another.[71]

A related concern is that the proliferation of state product standards will inhibit interstate commerce. A multiplicity of variable rules could sufficiently burden commerce in some goods and services as to become an obstacle to interstate trade. Insofar as states may seek to adopt environmental measures that facially discriminate against out-of-state producers, such measures are already barred by the dormant commerce clause.[72] Additionally, the *Pike* test further bars those state measures which unduly burden interstate commerce.[73] Whatever the merits of current dormant commerce clause doctrine, so long as courts continue to enforce these prohibitions, the ability of states to disrupt interstate commerce will be limited. Nonetheless, further federal action to encourage uniformity may be justified in some contexts.

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[70] *See* Andrew P. Morriss et al., *Regulating by Litigation: The EPA's Regulation of Heavy-Duty Diesel Engines*, 56 ADMIN. L. REV. 403, 438–40 (2004) (discussing emergence of cost-effective, programmable electronic vehicle emission controls).

[71] The imposition of national product standards also creates opportunities for rent-seeking, as economic interests seek to gain competitive advantage by encouraging the adoption of standards that benefit their products and disadvantage those of their competitors. *See, e.g.*, Jonathan H. Adler, *Watching Paint Dry*, 18 REGULATION, Fall 1995, at 23 (describing how national paint manufacturers sought to use federal standards for evaporative emissions from paint to disadvantage regional competitors).

[72] *See* Christine A. Klein, *The Environmental Commerce Clause*, 27 HARV. ENVTL. L. REV. 1 (2003) (discussing the United States Supreme Court's dormant commerce clause decisions affecting environmental regulation).

[73] *See* Pike v. Bruce Church, Inc., 397 U.S. 137, 142 (1970) ("Where the statute regulates even-handedly to effectuate a legitimate local public interest, and its effects on interstate commerce are only incidental, it will be upheld unless the burden imposed on such commerce is clearly excessive in relation to the putative local benefits."). *See also, e.g.*, Ark. Elec. Coop. Corp. v. Ark. Pub. Serv. Comm'n, 461 U.S. 375, 393–95 (1983) (applying the *Pike* test).

D. *Race to the Bottom*

One of the more prominent arguments for greater federal intervention is that the lack of a federal regulatory "floor" will result in a destructive "race to the bottom," in which states adopt suboptimally lax environmental protections in a futile effort to attract off-setting levels of economic investment.[74] As commonly explained, this competition creates downward pressure as each state seeks to attract business by reducing its environmental safeguards below the levels maintained by competing jurisdictions. As Professor Richard Stewart observed three decades ago, "[i]f each locality reasons in the same way, all will adopt lower standards of environmental quality than they would prefer if there were some binding mechanism that enabled them simultaneously to enact higher standards, thus eliminating the threatened loss of industry or development."[75] Thus, the theory goes, interstate competition will result in suboptimally lax environmental regulations even where there are not direct spillovers from one jurisdiction into another.

One immediate problem with the race to the bottom theory is its static view of the trade-off between economic development and environmental protection. Insofar as it is possible to reduce the costs of environmental regulation without sacrificing existing levels of environmental protection, government efforts to create a more business-friendly regulatory climate need not produce

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[74] *See, e.g.*, CLIFFORD RECHTSCHAFFEN & DAVID L. MARKELL, REINVENTING ENVIRONMENTAL ENFORCEMENT AND THE STATE/FEDERAL RELATIONSHIP 22–25 (2003) (noting that the race-to-the-bottom theory is "one of the central underpinnings of federal environmental regulation"); WILLIAM A. FISCHEL, THE HOME VOTER HYPOTHESIS 162 (2001) (noting "a widespread belief that competition among jurisdictions poses a danger of a mutually destructive 'race to the bottom'"); Esty, *supra* note 3, at 628 ("Fears of a welfare-reducing race to the bottom represent one of the central underpinnings of federal environmental regulation in the United States."). Perhaps the first to suggest the "race to the bottom" justification for federal environmental regulation was Richard Stewart. *See* Richard B. Stewart, *Pyramids of Sacrifice?: Problems of Federalism in Mandating State Implementation of National Environmental Policy*, 86 YALE L.J. 1196, 1212 (1977). *See also* Kirsten H. Engel, *State Environmental Standard-Setting: Is There a "Race" and Is It "to the Bottom"?*, 48 HASTINGS L.J. 271, 367–74 (1997); Peter P. Swire, *The Race to Laxity and the Race to Undesirability: Explaining Failures in Competition Among Jurisdictions in Environmental Law*, 14 YALE L. & POL'Y REV. (SYMPOSIUM ISSUE) 67, 68, 107 (1996).

[75] Stewart, *supra* note 74, at 1212.

suboptimal levels of environmental protection.[76] At the same time, business interests often have their own reasons for supporting greater levels of environmental protection,[77] including the effect of environmental conditions on labor supply. States are not only competing for industry, but for workers and taxpayers as well. Moreover, as incomes rise, so does the demand for environmental protection, so states that fail to maintain high levels of environmental protection risk driving away residents to other states.[78]

Additional problems with the race-to-the-bottom theory have been identified by Professor Richard L. Revesz.[79] First, as Revesz points out, there is no reason to assume that interjurisdictional competition in environmental policy is any less likely to produce optimal results or is otherwise less reliable than such competition in other contexts.[80] While it is plausible that interjurisdctional competition could produce suboptimal results due to game theoretic interactions, there is no *a priori* reason to assume that the result would be state standards that are suboptimally lax, rather than suboptimally stringent.[81] Assuming that there is a race to the

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[76] This argument is made in greater detail in Adler, *supra* note 47, at 226.

[77] Of course, sometimes business interests support environmental regulation for rent-seeking reasons. *See, e.g.*, Jonathan H. Adler, *Clean Politics, Dirty Profits: Rent-Seeking Behind the Green Curtain*, *in* POLITICAL ENVIRONMENTALISM: GOING BEHIND THE GREEN CURTAIN 1, 2 (Terry L. Anderson ed., 2000) ("As the costs of environmental regulations increase, so does the value of potential comparative advantages that environmental regulations can create. Seeking regulatory policies that will carve out niche markets or inhibit competitors becomes . . . increasingly profitable."); Todd J. Zywicki, *Environmental Externalities and Political Externalities: The Political Economy of Environmental Regulation and Reform*, 73 TUL. L. REV. 845, 856–873 (1999) (describing various examples of industrial rent-seeking in the context of environmental regulation); ENVIRONMENTAL POLITICS: PUBLIC COSTS, PRIVATE REWARDS (Michael S. Greve & Fred L. Smith, Jr. eds., 1992).

[78] *See* Deborah Jones Merritt, *Commerce!*, 94 MICH. L. REV. 674, 706 (1995) ("Residents have flocked to some western states that use aggressive measures to protect the environment—despite the fact that these laws impose significant costs on business and taxpayers.").

[79] *See* Richard L. Revesz, *Rehabilitating Interstate Competition: Rethinking the "Race-to-the-Bottom" Rationale for Federal Environmental Regulation*, 67 N.Y.U. L. REV. 1210 (1992).

[80] *See id.* at 1211–12.

[81] *See id.* at 1241–42. Advocates of the race-to-the-bottom theory also acknowledge this point. *See, e.g.*, Engel, *supra* note 74, at 345 ("[I]t is unclear whether this strategic interaction prompts states to establish more or less stringent standards."). It is also possible that, in some circumstances, the adoption of a federal regulatory "floor" could result in less state regulation, and

"bottom," and that state standards are insufficiently stringent, federal regulation might not solve the problem. Environmental regulation is not the only variable in which states compete for business investment.[82] If a federal standard prevents competition in environmental standards, states will compete in other areas. Indeed, if the race-to-the-bottom argument can justify federal environmental standards, it could justify the federalization of just about everything.

Another problem with the race to the bottom theory, as noted by economist William Fischel, is the dominant role of homeowners in local politics, which can often produce a "Not in My Back Yard" ("NIMBY") reaction to proposed changes in land use.[83] Homeowners tend to be very risk averse about local changes or developments that have the potential to depress land values, and this risk aversion "pervades all of local political decisions."[84] Even those homeowners who are not particularly concerned about the environmental effects of proposed developments or industrial activities are likely to recognize that prospective buyers might be.[85] As a result, Fischel goes so far as to argue that local governments are "the least likely candidates for a 'race to the bottom' of the environmental ladder" and that "local governments are, if anything, inclined to accept too little garden-variety industry" and other environmentally harmful land-uses.[86]

Theory aside, empirical evidence of a race to the bottom in environmental policy is conspicuously lacking.[87] While there are some studies finding that the stringency of environmental regulation can affect industry siting decisions,[88] and survey data indicating that such effects may influence state-level environmental policy decisions,[89] the available empirical evidence

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even less aggregate environmental protection, than if the federal regulations were not adopted. *See* Jonathan H. Adler, Why States Regulate: The Impact of Federal Action on State Regulatory Choices (draft, on file with author).

[82] *See* Richard Revesz, *Federalism and Environmental Regulation: A Normative Critique*, *in* THE NEW FEDERALISM: CAN THE STATES BE TRUSTED? 105–07 (John Ferejohn & Barry R. Weingast eds., 1997).

[83] FISCHEL, *supra* note 74, at 163.

[84] *Id.*

[85] *Id.* at 163–64

[86] *Id.* at 163, 183.

[87] *See* Oates, *supra* note 12, at 11–17 (summarizing empirical literature).

[88] *See id.* at 15–16.

[89] *See, e.g.*, Engel, *supra* note 74, at 340–47.

cannot sustain the claim that interjurisdictional competition produces suboptimally lax environmental regulation.[90] The fact that many states adopted federal regulation in advance of the federal government, and that in some cases those states with the most to lose from regulation were the first to act,[91] would strongly suggest otherwise. Further evidence suggests that, at least in some environmental contexts, any "race" among jurisdictions is "to the top," as states seem more likely to *increase* their environmental efforts in response to neighboring jurisdictions' actions than to relax regulation.[92] Moreover, some states may rationally opt to reduce environmental protection in one area so as to facilitate greater environmental gains in another context. This is evidence of variable state preferences, not a race to the "bottom" of environmental protection. In short, despite its prominence in environmental policy discussions, the "race-to-the-bottom" theory is not a particularly strong basis upon which to rest the case for federal intervention.

E. *Interest Groups and Institutional Competence*

There may be other institutional or public choice reasons to expect state and local governments to be less able to address environmental concerns than the federal government, even in the absence of spillovers or economies of scale. For instance, some argue that collective action problems and the threat of special interest influences are greater at the state than federal level.[93]

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[90] Several economic studies have failed to find empirical evidence of any race to the bottom in environmental policy. *See, e.g.*, Daniel L. Millimet & John A. List, *A Natural Experiment on the 'Race to the Bottom' Hypothesis: Testing for Stochastic Dominance in Temporal Pollution Trends*, 65 OXFORD BULL. ECON. & STAT. 395 (2003); Daniel L. Millimet, *Assessing the Empirical Impact of Environmental Federalism*, 43 J. REGIONAL SCI. 711 (2003); John A. List & Shelby Gerking, *Regulatory Federalism and Environmental Protection in the United States*, 40 J. REGIONAL SCI. 453 (2000).

[91] *See*, Adler, *Wetlands*, *supra* note 49, at 47–53.

[92] *See* Oates, *supra* note 12, at 15 ("States appear to be 'pulled' to higher levels of abatement spending by more stringent measures in neighbouring states, but relatively lax regulations nearby appear to have no effect on such expenditures."); TESKE, *supra* note 21, at 180–81 (finding states are more likely to increase, rather than decrease, air quality regulation in response to actions taken in neighboring states, and concluding that this "suggests that the race to the bottom is not a factor here"); *id.* at 191–92 (finding the same pattern in groundwater regulation).

[93] *See, e.g.*, Esty, *supra* note 3, at 597–98; Stewart, *supra* note 74, at 1213.

While there are certainly collective action problems at the state level that inhibit the adoption of environmental measures, there is no reason to assume that such problems are lesser at the national level. If anything, given wide diversity in environmental problems and preferences across the country, the opposite is likely to be true.[94] More important, as with the "race-to-the-bottom" theory, the empirical evidence that states face particularly acute public choice problems is lacking.[95]

Whatever the imperfections of state and local governments—and there are many—these "flawed institutions" were the first to address air pollution and other environmental problems.[96] Historically, state and local governments began to address most major environmental problems well before the federal government got into the act. As knowledge and awareness of specific environmental problems and their causes accumulated, state and local governments began to act. In the six years following publication of Rachel Carson's *Silent Spring*[97]—arguably the book most responsible for awakening the nation's environmental consciousness[98]—states with air pollution laws increased from sixteen to forty-six.[99] This change was driven by a shift in public opinion. For example, the percentage of Americans who believed air pollution to be a serious problem increased from 28 percent in 1965 to 69 percent by 1970.[100] Cities like Pittsburgh adopted local measures to address air quality precisely because the federal government (and, at the time, state governments) was unwilling to act.[101] Interestingly enough, such measures were adopted with the

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[94] *See* BUTLER & MACEY, *supra* note 2, at 46–47.

[95] *See generally* Richard L. Revesz, *Federalism and Environmental Regulation: A Public Choice Analysis*, 115 HARV. L. REV. 553 (2001) (presenting empirical data that challenges the view that states are ineffective environmental regulators); *see also*, TESKE, *supra* note 21, at 165–92.

[96] SCHOENBROD, *supra* note 13, at 221–22.

[97] RACHEL CARSON, SILENT SPRING (1962).

[98] *Silent Spring* is not without its share of critics, even to this day. *See, e.g.*, CHARLES T. RUBIN, THE GREEN CRUSADE: RETHINKING THE ROOTS OF ENVIRONMENTALISM 29–52 (1994).

[99] SCHOENBROD, *supra* note 13, at 10 (citing MARY GRAHAM, THE MORNING AFTER EARTH DAY: THE PRACTICAL ENVIRONMENTAL POLITICS 44 (1999)).

[100] S. ROBERT LICHTER & STANLEY ROTHMAN, ENVIRONMENTAL CANCER—A POLITICAL DISEASE? 9 (1999).

[101] *See* FISCHEL, *supra* note 74, at 168–69; *see also* ROY LUBOVE, TWENTIETH-CENTURY PITTSBURGH: GOVERNMENT, BUSINESS, AND ENVIRONMENTAL CHANGE 106–07, 114–19 (1969).

support of local business leaders, not over their opposition; indeed, in the 1940s U.S. Steel threatened to leave Pittsburgh because there was *too little* air pollution control.[102] This instance was not an aberration; several other local governments recognized the need to adopt environmental measures so as to prevent industrial flight to cleaner jurisdictions.[103]

Today, state capacity and willingness to address environmental problems remains substantial. The nation's state environmental agencies employ approximately 60,000 people, over three times the number employed by the EPA.[104] State environmental agencies also perform the majority of inspections and enforcement actions.[105] Moreover, states exceed federal minimum standards in many areas. While there are cases in which state environmental policy decisions are influenced by rent-seeking and interest group politics,[106] this is no less true at the federal level. Indeed, in some cases industry groups seek federal regulation to preempt potentially more stringent state and local rules.[107] Empirical studies of state regulatory activity generally fail to support the claim that state governments are more susceptible to interest group pressure than the federal

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[102] FISCHEL, *supra* note 74, at 169. As Fischel notes, this "turns the conventional 'race to the bottom' scenario on its head," as local governments had to enact *more stringent* environmental measures to keep local industry. *Id.*

[103] *Id.* at 169–70; *cf.* INDUR GOKLANY, CLEARING THE AIR: THE REAL STORY OF THE WAR ON AIR POLLUTION (1999); Arthur C. Stern, *History of Air Pollution Legislation in the United States*, 32 J. AIR POLLUTION CONTROL ASS'N 44, 44 (1982).

[104] NIVOLA & SHIELDS, *supra* note 15, at 30 (statistics quoted are accurate as of 2001).

[105] David L. Markell, *The Role of Deterrence-Based Enforcement in a "Reinvented" State/Federal Relationship: The Divide Between Theory and Reality*, 24 HARV. ENVTL. L. REV. 1, 32 (2000) (states are responsible for up to 90 percent of all facility inspections and environmental enforcement actions); U.S. GEN. ACCOUNTING OFFICE, GAO/RCED-98-113, EPA'S AND STATES' EFFORTS TO FOCUS STATE ENFORCEMENT PROGRAMS ON RESULTS 16 (1998), *available at* http://www.gao.gov/archive/1998/rc98113.pdf (noting that states accounted for 85 percent of enforcement actions in 1996).

[106] *See supra* note 77.

[107] *See* E. Donald Elliott et al., *Toward a Theory of Statutory Evolution: The Federalization of Environmental Law*, 1 J.L. ECON. & ORG. 313, 330–33 (1985); *see also* Revesz, *supra* note 95 at 577 (noting that industry will, at times, seek federal preemption of more stringent state standards); TESKE, *supra* note 21, at 17 (citing examples of business support of federal regulation to preempt state regulation).

government.[108]

III. JURISDICTIONAL MISMATCH

Turning to the present state of environmental policy, the division of authority and responsibility in environmental policy does not comport with the analytical framework sketched above. Nor does it comport with *any* particular analytical framework or theory of the proper federal-state balance in environmental policy. Rather, it is the result of an almost haphazard accretion of regulatory statutes over the past several decades.[109] The result is a mismatch between the analytical bases for federal intervention and the actual contours of federal intervention in environmental policy—a jurisdictional mismatch that is greater than that which would be caused by the failure of legal and political jurisdictions to track the scope and extent of various environmental concerns. This mismatch has significant consequences for environmental protection. It is inefficient and, at times, environmentally harmful. As illustrated by the examples that follow, the jurisdictional mismatch in environmental policy has hampered environmental protection in some significant respects.

A. *Federal Action*

The federal government is intensely involved in myriad environmental problems that are truly local in character. Drinking water, underground storage tanks, and hazardous waste sites are all problems that lack the features that would justify federal regulation, yet federal requirements for such intrastate concerns are sometimes more stringent than mandates to prevent interstate harms.[110] Even where a federal role can be justified, as in the case of air pollution that may drift across jurisdictional lines, the federal

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[108] *See* TESKE, *supra* note 21, at 196 ("[C]omplete capture of state regulation is rare and usually limited in time.").

[109] Some of this accretion is itself the result of haphazard or accidental events. *See, e.g.*, Jonathan H. Adler, *Fables of the Cuyahoga: Reconstructing a History of Environmental Protection*, 14 FORDHAM ENVTL. L.J. 89 (2002) (discussing the role of an accidental 1969 river fire in spurring passage of the Clean Water Act and other federal environmental laws).

[110] *See* NIVOLA & SHIELDS, *supra* note 15, at 35 (noting that federal authority mandating waste site cleanups is stronger than those provisions addressing interstate air and water pollution in the Clean Air Act and Clean Water Act, respectively).

government's involvement does not correspond with the federal government's interest. For example, current federal air quality regulations focus far more on whether a given metropolitan area meets national ambient air quality standards and on the development state plans to meet such standards than on interstate air pollution.[111] Moreover, those provisions targeted at such spillovers have only rarely been invoked with any success.

Regulation of drinking water quality is perhaps the paradigmatic example of a local environmental concern regulated under federal law. Under the Safe Drinking Water Act ("SDWA"), the federal government sets maximum thresholds for identified contaminants with which all local water systems must comply.[112] Although variances from federal standards are available in some instances,[113] as a practical matter, the SDWA sets uniform drinking water standards for the entire nation.

Federal drinking water standards cannot be justified on the grounds of interstate spillovers, as drinking water quality in one community seldom, if ever, has an effect upon drinking water in neighboring jurisdictions, let alone states half a nation away.[114] Both the costs and benefits of more protective standards fall on users of the drinking water system.[115] Accordingly, state and local governments made "significant strides" to improve drinking water

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[111] *See* Union Elec. Co. v. EPA, 427 U.S. 246, 249 (1976) (noting that the State Implementation Plan provisions are the "heart" of the Clean Air Act). As a practical matter, it may be more accurate to say that the primary federal focus is on the existence of State Implementation Plans for meeting the National Ambient Air Quality Standards, rather than on the actual *attainment* of the standards. *See generally* COMM. ON AIR QUALITY MGMT. U.S., NAT'L RESEARCH COUNCIL, AIR QUALITY MANAGEMENT IN THE UNITED STATES (2004) (noting significant progress in developing SIPs, and NAAQSs, as well limited success in attaining NAAQSs).

[112] *See* 42 U.S.C. § 300g-1(b)(1)(A) (2000).

[113] *See* 42 U.S.C. § 300g-4 (2000) (providing for variances from national primary drinking water regulations).

[114] *See* Paul R. Portney, *Environmental Policy in the Next Century*, *in* SETTING NATIONAL PRIORITIES: THE 2000 ELECTION AND BEYOND 359, 379 (Henry J. Aaron & Robert D. Reischauer eds., 1999) ("[F]or all but a few biological contaminants in drinking water, the risks linked with higher concentrations of most contaminants would be borne only by those who consume the affected water for a lifetime.").

[115] *See* Terry M. Dinan et al., *Environmental Federalism: Welfare Losses from Uniform National Drinking Water Standards*, *in* ENVIRONMENTAL AND PUBLIC ECONOMICS: ESSAYS IN HONOR OF WALLACE E. OATES 13, 14 (Arvind Panagariya et al. eds., 1999).

protection before the passage of the federal SDWA.[116] While federal standards were adopted, in part, due to concerns that local efforts may have been underprotective, the imposition of nationally uniform drinking water standards may have produced large net welfare losses.[117]

Drinking water is a local good produced by local water systems, so there are no economies of scale in the setting of uniform national standards. If states lack the expertise to identify the proper contaminant thresholds, it would justify the promulgation of federal guidelines to better inform local decision-making.[118] It would not, however, justify imposition of a federal rule. Similarly, if state and local governments lack the capacity to monitor and maintain drinking water quality, this could justify financial and technical support from the federal government, but not mandatory standards.[119]

Other justifications for federally imposed standards on local drinking water systems are equally unavailing. For instance, were one to accept the race to the bottom theory as a justification for federal environmental regulation generally, it would not justify the federal regulation of drinking water, as the imposition of local drinking water standards does not, in itself, increase compliance costs for local industry.[120] Insofar as local communities adopt less stringent drinking water standards than those who live elsewhere may like, the communities themselves bear the brunt of the risk. A

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[116] *Id.* at 27.

[117] *Id.* at 27–28. While recent SDWA reforms may reduce the welfare losses from uniform standards, they will not eliminate them. *Id.* at 28.

[118] *See id.* at 29.

[119] It may also be relevant that bottled water represents an increasing proportion of American water consumption, diminishing the perceived importance of federal regulation in this area. According to the International Bottled Water Association ("IBWA"), per capita annual bottled water consumption increased ten-fold from 1976 to 1999, from 1.6 gallons to 17 gallons. *See* INT'L BOTTLED WATER ASSOC., U.S. BOTTLED WATER MARKET VOLUME, GROWTH, CONSUMPTION: 1976–1999 (2002), http://www.bottledwater.org/public/BWFactsHome_main.htm.

[120] Under the Federal Superfund statute, drinking water standards can form the basis for waste site cleanup standards, and therefore more stringent drinking water standards could trigger more stringent cleanup requirements. 42 U.S.C. § 9621(d)(2)(A)(i) (2000). This is a function of federal law, however, and not inherent in the regulation of drinking water quality. Moreover, the basic structure of the SDWA was put in place in 1974, years before enactment of the Federal Superfund statute, and therefore could not serve as a justification for the federal presence in this area in the first place.

transient visitor has little to fear from drinking water that local residents ingest 365 days per year.[121]

Drinking water is not the only example of a clearly local matter that is regulated by federal law and not justified by interstate spillovers or other multi-jurisdictional concerns. Federal law governs cleanup standards for local waste sites[122] and underground storage tanks,[123] as well as air and water quality concerns that do not cross jurisdictional lines.[124] Indeed, it is fair to say that the bulk of federal environmental regulations on the books concern matters that do not directly address interstate spillovers or benefit from the sort of economies of scale that would justify federal regulation.

B. *Federal Abdication*

While the federal government is hyperactive in its focus on local environmental concerns, it is less active in those areas where the case for federal involvement is the strongest. The federal government is relatively absent when it comes to addressing interstate spillovers, and it has been deficient in providing the scientific and technical foundation for environmental regulatory efforts. The federal government has been more responsible in efforts to provide for national public goods, such as national parks and the like, though here, too, federal efforts are far from ideal. It chronically underfunds National Park maintenance and restoration, while spending money "unwisely and even extravagantly" on new construction.[125] The result is substantial pollution and ecological degradation of national public goods within federal care.[126] Even

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[121] *See* SCHOENBROD, *supra* note 13, at 177 ("The water that residents provide for themselves is generally safe for visitors. . . . Transients drinking water with 50 ppb arsenic are probably at much greater risk from being killed by a toppling vending machine while buying a soft drink.").

[122] *See, e.g.*, 42 U.S.C. §§ 9601–9675 (2000).

[123] *See* 42 U.S.C. §§ 6991–6991i (2000).

[124] *See* 42 U.S.C. § 7409 (2000) (setting National Ambient Air Quality Standards for local areas); 33 U.S.C. §§ 1311–1313, 1342 (2000) (setting effluent limitations and water quality standards for all waters irrespective of interstate effects).

[125] *See* Holly Lippke Fretwell & Michael Podolsky, *A Strategy for Restoring America's National Parks*, 13 DUKE ENVTL. L. & POL'Y F. 143, 149–50, 153 (2003).

[126] For discussions of the impact of this type of neglect on National Parks, see, for example, ALSTON CHASE, PLAYING GOD IN YELLOWSTONE: THE DESTRUCTION OF AMERICA'S FIRST NATIONAL PARK (1986); KARL HESS, JR.,

where the federal government manages resources that are not necessarily public goods of national importance, the results are distressing. One salient example is the management of the National Forests, where the federal government loses money on timber sales, and chronic mismanagement has led to ecosystem decline and a literally explosive threat of catastrophic wildfire.[127] Federal agencies are also responsible for thousands of contaminated waste sites that will likely cost in excess of $250 billion to clean.[128] Compounding the problems with state and local environmental efforts, federal facilities are not always subject to the same civil penalties for polluting activities as are private facilities.[129]

ROCKY TIMES IN ROCKY MOUNTAIN NATIONAL PARK: AN UNNATURAL HISTORY (1993) (criticizing the gross mismanagement in Rocky Mountain National Park); Fretwell & Podolsky, *supra* note 125, at 149–53 (giving specific examples of crumbling infrastructure in National Parks, as well as general degradation of the natural resources within those parks).

[127] *See* Holly Lippke Fretwell, *Forests: Do We Get What We Pay For?* (Prop. & Envtl. Research Ctr., Public Lands Report II, 1999), *available at* http://www.perc.org/perc.php?id=135; U.S. GEN. ACCOUNTING OFFICE, GAO/RCED-99-65, WESTERN NATIONAL FORESTS: A COHESIVE STRATEGY NEEDED TO ADDRESS CATASTROPHIC WILDFIRE THREATS 22–31 (1999), *available at* http://www.gao.gov/archive/1999/rc99065.pdf (noting that an estimated 39 million acres of federal lands are at risk of catastrophic wildfire); *see generally* Donald Leal, *Turning a Profit on Public Forests* (Prop. & Env't Research Ctr. Policy Series No. 4, 1995), *available at* http://www.perc.org/perc.php?id=639 (discussing poor timber profits); ROBERT H. NELSON, A BURNING ISSUE: A CASE FOR ABOLISHING THE U.S. FOREST SERVICE (2000) (discussing the threat of catastrophic wildfire due to management decisions).

[128] U.S. GEN. ACCOUNTING OFFICE, GAO/RCED-96-150, FEDERAL FACILITIES: CONSISTENT RELEVANT RISK EVALUATIONS NEEDED FOR PRIORITIZING CLEANUPS 29 (1996), *available at* http://www.gao.gov/archive/1996/rc96150.pdf. *See also* David Armstrong, *Government as Polluter: More Costly Cleanup on Horizon*, BOSTON GLOBE, Nov. 14, 1999, at A32 (reporting costs of cleaning up Department of Defense sites).

[129] *See* ROBIN KUNDIS CRAIG, THE CLEAN WATER ACT AND THE CONSTITUTION: LEGAL STRUCTURE AND THE PUBLIC'S RIGHT TO A CLEAN AND HEALTHY ENVIRONMENT 82 (2004) (discussing federal immunity from civil penalties under the Clean Water Act); *see also* Melinda R. Kassen, *The Inadequacies of Congressional Attempts to Legislate Federal Facility Compliance with Environmental Requirements*, 54 MD. L. REV. 1475 (1995) (discussing federal claims of immunity from civil penalties under RCRA and CERCLA).

1. *Interstate Spillovers*

Federal intervention is probably most needed to address interstate spillover concerns.[130] Only a small portion of current federal regulations can be justified on these grounds, however.[131] More significantly, these provisions have been invoked only rarely, and even then downwind states have been more aggressive at seeking to control interstate spillovers than has the federal government. For over two decades, the EPA made no significant effort to address such concerns, focusing instead on air quality in urban centers. As even those who support a fairly aggressive federal environmental presence acknowledge, the "EPA has not done a very good job of addressing transboundary pollution."[132] In some cases, existing federal environmental laws may have exacerbated interstate pollution problems, such as by encouraging the use of taller smoke stacks that will send polluting emissions further downwind.[133]

While the Clean Air Act contains a few provisions that specifically address interstate pollution concerns, the EPA has largely ignored these measures. Indeed, where states sought to invoke the Act to obtain relief for upwind contributions to local air pollution, the EPA refused to act, and federal courts largely validated the federal government's desire to ignore interstate air pollution.[134] Only recently has the EPA responded to states seeking to control emissions from upwind states that contribute to downwind nonattainment of federal air quality standards.[135] For over two decades, EPA made no significant effort to address such concerns, focusing instead on air quality in urban centers.[136] The Clean Water Act also authorizes the EPA to address transboundary

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[130] *See supra* Part II.A.

[131] *See* Richard L. Revesz, *Federalism and Interstate Environmental Externalities*, 144 U. PA. L. REV. 2341, 2347–49 (1998) (noting, for example, that "the core of the Clean Air Act" provides "an ineffective and poorly targeted means of dealing with the problem of interstate externalities").

[132] Rena I. Steinzor, *EPA and Its Sisters at 30: Devolution, Revolution, or Reform?*, 31 ENVTL. L. REP. 11086, 11092 (2001).

[133] *See* Revesz, *supra* note 5, at 541–42 (noting that the number of stacks taller than 500 feet increased from two in 1970 to over 180 in 1985, and arguing that this was due, in part, to incentives created by the Clean Air Act of 1970).

[134] *See* Merrill, *supra* note 34, at 959.

[135] *See* Michigan v. EPA, 213 F.3d 663, 669, 672 (D.C. Cir. 2000); Appalachian Power Co. v. EPA, 249 F.3d 1032 (D.C. Cir. 2001).

[136] *See* Revesz, *supra* note 131, at 2349–74.

pollution, but here again the federal government has been largely absent, rarely invoking the relevant provisions.[137] This federal abdication is all the more troubling for state environmental protection efforts as federal statutes largely preempt preexisting remedies for interstate nuisances under federal common law.[138] Policymakers may have voiced concerns about interstate externalities when adopting federal environmental statues,[139] but such concerns are scarcely evident in the environmental provisions of the U.S. Code as they represent only a tiny portion of federal pollution control law.

2. *Economies of Scale*

Economies of scale suggest that the federal government should actively fund scientific research about environmental problems, collect data, and support the development of pollution control strategies, even if they are not imposed on local jurisdictions.[140] Yet the state of knowledge about environmental problems, their causes and extent, remains quite poor. Much environmental regulation has proceeded despite a lack of basic data about the nature of current environmental problems and incomplete scientific understanding of the problems in question. These problems are compounded by the politicization and manipulation of science within the regulatory process.[141] While state and local governments could benefit from federal research identifying the nature and causes of various environmental problems, as well as from comparative analyses of potential environmental protection policies, they get far less federal support of this type than is warranted by the economies of scale in scientific research. Given the amount of resources devoted to forcing state and local compliance with federal standards, particularly federal *process* standards, this deficiency is

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[137] *See* Merrill, *supra* note 34, at 960–61.

[138] *See* City of Milwaukee v. Illinois, 451 U.S. 304 (1981); *see also* Robert Percival, *The Clean Water Act and the Demise of the Federal Common Law of Interstate Nuisance*, 55 ALA. L. REV. 717 (2004).

[139] *See* Esty, *supra* note 3, at 624 n.196 (citing H.R. Rep. No. 940117 (1976); H.R. Rep. No. 95-294 (1977)) (stating that Congress considered interstate externalities when adopting Clean Air Act Amendments of 1977).

[140] *See supra* Part II.A.

[141] *See generally* E. Donald Elliott, *Strengthening Science's Voice at EPA*, 66 LAW & CONTEMP. PROBS. 45, 45–46 (2003) (describing EPA's "tendency to run roughshod over science to follow the political winds").

particularly striking.

In 1970, the President's Council on Environmental Quality reported that existing government efforts did "not provide the type of information or coverage necessary to evaluate the condition of the nation's environment or to chart changes in its quality and trace their causes."[142] Although the federal government spends over $600 million each year on environmental data collection, in addition to private, state, and local efforts, there is no "comprehensive account on the state of the nation's ecosystems."[143] As noted in a recent report by the Heinz Center titled *The State of the Nation's Ecosystems*, "[f]or a nation deeply committed to protecting the environment, this is an unacceptable state of affairs."[144]

The Heinz Center report sought to address the lack of reliable and comprehensive environmental data by developing and publishing a series of indicators of ecosystem health. While still underway, this project was hampered by the lack of adequate data, as some or all of the necessary data was missing for nearly 70 percent of the chosen indicators.[145] The report noted there was sufficient data to report nationally on only 58 of the 103 chosen indicators;[146] complete data only existed for only thirty-three indicators.[147] Thirty-one indicators had "inadequate data," and fourteen indicators were not reported at all.[148] In some cases the data was unreliable, inconsistent, or incomplete. In others cases the report suggested the gaps could be filled with relatively little effort. The report concluded that "until and unless these gaps are filled, Americans will not have access to a complete picture of the 'state of the nation's ecosystems.'"[149] In other words, after over thirty years of substantial federal environmental regulation, there is no adequate measurement of overall ecosystem health.

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[142] COUNCIL ON ENVTL. QUALITY, ENVIRONMENTAL QUALITY: THE FIRST ANNUAL REPORT OF THE COUNCIL ON ENVIRONMENTAL QUALITY 237 (1970).

[143] H. JOHN HEINZ III CTR. FOR SCI., ECON. AND THE ENV'T, THE STATE OF THE NATION'S ECOSYSTEMS: MEASURING THE LANDS, WATERS, AND LIVING RESOURCES OF THE UNITED STATES 3 (2002), *available at* http://www.heinzctr.org/ecosystems/pdf_files/sotne_complete.pdf.

[144] *Id.*

[145] *See id.* at 203.

[146] *Id.* at 18.

[147] *Id.*

[148] The remaining twenty-five indicators had "some" data. *Id.*

[149] *Id.*

Other studies confirm the general findings of the Heinz Center report. For instance, a recent study conducted for Resources for the Future on the use of science at the EPA, concluded that "the state of environmental science is characterized by a chronic lack of data and a primitive understanding of many biological, physical, and ecological processes."[150] Additionally, "monitoring data" on pollutants are "generally unavailable for most substances," and the "[a]vailable data tend to be sparse, of poor quality, or both."[151] This problem is likely to persist as the percentage of EPA's budget devoted to research has declined substantially since the agency's founding in 1970.[152] Yet the problem is not merely a lack of data, as EPA scientists "also lack a fundamental mechanistic understanding of how pollutants cause harm."[153] Some of these deficiencies are due to the institutional and political incentives facing EPA officials.[154]

For years the Government Accountability Office (formerly known as the General Accounting Office, "GAO") has documented widespread gaps in environmental data and scientific research. In 1995, GAO told Congress about "numerous long-standing problems with EPA's efforts to collect and manage the scientific data that form the basis of regulatory decisions."[155]

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[150] MARK R. POWELL, SCIENCE AT EPA: INFORMATION IN THE REGULATORY PROCESS 125 (1999) (but also noting that "the current state of science is generally sufficient to provide a basis for sound regulatory decisions in routine cases in which the stakes . . . are relatively low"); *see also* U.S. GEN. ACCOUNTING OFFICE, GAO-05-458, CHEMICAL REGULATION: OPTIONS EXIST TO IMPROVE EPA'S ABILITY TO ASSESS HEALTH RISKS AND MANAGE ITS CHEMICAL REVIEW PROGRAM (2005), *available at* http://www.gao.gov/new.items/d05458.pdf (noting lack of data on risks posed by chemical substances subject to EPA regulation).

[151] POWELL, *supra* note 150, at 126.

[152] *See id.* at 2–3 (noting that one-third of EPA's budget once funded the Office of Research and Development, but that "ORD's budget now hovers in the single digits").

[153] *Id.* at 126.

[154] For instance, Powell observes that "environmental data collection falls in and out of favor over time, resulting in a discontinuous series of broad, shallow efforts." *Id.* at 112. Moreover, EPA is fundamentally a "regulatory agency" rather than a "science agency," and it is "dominated by a legalistic culture that often looks for engineering-based solutions to meet statutory obligations." *Id.* at 2. *See also* Elliott, *supra* note 141; MARC K. LANDY ET AL., THE ENVIRONMENTAL PROTECTION AGENCY: ASKING THE WRONG QUESTIONS (1994).

[155] U.S. GEN. ACCOUNTING OFFICE, GAO/T-RCED-95-174, ENVIRONMENTAL PROTECTION: EPA'S PROBLEMS WITH COLLECTION AND MANAGEMENT OF SCIENTIFIC DATA AND ITS EFFORTS TO ADDRESS THEM 1 (1995), *available at*

Specifically, GAO noted that "[m]any of EPA's scientific data sets are either incomplete, obsolete, or missing altogether, a problem that extends across all media areas."[156] In addition, GAO reported that the EPA's "problems in obtaining quality data are exacerbated by difficulties in managing the data that are available."[157] GAO noted that these problems were "longstanding" and were not confined to one or two isolated program areas.[158]

While there have been efforts to address chronic gaps in data and scientific research over the past decade, substantial problems remain. In 1999, GAO reported that the EPA lacks fundamental scientific environmental data concerning various pollutants and their effects on human and ecosystem health.[159] In 2000, GAO concluded that the EPA's national water quality inventory "does not accurately portray water quality conditions nationwide," in large part because data are only collected for a small percentage of the nation's waters.[160] Not only does the EPA not collect sufficient data, but it does not ensure consistency and compatibility across state-collected data.[161] GAO concluded that "the dearth of the waters actually monitored, combined with the wide variation among states' monitoring and assessment approaches, make the national statistics unreliable and subject to misinterpretation and, therefore, of limited usefulness . . . ."[162]

These are not isolated findings. A 2003 GAO study reported that "[n]o federal entity has comprehensively assessed the availability and use of freshwater to meet the nation's needs in 25 years."[163] It further reported that state water managers believed

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http://archive.gao.gov/t2pbat1/154238.pdf.

[156] *Id.*

[157] *Id.*

[158] *Id.* at 3.

[159] U.S. GEN. ACCOUNTING OFFICE, GAO/RCED-99-261, ENVIRONMENTAL INFORMATION: EPA IS TAKING STEPS TO IMPROVE INFORMATION MANAGEMENT, BUT CHALLENGES REMAIN 4–5 (1999), *available at* http://www.gao.gov/archive/1999/rc99261.pdf ("These extensive data gaps are a result both of a lack of fundamental scientific knowledge and of inadequate data collection, according to EPA and others.").

[160] U.S. GEN. ACCOUNTING OFFICE, GAO/RCED-00-54, WATER QUALITY: KEY EPA AND STATE DECISIONS LIMITED BY INCONSISTENT AND INCOMPLETE DATA 5 (2000), *available at* http://www.gao.gov/archive/2000/rc00054.pdf.

[161] *Id.* at 6.

[162] *Id.*

[163] U.S. GEN. ACCOUNTING OFFICE, GAO-03-514, FRESHWATER SUPPLY: STATES' VIEWS OF HOW FEDERAL AGENCIES COULD HELP THEM MEET THE

that more water data and greater flexibility in complying with federal environmental laws would help states to meet their water resource needs.[164] The National Research Council, a division of the National Academy of Sciences ("NAS") likewise reported that "observational networks to measure various water characteristics have been in decline during the last 30 years because of political and fiscal instabilities."[165] This is particularly true for systems monitoring "streamflow, groundwater, sediment transport, water quality and water use."[166] Although the "number, complexity, and severity of water problems are growing," the NAS found that investment in the scientific studies necessary to address such problems has "stagnated."[167] The NAS panel found that too much of current research is focused on short-term concerns and "[t]oo little of it is focused on the kind of fundamental, integrated, longer-term research that will be required if current and emerging water problems are to be addressed successfully."[168]

A 2001 report by the National Academy of Public Administration ("NAPA") also found major deficiencies in the EPA's information systems for overseeing and monitoring state and federal environmental program performance.[169] The NAPA report further found that

> [D]ata from EPA and state systems are hard to use in assessing changes of environmental conditions at specific locations and in evaluating the environmental and compliance performance of individual facilities, groups of facilities, or responsible government agencies. As a result, Congress, EPA, state legislatures, and the public cannot readily evaluate the effectiveness, efficiency, or equity of federal and state

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CHALLENGES OF EXPECTED SHORTAGES 44 (2003), *available at* http://www.gao.gov/new.items/d03514.pdf.

[164] *Id.* at 76. Of course, state water managers also stated that they would benefit from greater financial assistance. *Id.* at 77.

[165] COMM. ON ASSESSMENT OF WATER RES. RESEARCH, NAT'L RESEARCH COUNCIL, CONFRONTING THE NATION'S WATER PROBLEMS: THE ROLE OF RESEARCH 180 (2004).

[166] *Id.* at 195.

[167] *Id.* at 16.

[168] *Id.*

[169] *See* NAT'L ACAD. OF PUB. ADMIN., EVALUATING ENVIRONMENTAL PROGRESS: HOW EPA AND THE STATES CAN IMPROVE THE QUALITY OF ENFORCEMENT AND COMPLIANCE INFORMATION 1–5 (2001), *available at* http://www.napawash.org/pc_economy_environment/environmental.pdf.

enforcement and compliance assistance programs.[170]

Similarly, a 2004 GAO report noted significant "gaps" and "duplication of effort" in water quality data.[171]

The lack of data can inhibit sound policy formation at all levels of government. In recent litigation over revisions to the EPA's "New Source Review" regulations, the agency was forced to acknowledge that its environmental impact analysis could not "reasonably quantify" the impact of the proposed regulatory changes on public health because the analysis was "based upon incomplete data."[172] GAO likewise concluded that the environmental impact of the rule was "uncertain because of limited data and difficulty in determining how industrial companies will respond to the rule."[173]

A lack of quality environmental data also makes it difficult to identify environmental baselines for the purpose of measuring environmental progress or decline. In 2004 EPA announced the classification under fish advisories of a record proportion of the nation's rivers and streams due to contamination from mercury and other toxic substances.[174] While there were only 20 fish advisories in 1993, there were 175 by 2001, and 386 by 2003.[175] Yet the increased number of advisories was not due to any measured increase in water pollution or fish contamination; indeed, emissions of mercury and other contaminants of concern have declined substantially over the same time period that the number of fish advisories skyrocketed.[176] Rather, the increased number of

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[170] *Id.* at 3.

[171] U.S. GEN. ACCOUNTING OFFICE, GAO-04-382, WATERSHED MANAGEMENT: BETTER COORDINATION OF DATA COLLECTION EFFORTS NEEDED TO SUPPORT KEY DECISIONS 6 (2004), *available at* http://www.gao.gov/new.items/d04382.pdf.

[172] New York v. EPA, 413 F.3d 3, 30 (D.C. Cir. 2005). It is possible that it would be exceedingly difficult to quantify these effects even if there were more comprehensive data collection because much is dependent upon predictions about industry behavior under a different set of regulatory requirements.

[173] U.S. GEN. ACCOUNTING OFFICE, GAO-03-947, CLEAN AIR ACT: EPA SHOULD USE AVAILABLE DATA TO MONITOR THE EFFECTS OF ITS REVISIONS TO THE NEW SOURCE REVIEW PROGRAM 24 (2003), *available at* http://www.gao.gov/new.items/d03947.pdf.

[174] *See* U.S. EPA, EPA-823-F-04-016, FACT SHEET: NATIONAL LISTING OF FISH ADVISORIES (2004), *available at* http://www.epa.gov/ost/fish/advisories/factsheet.pdf.

[175] *Id.* at 3 tbl.3.

[176] *Id.* at 1 (noting that U.S. mercury emissions have declined by 50 percent

fish advisories was due to in part to an increase in water quality testing conducted by environmental agencies.[177] In other words, more rivers and streams were under fish advisories than ever before because more river miles were tested than ever before.

While the federal government invests substantial resources in environmental protection, and enforces a wide array of environmental regulations, these efforts are not focused on those areas in which the case for federal involvement is the strongest. Just as the federal government has failed to address interstate pollution spillovers, it has failed to concentrate federal resources in those areas where federal efforts are most warranted due to economies of scale. This mismatch undermines the effectiveness of federal environmental protection.

IV. STATE-LEVEL CONSEQUENCES

The jurisdictional mismatch in environmental policy distorts state environmental policymaking and can have significant environmental consequences. As a result of extensive federal involvement in areas best left in state or local hands, state policy development is heavily distorted.[178] The lack of a match between the scope of environmental problems and the political jurisdictions asserting authority over such concerns leads to poor prioritization. The over-centralization of environmental policy further compounds the problem of excessive rigidity created by excessive uniformity.[179] The extension of federal authority into areas more properly left under state and local control does not extinguish the demand for greater environmental protection at the state and local level. It does, however, rechannel it. One consequence of the mismatch is that state and local policy makers increasingly turn to environmental issues and concerns where the case for federal dominance is stronger.

The most obvious way federal action influences state environmental protection efforts is when federal rules preempt conflicting or varying state rules. For example, section 209(b) of

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since 1990).

[177] *Id.* at 2. Another contributing factor was the increased use of statewide advisories in response to state testing results. *Id.*

[178] The full range of federal regulation's potential effects on state regulatory activity is surveyed in Adler, *supra* note 81.

[179] *See, e.g.*, BUTLER & MACEY, *supra* note 2, at 1 (noting that excessive centralization produces "inflexibility and inertia").

the Clean Air Act prohibits states from adopting "any standard relating to the control of emissions from new motor vehicles."[180] Similarly, the Energy Policy Conservation Act preempts any state regulation of automotive fuel economy.[181] Preemption can be express, as in the above examples, or implied.[182] Where implied preemption is found, federal regulation will typically preclude any state or local regulation whatsoever.[183]

Because preemption operates to prevent state regulatory activity, the net effect of federal preemption is for there to be less regulation than there would have been otherwise.[184] Where federal measures are insufficiently protective, or where federally imposed uniformity is inefficient, there will be suboptimal results. As a recent environmental group report concluded, "[f]ederal preemption of states' ability to go above and beyond the federal floor suppresses states' creativity in developing new approaches to solving public policy problems, such as air pollution."[185] Sometimes federal preemption may be justified by economies of scale. In other cases, however, preemption precludes the adoption of state-level standards that are more tailored to local or regional conditions and needs.

As a practical matter, a federal regulatory "floor" can become a ceiling. The existence of a federal standard may discourage state

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[180] 42 U.S.C. § 7543(a) (2000). There are exceptions to this rule. The EPA may waive preemption of emission standards adopted by California, subject to certain conditions. 42 U.S.C. § 7543(b) (2000). Where the EPA has approved a waiver for California, other states may adopt the California rule. In all cases, however, the other 49 states may not adopt a "third" standard. The Clean Air Act contains similar provisions governing standards for gasoline. 42 U.S.C. § 211(c)(4).

[181] 49 U.S.C. § 32919(a) (2000). Unlike emission standards, there is no conditional exemption for California.

[182] *See, e.g.*, Gade v. Nat'l Solid Waste Mgmt. Ass'n, 505 U.S. 88, 98 (1992) (state regulation is preempted "where the scheme of federal regulation is so pervasive as to make reasonable the inference that Congress left no room for the States to supplement it") (quoting Rice v. Santa Fe Elevator Corp., 331 U.S. 218, 230 (1947)).

[183] *See* Paul S. Weiland, *Federal and State Preemption of Environmental Law: A Critical Analysis*, 24 HARV. ENVTL. L. REV. 237, 258–59 (2000).

[184] In some cases the purpose of federal preemption is to replace one type of regulation with another, though this results in less regulation than if the federal regulation was adopted *in addition to* the state regulation.

[185] U.S. PIRG EDUC. FUND, POWER TO PROTECT: THE CRITICAL ROLE STATES PLAY IN CLEANING UP POLLUTION FROM MOBILE SOURCES 34 (2005), *available at* http://uspirg.org/reports/powertoprotect.pdf.

policymakers from adopting and maintaining more stringent measures of their own, even where such measures could be justified. Many states have adopted legislation to prevent state environmental agencies from adopting regulatory standards that are more protective than federal rules.[186] New Mexico and Colorado, for example, have statutes prohibiting the promulgation of air pollution controls more stringent than what would be required by federal law.[187] Virginia law bars state regulatory authorities from requiring greater amounts of water treatment than mandated under the federal Clean Water Act.[188] Others states have general prohibitions against agency promulgation of environmental rules more stringent than federal law.[189] Insofar as federal standards are not based upon accurate, up-to-date scientific assessments of environmental problems, and such information about the nature and extent of environmental problems is not available to state and local policymakers, the federal regulation may have an even greater distorting effect on state priorities.

The mere existence of a federally mandated floor also preempts contrary state policies and environmental priorities. If a local community has different health and environment-related regulatory priorities, it still must meet the requirements of federal law.[190] In 2000, for example, the outgoing Clinton Administration proposed lowering the federal standard for arsenic in drinking

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[186] *See* Jerome M. Organ, *Limitations on State Agency Authority to Adopt Environmental Standards More Stringent than Federal Standards: Policy Considerations and Interpretive Problems*, 54 MD. L. REV. 1373, 1376–86 (1995); *see also* Arnold W. Rietze, Jr., *Federalism and the Inspection and Maintenance Program under the Clean Air Act*, 27 PAC. L.J. 1461, 1465 (1996) (noting "movement among state legislature to prohibit more stringent state standards"). This phenomenon continues today. *See* James M. Taylor, *Indiana Bill Would Ban State Agencies from Tightening EPA Standards*, ENV'T & CLIMATE NEWS, June 1, 2005, *available at* http://www.heartland.org/Article.cfm?artId=17173.

[187] *See* N.M. STAT. ANN. § 74-2-5 (LexisNexis 2000); COLO. REV. STAT. § 25-7-114.2 (2004).

[188] *See* VA CODE ANN. § 62.1-44.15:1 (2001).

[189] *See, e.g.*, KY. REV. STAT. ANN. § 12A.120(1)(A) (LexisNexis 2003) (prohibiting all administrative regulations "more stringent than the federal law or regulations").

[190] *See, e.g.*, Keith Schneider, *How a Rebellion over Environmental Rules Grew from a Patch of Weeds*, N.Y. TIMES, Mar. 24, 1993, at A16 (quoting a Columbus, Ohio health official as complaining that "the new rules coming out of Washington are taking money from decent programs and making me waste them on less important problems").

water from 50 to 10 parts per billion (ppb), largely to reduce the risk of bladder cancer from arsenic consumption.[191] While the leaders of national environmental groups cheered the proposed reduction in the federal arsenic standard, many communities faced with high compliance costs were less enthusiastic.[192] In Los Lunas, New Mexico groundwater naturally contains 12–19 ppb of arsenic. Local officials estimated that reducing arsenic levels to the new 10 ppb standard would cost $14 million.[193] Local experts also noted that while New Mexico has among the highest natural concentrations of arsenic in groundwater in the country, it also has among the lowest rates of bladder cancer, leading many to question whether spending millions to reduce local arsenic levels was the most cost-effective way to safeguard public health.[194] There is even evidence that the federal arsenic rule will *increase* risks to public health in some communities insofar as the higher water rates necessary to pay for the change induces some families to opt for water from their own wells.[195] Yet insofar as residents of Los Lunas, or any other community, wish to adopt different drinking water standards that are more in line with their environmental and public health needs, and lack the resources to pursue every laudable public health or environmental goal, the federal standard precludes them from acting on their preferences.

While the federal government may preempt state regulatory action, and may require state compliance with a general regulatory scheme that does not target states-as-states, it cannot force states to adopt federally desired regulations. It can, however, offer various inducements to encourage state "cooperation." The federal government may, for instance, condition funding on state cooperation or threaten to preempt state and local regulations if such measures do not meet federal requirements. This approach is

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[191] *See* National Primary Drinking Water Regulations; Arsenic and Clarifications to Compliance and New Source Contaminants Monitoring, 66 Fed. Reg. 6976, 6980–81 (Jan. 22, 2001).

[192] One state, Nebraska, even sued the U.S. EPA to overturn the standard after it was finally adopted by the Bush Administration. *See* Nebraska v. EPA, 331 F.3d 995 (D.C. Cir. 2003).

[193] SCHOENBROD, *supra* note 13, at 171.

[194] *Id.*; *see also id.* at 178 ("[A]ccording to Betty Behrend, Los Lunas's utilities and public works director, 'The community need[ed] other things worse [than lowered arsenic levels]'.").

[195] *Id.* at 178; *see also* Floyd Frost, *Poisonous Decision: A Low Arsenic Standard Carries a High Cost*, WASH. POST, Sept. 16, 2001, at B5.

typically referred to as "cooperative federalism,"[196] though many analysts question whether the relationship can be properly described as "cooperative."[197] Particularly where the consequence of state refusal to cooperate is the imposition of a federal regulatory scheme, the "cooperative federalism" model does not leave much flexibility in the scope and design of regulatory programs.

Even where federal involvement is supposed to be "cooperative," states are often precluded or at least discouraged from adopting environmental policies that would be more efficient or effective at addressing their particular environmental concerns and demands. Under the Clean Air Act, for example, the federal government uses the threat of sanctions to impose federal air pollution control priorities on state governments. Specifically, the threatened loss of highway funds induces states to adopt that mix of air pollution control measures preferred by federal policymakers, even when an alternative mix of pollution control measures may produce greater environmental results. The adoption of one air pollution control measure may increase other forms of pollution or otherwise contribute to other environmental

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[196] "[W]here Congress has the authority to regulate private activity under the Commerce Clause, we have recognized Congress' power to offer States the choice of regulating that activity according to federal standards or having state law pre-empted by federal regulation. This arrangement . . . has been termed . . . cooperative federalism." New York v. United States, 505 U.S. 144, 167 (1992) (citations and quotations omitted).

[197] *See, e.g.*, Dwyer, *supra* note 22, at 1185 ("So much political power has been reallocated to the federal government that, at times, the states could be mistaken for vassals of the federal government."); Robert V. Percival, *Environmental Federalism: Historical Roots and Contemporary Models*, 54 MD. L. REV. 1144 (1995) ("[F]ederal environmental standards have been a chronic source of friction for federal-state relations."). States are frequent litigants challenging the validity or implementation of federal environmental regulations. *See, e.g.*, West Virginia v. EPA, 362 F.3d 861 (D.C. Cir. 2004) (challenging federal regulations requiring nitrogen oxide emission reductions under state implementation plans); Michigan v. EPA, 213 F.3d 663, (D.C. Cir. 2000) (challenging federal regulations requiring nitrogen oxide emission reductions under state implementation plans); Virginia v. EPA, 116 F.3d 499 (D.C. Cir. 1997) (challenging federal vehicle emission standards). For more on cooperative federalism in environmental policy, see Jonathan H. Adler, Comment, *The Green Aspects of* Printz*: The Revival of Federalism and Its Implications for Environmental Law*, 6 GEO. MASON L. REV. 573, 575–82, 616–25 (1998). *See also* DENISE SCHEBERLE, FEDERALISM AND ENVIRONMENTAL POLICY: TRUST AND THE POLITICS OF IMPLEMENTATION (1997); Robert L. Fischman, *Cooperative Federalism and Natural Resources Law*, 14 N.Y.U. ENVTL. L.J. 179, 183–88 (2005).

problems.[198] Although ostensibly designed to reduce automotive emissions, there is substantial scientific evidence that oxygenated fuels provide little environmental benefit,[199] and can even cause environmental harm.[200] This is not the only instance in which the Clean Air Act mandates may impede the achievement of optimal levels of environmental protection. Because the formation of tropospheric ozone ("smog") is in part dependent upon ratios of ozone precursors in the ambient air, measures that reduce ozone levels in some cities increase ozone levels elsewhere.[201] Some

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[198] As Justice Breyer, then Judge Breyer, observed, "one can find many examples of regulators' ignoring one program's safety or environmental effects on another" STEPHEN BREYER, BREAKING THE VICIOUS CIRCLE: TOWARD EFFECTIVE RISK REGULATION 22 (1993). On this point, see Frank B. Cross, *The Paradoxical Perils of the Precautionary Principle*, 53 WASH. & LEE L. REV. 3, 851 (1996) (chronicling potential negative public health and environmental impacts from environmental regulation); Edward W. Warren & Gary E. Merchant, *"More Good Than Harm": A First Principle for Environmental Agencies and Reviewing Courts*, 20 ECOLOGY. L. Q. 379, 390 (1993) (same).

[199] *See, e.g.*, COMM. ON OZONE-FORMING POTENTIAL OF REFORMULATED GASOLINE, NAT'L RESEARCH COUNCIL, OZONE FORMING POTENTIAL OF REFORMULATED GASOLINE 7 (1999), *available at* http://www.nap.edu/catalog/9461.html ("[T]he use of commonly available oxygenates in RFG has little impact on improving ozone air quality and has some disadvantages."); *id.* at 45 (noting there is "uncertainty" as to whether any of the documented improvement in urban air quality is due to the use of reformulated gasoline). At times, EPA has sought to use the federal oxygenate requirement to benefit ethanol producers and other agricultural interests improve at the expense of air quality. *See, e.g.*, Am. Petroleum Inst. v. EPA, 52 F.3d 1113, 1119 (D.C. Cir. 1995).

[200] *See* Davis v. EPA, 348 F.3d 772, 777 (9th Cir. 2003) (noting that waiver of federal oxygenate requirement would reduce emissions of nitrogen oxides); Harold M. Haskew et al., *Fuel Permeation from Automotive Systems* 1 (Coordinating Research Council Project No. E-65, 2004), *available at* http://www.arb.ca.gov/fuels/gasoline/permeation/090204finalrpt.pdf (documenting increased auto-related emissions from the use of ethanol as an oxygenate); U.S. GEN. ACCOUNTING OFFICE, GAO-02-753T, ENVIRONMENTAL PROTECTION: MTBE CONTAMINATION FROM UNDERGROUND STORAGE TANKS 2 (2002) (reporting that a majority of states have found MTBE in groundwater). *See generally* Jonathan H. Adler, *Clean Fuels, Dirty Air*, *in* ENVIRONMENTAL POLITICS: PUBLIC COSTS, PRIVATE REWARDS, *supra* note 77, at 19 (characterizing the "clean fuels" program as an ethanol subsidy with little regard for environmental benefits).

[201] *See, e.g.*, COMM. ON TROPOSPHERIC OZONE FORMATION AND MEASUREMENT, NAT'L RESEARCH COUNCIL, RETHINKING THE OZONE PROBLEM IN URBAN AND REGIONAL AIR POLLUTION 12 (1992), *available at* http://books.nap.edu/books/0309046319/html/index.html ("[N]Ox [nitrogen oxide] reductions can have either a beneficial or detrimental effect on ozone concentrations, depending on the locations and emissions rates of VOC [volatile organic compound] and NOx sources in a region.").

earlier measures had similar effects. For instance, air pollution control provisions adopted as part of the Clean Air Act Amendments of 1977 were tailored to advantage regional coal producers at the expense of their competitors, and air quality suffered as a result.[202]

Federal *inaction* can alter state environmental policy priorities just as much as federal action. In some cases, federal failure to conduct scientific research leaves states without the scientific and technical information necessary to set environmental priorities in accordance with local preferences. The failure of federal policymakers to address new or emerging environmental concerns has encouraged states to become more aggressive in their approach to such problems.[203] New York State, for example, sought to restrict the sale of sulfur-dioxide emission credits under the Clean Air Act due to concerns that such sales could increase pollution within the state.[204] Yet because the federal government is disproportionately active in those areas where there is no strong case for federal involvement, states may be disproportionately active in those areas where federal action, and perhaps even federal preemption, would be preferable.

Global climate change policy is a prime example of increasing state activity where federal action would provide for a greater jurisdictional match. In recent years, state governments have become quite active on climate change, both for and against greater action to control greenhouse gas emissions.[205] As of 2004,

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[202] *See generally* BRUCE ACKERMAN & WILLIAM T. HASSLER, CLEAN COAL, DIRTY AIR (1981) (describing the role of regional coal producers in the adoption of the Clean Air Act Amendments of 1977).

[203] *See* TESKE, *supra* note 21, at 168 ("A number of states . . . have tried to move aggressively to deal with pollution problems, viewing federal policymaking as increasingly in a condition of policy gridlock."); *see also* William W. Buzbee, *Contextual Environmental Federalism*, 14 N.Y.U. ENVTL. L.J. 108, 111–12 (2005).

[204] *See* Clean Air Markets Group v. Pataki, 194 F. Supp. 2d 147, 161–62 (N.D.N.Y. 2002) (striking down New York law on dormant commerce clause grounds). For more background on this litigation, see generally Andrew D. Thompson, *Public Health, Environmental Protection, and the Dormant Commerce Clause: Maintaining State Sovereignty in the Federalist Structure*, 55 CASE W. RES. L. REV. 213 (2004).

[205] *See* TESKE, *supra* note 21, at 17 (noting several states adopted carbon dioxide standards, while others oppose ratification of the Kyoto Protocol); *see also* BARRY G. RABE, GREENHOUSE AND STATEHOUSE: THE EVOLVING STATE ROLE IN CLIMATE CHANGE 1 (2002), *available at* http://www.pewclimate.org/document.cfm?documentID=295 (current state

28 states had begun developing greenhouse gas emission policies.[206] Some, such as New Jersey, Massachusetts, and New Hampshire, adopted emission reduction targets. In July 2002, California adopted legislation requiring the California Air Resources Board to "develop and adopt regulations that achieve the maximum feasible and cost-effective reduction of greenhouse gas emissions from motor vehicles."[207] The state has also embarked on an ambitious plan to reduce greenhouse gas emissions by 25 percent over the next fifteen years.[208] Others states have adopted voluntary plans. New York and seven other states, mostly in the Northeast, also filed suit directly against various Midwestern utilities alleging that their failure to control greenhouse gas emissions constitutes common law nuisance.[209] This activity is the result, in part, of relative federal inaction on climate change.[210] Setting aside the question of whether regulatory action to control greenhouse gases is worthwhile, it should be clear that any such action is best undertaken at the national (if not international) level, rather than by state and local governments.

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policies indicate that a "bottom-up approach to addressing global climate change" is inevitable for "a nation as physically large and economically diverse as the United States"); Ann E. Carlson, *Federalism, Preemption, and Greenhouse Gas Emissions*, 37 U.C. DAVIS L. REV. 281, 282 (2003) (noting that many states "have quietly begun to fill the void in leadership that some believe exists at the national level").

[206] PEW CTR. ON GLOBAL CLIMATE CHANGE, CLIMATE CHANGE ACTIVITIES IN THE UNITED STATES: 2004 UPDATE 9 (2004), *available at* http://www.pewclimate.org/document.cfm?documentID=295.

[207] A.B. 1493, codified in CAL. HEALTH & SAFETY CODE § 43018.5(a) (West 2005).

[208] Juliet Eilprin, *California Plan Aims to Slash Emissions*, WASH. POST, Jun. 2, 2005, at A4.

[209] *See* Miguel Bustillo, *States to Sue Over Global Warming*, L.A. TIMES, Jul. 21, 2004, at B8; *see also* Andrew C. Revkin, *New York City and 8 States Plan to Sue Power Plants*, N.Y. TIMES, Jul. 21, 2004, at A15. In September 2005, a federal district court dismissed the lawsuit on the grounds that it presented a nonjusticiable political question. Connecticut v. Am. Elec. Power Co., Inc., 2005 WL 2347900 (S.D.N.Y., Sep. 22, 2005).

[210] *See, e.g.*, Harry Stoffer, *Fuel Economy Battle: Lack of Action on National Level Forcing Groups to Push Regulations on State Level*, TIRE BUSINESS, May 23, 2005, at 6 (noting Sierra Club efforts to push climate policies at the state level); Buzbee, *supra* note 203, at 112.

CONCLUSION

Environmental protections would be more successful if responsibility were divided between the federal and state governments in a more justifiable manner.[211] Ideally, the federal government should reorient its efforts toward those areas in which the federal government possesses an institutional advantage, due to economies of scale, or where state and local governments are incapable of addressing environmental problems, such as where there are substantial interstate spillovers. A greater "match" between the scope of environmental problems and the institutions entrusted with addressing such concerns would enhance the efficiency, effectiveness, and equity of existing environmental protection efforts.

The jurisdictional mismatch in environmental policy was not created overnight, nor can it be cured easily.[212] Numerous reports and studies have identified the deficiency in federal research and scientific knowledge relevant to environmental concerns, and there is some evidence of progress on this front. Addressing the jurisdictional mismatch will be more difficult; at present there is little interest in revisiting the basic structure of federal environmental law in the legislative or executive branch. Nor are courts likely to force wholesale revisions in existing federal environmental regulations.[213]

One possible means of addressing the jurisdictional mismatch would be to create greater opportunities for states to free themselves of inappropriate federal requirements. Elsewhere this author has proposed a policy of "ecological forbearance," under which states could petition federal agencies for waivers from federal requirements where no compelling reasons exist to enforce the federal rule.[214] Such a policy would enable states to experiment with alternative means of environmental protection,

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[211] *See* Buzbee, *supra* note 3, at 57 (noting that any reform that does not divide regulatory tasks among different levels of government "would be highly unlikely to create effective regulation").

[212] *See, e.g.*, *id.* at 50–51 (noting that the likelihood of "fundamental reorganization" of governmental responsibility "appears too far-fetched to justify much attention," but that "reallocation of responsibilities in particular subject areas" may be "a viable answer").

[213] *See* Adler, *supra* note 8, at 453, 471–72.

[214] *See* Adler, *supra* note 1, at 272–81. A similar proposal was suggested by Professor Farber. *See* FARBER, *supra* note 1, at 194–98.

which could reopen the laboratories of democracy in environmental policy. It also would have the potential to free up federal resources to focus on those areas in which interstate spillovers or economies of scale require greater federal involvement.

However it is accomplished, fixing the current jurisdictional mismatch should be a high priority for environmental reform. Despite the environmental successes of the past three decades, the overlapping and contradictory state and federal rules do not lead to efficient or effective environmental protection. It is in some senses an historical accident that state leadership in environmental policy was supplanted by federal regulation, and environmental policy could be improved if states regained more of their historic role. The federal government did not come to dominate environmental policy because a more decentralized system was leading to environmental ruin.[215] Yet environmental protection could be improved if federal dominance was confined to those areas in which the federal government has something unique to contribute.

[215] *See generally* Jonathan H. Adler, *The Fable of Federal Environmental Regulation*, 55 CASE W. RES. L. REV. 93 (2004) (arguing that the "conventional fable" that the decentralized system of dealing with environmental problems lead to disasters necessitating federal regulation is not an adequate explanation of the rise of the federal role in environmental protection).