ARTICLES

MY TREE VERSUS YOUR SOLAR COLLECTOR OR YOUR WELL VERSUS MY SEPTIC SYSTEM?—EXPLORING RESPONSES TO BENEFICIAL BUT CONFLICTING NEIGHBORING USES OF LAND

R. Lisle Baker

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Abstract: When one neighbor wants to use his land for a lawful purpose, but the neighbor next door wants to do the same so that their beneficial uses conflict, how might these conflicts be resolved? The conventional law of nuisance offers either a rationale based on fault or a general standard of what is “reasonable,” both of which require litigation to apply to a particular context. This Article suggests that resolving conflicts between neighboring beneficial uses of land would be aided by guidelines which might be grounded in some understandable norms to provide such neighbors with a sense that rough justice is being served. Two such norms appear helpful: priority in time and examining which of the two beneficial uses appears to be the more intrusive of the neighboring land. The hope is that such guidelines might facilitate resolution where hard feelings or litigation might otherwise result.

SITING GREEN INFRASTRUCTURE: LEGAL AND POLICY SOLUTIONS TO ALLEVIATE URBAN POVERTY AND PROMOTE HEALTHY COMMUNITIES

Alexandra Dapolito Dunn

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Abstract: Green infrastructure is an economically and environmentally viable approach for water management and natural resource protection in urban areas. This Article argues that green infrastructure has additional and exceptional benefits for the urban poor which are not frequently highlighted or discussed. When green infrastructure is concen-
trated in distressed neighborhoods—where it frequently is not—it can improve urban water quality, reduce urban air pollution, improve public health, enhance urban aesthetics and safety, generate green collar jobs, and facilitate urban food security. To make these quality of life and health benefits available to the urban poor, it is essential that urban leaders remove both legal and policy barriers to implementing green infrastructure projects. This Article argues that overcoming these obstacles requires quantified methods and regulatory reform. Increased public financing and other incentives are also necessary. Furthermore, legal structures that facilitate green solutions must be put in place. Lastly, awareness of green infrastructure solutions among policy makers and the wider public must be enhanced so that our nation's more distressed urban populations may realize the benefits that such solutions yield.

THE FAILURE OF INTERNATIONAL GLOBAL WARMING REGULATION TO PROMOTE NEEDED RENEWABLE ENERGY

Steven Ferrey

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Abstract: Renewable power generation technologies exist today and comprise the foundation for the bridge to a sustainable international power generation infrastructure. However, the Kyoto Protocol (Kyoto) has failed to utilize these technologies. Kyoto also missed the forest for the trees: it disallowed forest preservation to count in its carbon currency. It also missed including the correct chemical base in developing countries. This Article examines what led international law not to focus on development in renewable power alternatives where they are most required in the international order: developing nations. It analyzes the critical role of international multilateral organizations to create the new architecture of carbon control before it is too late. This Article concludes by highlighting a little-noticed template for renewable power and carbon mitigation success that has been demonstrated in several developing countries. It highlights the changes to Kyoto and international law that are necessary to construct a bridge to the development of sustainable power generation infrastructure.
NOTES

A CRANBERRY RECIPE FOR CITIZEN RULEMAKING

Tobias F. Bannon, III

[pages 127–156]

Abstract: Under the Massachusetts Clean Water Act, a loophole exists that allows fertilizer-laden waters to escape “wet crop” farms and to flow into nearby waterways, causing detrimental effects. Blackmore Pond, located near Cape Cod, Massachusetts, has seen such effects, and its residents are eager for change. Considering that past lawsuits have failed to close the wet crop loophole, the residents of Blackmore Pond may petition the Massachusetts Department of Environmental Protection to amend the Massachusetts Clean Water Act regulations. The Massachusetts Department of Environmental Protection may accept the proposed amendments, in which case the residents of Blackmore Pond will have achieved success in closing the wet crop loophole, or reject the amendments, in which case the residents will be able to challenge this decision through judicial review. Citizen petitions for rulemaking are a seldom-used, powerful means for ordinary citizens to effect change.

MAKING TAXIS GREEN: HYBRID CAB PROGRAMS AND THE DEBATE OVER PREEMPTION IN ENVIRONMENTAL REGULATION

J.D. Holden

[paged 157–190]

Abstract: In the past few years, many cities have attempted to mandate the use of hybrid taxicabs. The taxi industry, arguing that the Energy Policy and Conservation Act and the Clean Air Act preempt such mandates, has successfully opposed them. Mandating hybrid cab use, however, is but one important aspect of a larger push by states and local governments to enact progressive environmental legislation and policies with greater breadth than those of the federal government. An example is California’s battle to enact greenhouse gas emissions regulations and its conflict with the Environmental Protection Agency. Though New York City and Boston lost on preemption grounds, their attempts are important in the context of the battle over environmental federalism. In the long term, the Energy Policy and Conservation Act should be amended to allow for more progressive environmental regulations at the state and local level.
THE SAME NEPA PROPOSAL OR CONNECTED NEPA ACTIONS?:
WHY THE BUREAU OF LAND MANAGEMENT’S NEW OIL SHALE
RULES AND REGULATIONS SHOULD BE SET ASIDE

Alexander Hood

[pages 191–224]

Abstract: In November 2008, the Bureau of Land Management (BLM) finalized a rule opening public land in Colorado, Utah, and Wyoming for oil shale leasing and finalized regulations creating policies and procedures for that leasing. The rule and regulations are the BLM’s attempt to fulfill their mandate under the Energy Policy Act of 2005 to create a commercial oil shale leasing program in the western United States. As federal actions significantly affecting the environment, both the rule and regulations, are subject to the procedural requirements of the National Environmental Policy Act (NEPA). The purpose of this Note is to point to two possible errors by the BLM in fulfilling NEPA’s procedural requirements. These procedural errors are fodder for citizen-plaintiffs hoping to have the Bush-era rule and regulations judicially set aside and subsequently abandoned by the Obama Administration.

GLOBAL WARMING AND ORIGINALISM: THE ROLE OF THE EPA
IN THE OBAMA ADMINISTRATION

Joshua K. Westmoreland

[pages 225-256]

Abstract: Anthropogenic warming will devastate the world if it is not abated. Abating such warming will require a long-term strategy that starts with immediate and drastic action in the form of new laws designed to restrict greenhouse gas emissions. In the wake of Massachusetts v. EPA, President Obama is likely to issue an executive order requiring the EPA Administrator to issue strict regulations addressing greenhouse gas emissions from mobile sources under the Clean Air Act. However, such executive action will surely spark a flood of lawsuits challenging the scope of executive power. This Note addresses the merits of such lawsuits and uses unitary executive theory to argue that the President’s executive power includes the power to control the EPA rule-making process.
MY TREE VERSUS YOUR SOLAR COLLECTOR OR YOUR WELL VERSUS MY SEPTIC SYSTEM?—EXPLORING RESPONSES TO BENEFICIAL BUT CONFLICTING NEIGHBORING USES OF LAND

R. Lisle Baker*

Abstract: When one neighbor wants to use his land for a lawful purpose, but the neighbor next door wants to do the same so that their beneficial uses conflict, how might these conflicts be resolved? The conventional law of nuisance offers either a rationale based on fault or a general standard of what is “reasonable,” both of which require litigation to apply to a particular context. This Article suggests that resolving conflicts between neighboring beneficial uses of land would be aided by guidelines which might be grounded in some understandable norms to provide such neighbors with a sense that rough justice is being served. Two such norms appear helpful: priority in time and examining which of the two beneficial uses appears to be the more intrusive of the neighboring land. The hope is that such guidelines might facilitate resolution where hard feelings or litigation might otherwise result.

Introduction

Here’s the problem. Neighbor A wants to use his land for a lawful purpose. Neighbor B next door wants to do the same, but the use which neighbor A wants to make conflicts with the use that neighbor B wants to make. How should they respond?

Consider two examples:

* © 2010 R. Lisle Baker, Professor of Law, Suffolk University Law School. The author wishes to acknowledge the help of Suffolk Law School student research assistants Daniel Kazakis and Samuel Reidy ’09, Jackson Moller ’10, and Jonathan Hunter ’11, as well as Jeanie Fallon of the Suffolk Law Library reference staff, in the preparation of this article. The author also wishes to acknowledge helpful comments on drafts of this article from Professor Robert Ellickson of Yale Law School, Professor James Ely of Vanderbilt Law School, Professor Henry Smith of Harvard Law School, and Professors Bernie Jones, Andy Beckerman-Rodau, Joseph Glannon and Michael Rustad of Suffolk University Law School. Omissions or errors, however, are the author’s responsibility.
Case #1: Neighbor A wants to install a solar collector on his land, but Neighbor B has redwood trees that shade his solar collector. Must Neighbor B cut his trees so the sun will shine on Neighbor A’s collector? Yes, at least in California in 2008.

Under the California Solar Shade Control Act, a law enacted twenty years ago, shading a solar collector by more than ten percent between ten a.m. and two p.m. became a public nuisance subject to a fine of up to $1000 a day.\(^1\) In 2008, an owner in Sunnyvale, California had to cut back his neighboring redwood tree to comply.\(^2\) Here is the result:

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\(^1\) Solar Shade Control Act, Cal. Pub. Res. Code §§ 25980–25986 (West 2007). Enacted in 1978, this law prohibited the placement or growth of trees or shrubs subsequent to the installation of a solar collector if the placement or growth shades more than ten percent of the solar collector between 10:00 a.m. and 2:00 p.m. PST, making such conduct a public nuisance subject to fines of up to $1000 per day. Id. §§ 25982, 25983.

As a consequence, the California statute has been amended to protect such pre-existing trees.  

Case #2: Neighbor C wants to dig a well. Neighbor D wants to install a septic system. Local health regulations require water wells and

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3 See infra notes 114–115 and accompanying text (discussing the 2008 amendment to the Solar Shade Control Act to protect pre-existing trees and other changes to the Act).
septic systems to be at least 100 feet apart. Because of the nature of the lots, the well cannot be installed if the septic system is in place, and the septic system cannot be installed if the well is in place.

Can Neighbor D with the planned septic system prevent Neighbor C from installing his well? Not in West Virginia in 1989. In Hendricks v. Stalnaker, the Supreme Court of Appeals of West Virginia decided for the owner who installed his well, reversing the trial court decision that, based on the law of nuisance, held in favor of the owner of the land requiring the septic system.4

These examples, discussed in more detail below, raise the question of how to guide neighbors, each of whom is using his land in a lawful way that, but for the incompatible neighboring use, would be deemed harmless and even worthwhile. Most citizens would endorse solar collectors and trees, or wells and septic systems, as assets to a civilized society. Here, both landowners are “good” neighbors. But in the first case it took a legislature, and in the second, litigation to the state’s highest court after an extensive (and presumably expensive) lawsuit, to decide which otherwise benign neighboring land use should prevail over the other.5

Those cases raise the question of whether issues like these can be resolved with less difficulty. Is there a better way for neighbors to get along, especially where their respective land uses are simply incompatible rather than offensive? Are there some guiding principles which could be available to neighbors which would allow them to reach a resolution that leaves them both better off with a sense that justice, even if rough, is being done rather than resorting to contentious and expensive litigation?

This article makes the suggestion that there may be such principles which could help neighbors cooperate to find a better solution than these cases might suggest. The recommendation set out below combines some of the principles apparent within the resolutions of these conflicts in California and West Virginia, as well as informal norms of citizen conduct, to offer a set of principled but simple guidelines to facilitate neighbor-to-neighbor negotiation and reconciliation of these incompatible uses.6 These guidelines focus on which of the competing

5 See id.; Solar Panels vs. Redwoods, supra note 2.
6 See Melvin Aron Eisenberg, Private Ordering Through Negotiation: Dispute-Settlement and Rulemaking, 89 Harv. L. Rev. 637, 649, 653 (1976) (arguing that norms give the parties a baseline from which to work; where there is likely to be an ongoing relationship between
uses was first in time and which of the uses also needed to make some use of the adjacent land to succeed. The guidelines also fall between relatively bright-line property rules, such as the right to exclude, which most laypeople can understand and apply without litigation, and general standards of reasonable use, such as in the law of nuisance, that require litigation to apply to specific facts. The hope is that such guidelines will be flexible enough to facilitate a principled resolution between neighbors with conflicting uses of land, but also clear enough to help avoid litigation in order to apply more conventional but general standards of “reasonable use” to resolve their conflict.

But before elaborating on the recommendation, it is important to lay a foundation of background on some basic principles of property law, as well as some of the literature about reconciling conflicting uses through rules, standards and norms. This article will then return to the two original California and West Virginia examples to see how they help inform a possible broader solution.

I. Resolving the Conflict Between Beneficial Neighboring Uses on a Principled Basis: The Challenges of Finding a Workable Guideline

A. The Right to Exclude Others Is a Relatively Clear Guide for Issues of Access but Not for Use

One way to begin to think about benign but conflicting neighboring uses of land may be to examine some of the aspects of property law where rules are more common, and compare those to the law of nuisance. As others have written before, real property has fundamental aspects such as the right to exclude others, which the courts support in an action for trespass against a private party or inverse condemnation the parties, there is incentive to consider and respect the norms that underlie an opponent’s claim.

7 See infra Part III.
8 See infra Part I.
9 See infra Part III.
10 See infra Part I.
11 See infra Part II.
12 See generally Thomas W. Merrill, Trespass, Nuisance, and the Costs of Determining Property Rights, 14 J. LEGAL STUD. 13 (1985) (discussing the right of exclusion).
13 See Jacque v. Steenberg Homes, Inc., 563 N.W.2d 154, 161 (Wis. 1997) (awarding punitive damages against mobile home company for trespass when it delivered mobile home across farmer’s property without permission).
against a government. These situations involve the application of a relatively clear rule, made easier by the physical dimensions of a property boundary. And while there are exceptions to the right to exclude, such as providing governmental services to migrant workers or emergency conditions, the rule is relatively clear for adjoining neighbors so long as their property boundaries are apparent to them both. Absent a privilege, if Neighbor F intrudes on the land of Neighbor G, Neighbor F must gain permission, or face a legal action by Neighbor G to exclude Neighbor F, or even extra-legal self-help by Neighbor G.

It is this relatively clear right of ownership which enables property to be bought and sold with relative ease because the property takes with it a valuable exclusionary right, or an entitlement, which includes within its scope the capacity to undertake a variety of uses of the land which may not be clear at the outset. Thus when one owner wants to buy access from his neighbor, they can conduct their business in “the shadow of the law” of relatively clear rights. Where beneficial uses on neighboring lands conflict, however, the law leaves no such crisp shadow.

15 State v. Shack, 277 A.2d 369, 374 (N.J. 1971) (holding that right to exclude is subordinate to rights of those living on the land to receive necessary services).
16 See Ploof v. Putnam, 71 A. 188, 189 (Vt. 1908) (tying ship to private pier in emergency was permissible).
17 See Merrill, supra note 12, at 14–16.

Divorcing parents do not bargain over the division of family wealth and custodial prerogatives in a vacuum; they bargain in the shadow of the law. The legal rules give each parent certain claims based on what each would get if the case went to trial. In other words, the outcome that the law will impose if
B. Separating Incompatible Uses Can Help in Some, but Not All Cases

At the outset it is important to recognize that the avoidance of conflicts between incompatible uses of land explains why we use governmental regulation to separate them. For example, traffic flows much better because we drive on one side of the road and use stop lights than it did before when there were literally no “rules of the road” other than a general obligation of due care. Imagine traffic control by lawsuit as the only form for regulating driver behavior.

Indeed, it is to minimize conflicts between inconsistent (and sometimes harmful) uses of land that has justified separating land uses through zoning. Part of the rationale for such regulation is that while it limits one landowner’s use of land, it benefits him by limiting the use of land next door in the same way, offsetting collective burdens with collective benefits. This principle is called the “average reciprocity of advantage,” and it enables neighbors to make investments in their homes with the expectation that if the neighborhood they choose is residential, it is likely to stay that way.

C. Giving Statutory Priority to Uses Resolves Some Conflicts, but It Is Rare

Zoning is commonplace for separating classes of uses, like homes and industry. It cannot, however, separate all incompatible uses, as the two cases cited at the outset of this article suggest. Thus the legislature can, as it did in California, give preference to one land use over another, such as solar collectors over trees. This makes a relatively bright (no pun intended) line rule that neighbors can understand even if one of them might not agree (though as discussed above and below, the

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Id. at 968.


23 See id. (noting that the burden of regulation is offset by benefit of similar regulation of neighboring properties).


application of the statute involved a protracted dispute). Such statutory preferences are the exception rather than the rule, leaving other incompatible neighboring land uses, like the second example involving a septic system and a well, for courts to resolve. Unless the legislature is to give priority to specific uses, as occurred in California and other states for solar collectors, or in a number of states with “right to farm” statutes, or protections for other specific uses against the claim they are nuisances, how are neighbors to proceed in other circumstances when the nature of the “harm” is reciprocal?

D. The Reciprocal Nature of the Problem of Conflicting Uses of Neighboring Land

One of the most cited of all law review articles (written by a non-lawyer Ronald Coase), The Problem of Social Cost, recognized the reciprocal nature of many conflicting uses of land:

The traditional approach has tended to obscure the nature of the choice that has to be made. The question is commonly thought of as one in which A inflicts harm on B and what has to be decided is: how should we restrain A? But this is wrong.

27 See infra notes 114–115 (discussing 2008 amendment to California’s Solar Shade Control Act).

28 See Hendricks, 380 S.E.2d at 203.


30 See Alexander A. Reinert, The Right to Farm: Hog-Tied and Nuisance Bound, 73 N.Y.U. L. Rev. 1694, 1695 (1998). In some cases, such statutes have raised questions whether the neighbors whose rights are foreclosed are entitled to compensation from the state. See Bormann v. Bd. of Supervisors, 584 N.W.2d 309, 316, 322 (Iowa 1998) (finding nuisance immunity provisions to be an unconstitutional taking of property without compensation). But see Moon v. N. Idaho Farmers Ass’n, 96 P.3d 637, 646 (Idaho 2004) (finding nuisance immunity provisions are not takings).

31 E.g., Ala. Code § 6-5-127 (LexisNexis 2009) (“[No] racetrack for automobiles or motorcycles . . . operated in conjunction with a museum that is owned by a nonprofit organization and has a building and collection on display which together have a minimum value of at least one million dollars . . . or any of its appurtenances or the operation thereof shall be or become a nuisance . . . .”); Cal. Civ. Code § 3482.1 (West 1997) (shooting ranges cannot be nuisances based on noise); Idaho Code Ann. § 38-1403 (2002) (logging and reforestation not nuisances); Ind. Code Ann. § 32-30-6-10 (LexisNexis 2002) (declaring public use airports and appurtenant operations not nuisances).
We are dealing with a problem of a reciprocal nature. To avoid the harm to B would inflict harm on A. The real question that has to be decided is: should A be allowed to harm B or should B be allowed to harm A?\textsuperscript{32}

Coase’s thesis has been criticized as making reciprocal harm out of true cases of unilateral harm, because “in an everyday sense we do not say that the owners of noses cause punches as much as the owners of the fists that impact them.”\textsuperscript{33} But that does not detract from his basic point that in the case of incompatible uses, the most efficient allocation of resources will occur if the two users of land are free to bargain between themselves to secure a resolution.\textsuperscript{34} More specifically, what Coase describes as the efficient allocation of resources occurs as if both parcels were owned by the same owner.\textsuperscript{35}

\textsuperscript{32} R. H. Coase, \textit{The Problem of Social Cost}, 3 J.L. & Econ. 1, 2 (1960). Or as Dean Prosser has written:

The defendant’s privilege of making a reasonable use of his own property for his own benefit and conducting his affairs in his own way is no less important than the plaintiff’s right to use and enjoy his premises. The two are correlative and interdependent, and neither is entitled to prevail entirely, at the expense of the other . . . . The law of private nuisance is very largely a series of adjustments to limit the reciprocal rights and privileges of both.

\textsuperscript{33} Henry E. Smith, \textit{Self-Help and the Nature of Property}, 1 J.L. Econ. & Pol’y 69, 70 (2005). Professor Smith has argued that the reciprocity discussed supra note 32, is in fact asymmetrical. See id. at 70–73. Using the example of the rancher whose cattle are next to a farmer’s corn, or the noisy confectioner next to the physician conducting exams, he notes that

[i]f the activity of the farmer or the doctor is going to survive, either liability must be placed on the other party or the person in the position of the farmer or the doctor must take some form of self-help. This self-help can be passive as in building a fence or in soundproofing a party wall, or more active, as in shooting the cattle or smashing the noisy pestle. By contrast, the rancher and the confectioner tend to do better in the state of nature. Putting aside the possibility of “active” self-help on the part of the other party, a situation of no liability would suit the rancher or the confectioner just fine. Cattle will win the competition with crops, and noisy activities like candy-making will win out over medical exams. The entitlement needed to protect these more robust activities is more minimal than the one needed to protect the more vulnerable ones. Thus, there is already an asymmetry in terms of the entitlement needed to protect the conflicting activities in order for them to prevail.

Id. at 72.

\textsuperscript{34} See Coase, supra note 32, at 11.

\textsuperscript{35} Id.
Such an owner could make a rational and economically sensible decision by looking at the properties as one. If it is better for him to favor one use over the other—for example, the solar collector over the trees or the well over the septic system—he can make that choice, or try to re-site the particular uses so they are no longer incompatible. That is the efficient outcome, an issue that is easy to resolve in that context of unified ownership where relative values of incompatible uses of land can be easily weighed and decided. Coase argues that two owners will bargain to produce the same result, regardless of the legal rule involved (or, framed more directly, might makes right).  

But a premise of the law instead is that the more valued use will prevail, or that some uses should prevail independent of their relative value, or that right makes might, as in the case of the owner’s right to exclude trespassers. In other words, when the parcels are not under unitary ownership, which of them has the primary entitlement in the first place? If that is not clear, how are the parties to bargain even if transaction costs are indeed zero? Of two neighbors using land in incompatible ways, whose use has priority so that they know where to start their negotiation, as they would if a trespass occurred by one neighbor on the land of the other? Coase’s article indeed recognizes this problem, stating that “[i]t is necessary to know whether the damaging business is liable or not for damage caused since without the establishment of this initial delimitation of rights there can be no market transactions to transfer and recombine them.”

Coase’s article has no easy answer as to how that “initial delimitation of rights” should be done, but focuses primarily on the fact that in a costless bargain the parties would achieve the most efficient allocation of resources regardless of who had the initial entitlement. His article goes on to recognize that “it has to be remembered that the immediate

36 See id. at 10–13. Sometimes the assistance of a mediator, even an informal one, can help. See Roger Fisher & William Ury, Getting to Yes 40 (2d ed. 1991). Fisher and Ury give the example of the open window in the library—one patron wanted it open to get fresh air, the other closed to avoid the draft; the solution found was to open a window in the next room. Id. Neither of these uses was tortious, as in the case of an objectionable nuisance, but merely incompatible uses of land (which were collaboratively resolved through third-party intervention by the librarian). See id. at 40–41.

37 Coase, supra note 32, at 8. See generally Stewart E. Sterk, Neighbors in American Land Law, 87 Colum. L. Rev. 55 (1987) (discussing the issue of cross-boundary resolutions between neighbors in areas such as boundary disputes, implied easements, and spite fences).

question faced by the courts is not what shall be done by whom but who has the legal right to do what."\(^{39}\)

In other words, if two landowners will bargain to an efficient result, will it also be the fair result? In economic terms, the issue is not just the efficient allocation of resources, but also the distribution of wealth. In simple terms, who pays whom? Coase does not offer much help. His article then suggests that “courts should understand the economic consequences of their decisions and should, insofar as this is possible without creating too much uncertainty about the legal position itself, take these consequences into account when making their decisions.”\(^ {40}\)

But Coase’s desire for flexibility lies at the core of the problem of choosing “who has the legal right to do what,” illustrated by the California and West Virginia examples.\(^ {41}\) It has earned Coase this critique from Professors Merrill and Smith:

Coase’s analysis generates implications about the desirable features of a system of property rights that are in considerable tension. With no (or low) transaction costs, what matters most is that rights be clearly assigned. This suggests that use rights should be defined by formalistic legal rules that are relatively indifferent to the costs and benefits of individual disputes. With positive (especially high) transaction costs, Coase wants courts to assign use rights in such a way as to maximize the value of production. This, in turn, requires that the courts have discretion to assign rights in accordance with the shifting costs and benefits of particular disputes. Coase thus suggests both that clear rules are desirable (to promote bargaining) and that flexible standards are desirable (when bargaining breaks down) . . . . But he offers no suggestion as to how to achieve both flexibility and legal certainty in an area of law such as nuisance.\(^ {42}\)

Professors Merrill and Smith go on to suggest that “one solution may be to use rules in some areas of the law and standards in others,” citing the work of Professor Louis Kaplow.\(^ {43}\) Kaplow in turn suggests that the choice between rules and standards “involve[s] the extent to which a given aspect of a legal command should be resolved in advance or left

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\(^{39}\) Id. at 15.

\(^{40}\) Id. at 19.

\(^{41}\) See supra notes 1–5 and accompanying text.

\(^{42}\) See Merrill & Smith, supra note 19, at 370 n.57.

\(^{43}\) Id.
to an enforcement authority to consider." His article recommends that rules are helpful when the conduct to be regulated is widespread, like limits on highway speed or taxation of income under the Internal Revenue Code, and that standards are more helpful when the conduct to be regulated is rare, as in the case of the standard of negligence in determining who should bear the loss from an accident. That implies that if the conduct is rare, such as in the case of competing neighboring uses of land, general standards are to be preferred. But the literature and the case law do not offer much guidance on how owners of two neighboring parcels with irreconcilable but beneficial uses are to bargain in advance of resorting to litigation in order to see how a general legal standard works out in their specific case to resolve their conflict.

The argument for standards to be applied after the fact is that they give judges greater leeway over hard-lined rules which “are crude and inflexible and often seem to produce unfair (or inefficient) results in particular cases.” Also, there is some argument that, even in advance of litigation, having standards which are unclear before a court applies them to specific facts is better than rules because the uncertainty encourages bargaining:

[M]uddy rules create probabilistic entitlement divisions—the parties are tied together, but neither is certain of the extent of his claim. If either engages in strategic behavior and pushes his luck too far, there is a possibility that the other may choose to seek judicial clarification of the entitlement and could be awarded the entire entitlement. Indeed, the uncertainty itself makes litigation potentially expensive, and so there are incentives to find some other method of clarification.

In other words, some scholars argue that when parties are unclear as to who owns the initial entitlement, as the case generally is under a reasonable use standard, they may in fact be more likely to bargain as neither party will feel endowed with more rights than the other.

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45 Id. at 563–64.
46 Merrill, supra note 12, at 46–47.
On the other hand, some recent research indicates that where a norm of self-interest is strong, it will effectively trump a general standard but not a clear rule.49 Other evidence exists that once a standard is clarified through a judicial decision providing one neighbor the dominant right of use, post lawsuit bargains do not occur because the litigation involves a process that either reflects, or even effects, antipathy between the parties.50 Also, almost by definition, standards require litigation to sort out, which can be less helpful in negotiation before litigation occurs.

There is additional literature arguing for a more rule-based approach. Rules are “a key shorthand method of delineating rights that saves on the transaction costs of delineating and processing information about rights in terms of uses and users.”51 Security of positions and the unlikelihood of judicial interference may make better conditions for bargaining,52 and avoid judicial recourse.53 Moreover, rules are gener-

49 See Yuval Feldman & Alon Harel, Social Norms, Self-Interest and Ambiguity of Legal Norms: An Experimental Analysis of the Rule vs. Standard Dilemma, 4 REV. L. & ECON. 81, 89 (2008) (finding rules make for better compliance than standards because rules leave less room than standards for interpretation in favor of one’s self-interest or where social norms conflict); see also Peter H. Huang, Reasons Within Passions: Emotions and Intentions in Property Rights Bargaining, 79 OR. L. REV. 435, 441 (2000) (noting that emotions occur in nearly every bargaining situation, and economic models that fail to incorporate such emotions into their calculus are flawed).

50 Ward Farnsworth, Do Parties to Nuisance Cases Bargain After Judgment? A Glimpse Inside the Cathedral, 66 U. CHI. L. REV. 373, 384 (1999) (finding that nuisance litigants in twenty cases did not bargain after the court determined which neighbor’s use should prevail). “But the manner in which entitlements are created may well affect how readily they are exchanged. If a system assigns rights by inviting the parties to brawl for them, we might think twice before expecting to see much negotiation between the parties after the brawling is over . . . .” Id. at 412.

51 Smith, supra note 33, at 79.


53 See Merrill, supra note 12, at 14. Also:

[m]echanical rules—such as the law of intentional trespass—are predictable and relatively inexpensive to apply; generally speaking, they can be applied by laymen with little or no input from lawyers or judges . . . . In contrast, judgmental rules—such as the law of intentional nuisance—are unpredictable and relatively expensive to apply. Judgmental rules require a large input of legal advice and possibly a judicial trial . . . before the assignment of property rights can be established.

Id. at 23–24; see also Robert C. Ellickson, Alternatives to Zoning: Covenants, Nuisance Rules, and Fines as Land Use Controls, 40 U. CHI. L. REV. 681, 725 (1973) (arguing that simple rules are preferable in nuisance and nuisance-like situations so that the parties will better understand their rights with minimal cost to determine those rights). But see Carol M. Rose, Crystals and
ally preferred by laymen—regardless of any unintended consequences—due to their ease of application.54

These aspects argue for more, rather than less, specificity, and principles for decision which are relatively easy to understand and agree upon. Unfortunately, for the purpose of reconciling competing beneficial uses of land, the general standards which have been applied in the law of nuisance don’t seem to offer much help.

E. Prah v. Maretti: The Example of Solar Rights in Wisconsin

The California solar collector conflict involved a statute. For an example of a judicial resolution involving the application of a general standard to such a use, it may be helpful to recall the celebrated Wisconsin solar rights case, Prah v. Maretti.55 This case involved a landowner whose rooftop solar collector for heat and hot water was going to be shaded by a new home erected by his neighbor.56

According to the case, when the landowner with the solar collector discovered that the new structure, which was to be erected by his neighbor, would shade his collector, he notified him and sought to negotiate a resolution involving moving the new home further from the

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54 Merrill, supra note 12, at 47.
55 321 N.W.2d 182, 190 (Wis. 1982).
56 Id. at 184–85.
lot line.\textsuperscript{57} When this process proved unsuccessful, he sought an injunction to prevent construction of the new home, as well as damages.\textsuperscript{58} The Wisconsin Supreme Court reversed a trial court decision denying relief under nuisance law, and said that because of changing policies designed to encourage solar energy, the law of nuisance, specifically the “reasonable use” doctrine articulated in the \textit{Restatement (Second) of Torts} (the “\textit{Restatement}”), governed the case.\textsuperscript{59} The Court, however, declined to decide whether the plaintiff was entitled to relief.\textsuperscript{60} Instead, it reversed the judgment of the circuit court and remanded it for further proceedings, indicating that the plaintiff had the burden of proving that the elements of actionable nuisance existed and that the defendant’s conduct was unreasonable.\textsuperscript{61} In reaching its conclusion, the Court said: “[t]hat obstruction of access to light might be found to constitute a nuisance in certain circumstances does not mean that it will be or must be found to constitute a nuisance under all circumstances. The result . . . depends on whether the conduct complained of is unreasonable.”\textsuperscript{62} The dissent argued that the matter was more appropriate for the legislature to decide.\textsuperscript{63}

In discussing the \textit{Prah} case, Professor Carol M. Rose had the following comment, critical of the use of a general standard rather than a clear rule:

\begin{quote}
[W]hat seemed to be a workable crystalline rule about sunlight rights—that your neighbor has no right to the sunlight that crosses your lot unless your neighbor has gotten an easement from you—has been transformed into a mud doctrine. Now, if you block the light, your neighbor may have a nuisance action against you—at least in Wisconsin.
\end{quote}

\textsuperscript{57} \textit{Prah}, 321 N.W.2d at 184–85.
\textsuperscript{58} \textit{Id}.
\textsuperscript{59} \textit{Id}. at 191.
\textsuperscript{60} \textit{Id}.
\textsuperscript{61} \textit{Id}. at 192.
\textsuperscript{62} \textit{Id}.
\textsuperscript{63} \textit{Prah}, 321 N.W.2d at 195 (Callow, J., dissenting). In his dissent, Justice Callow noted: “[C]ould it be said that the solar energy user is creating the nuisance when others must conform their homes to accommodate his use? I note that solar panel glare may temporarily blind automobile drivers, reflect into adjacent buildings causing excessive heat, and otherwise irritate neighbors.” \textit{Id}. at 195 n.3. The case was never tried on remand, but a resolution was achieved by Maretti paying a portion of the cost of relocating Prah’s solar collector. Telephone Interview with John F. Maloney, Esq., Counsel for plaintiff Glenn Prah (Sept. 8, 2008).
Now, nuisance is one of those extraordinarily shapeless doctrinal areas in the law of property. In *Prah*, the nuisance question hinged on a typically vague formulation: ‘all the underlying facts and circumstances.’ Does it matter that you built first? Could you or your neighbor have adjusted your respective buildings to avoid the problem? How valuable was the sunlight to you, and how valuable to your neighbor? You don’t know in advance how to answer these questions and how to weigh the answers against each other; that is to say, you don’t know whether your building will be found a nuisance or not, and you won’t really know until you go through the pain and trouble of getting a court to decide the issue after you have built it or have had plans drawn up.64

F. **Resolving Conflicting Rights of Land Use Tends to Involve the “Muddy” Law of Nuisance in Part Because It Is Grounded in the Law of Torts**

As the Wisconsin case indicates, part of the difficulty in choosing between two uses, each of which seems individually beneficial, lies in the primary conceptual framework by which conflicts in neighboring land uses are resolved when they arise. This is in part because the doctrine of nuisance is grounded in the law of torts, in which the loss caused by a neighbor’s use of his land can be shifted from the aggrieved neighbor back to the neighbor who caused the harm.65 Or in

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64 Rose, *supra* note 53, at 579 (citations omitted).
65 See Von Henneberg v. Generazio, 531 N.E.2d 563, 567 (Mass. 1988) (holding that nuisance is a tort). The *Restatement (Second) of Torts* states:

[O]ne is subject to liability for a private nuisance if, but only if, his conduct is a legal cause of an invasion of another’s interest in the private use and enjoyment of land, and the invasion is either (a) intentional and unreasonable, or (b) unintentional and otherwise actionable under the rules controlling liability for negligent or reckless conduct, or for abnormally dangerous conditions or activities.

*Restatement (Second) of Torts* § 822 (1979); see also id. §§ 826–831; Richard A. Epstein, *Nuisance Law: Corrective Justice and Its Utilitarian Constraints*, 8 J. LEGAL STUD. 49, 49 (1979) (“Nuisance is a very old branch of the tort law, dating back to the early assizes, and at its core it protects the quiet possession and enjoyment of land.”). Professor Epstein makes the point that the tort law view of nuisance proceeds from an assumption that one landowner has an ownership interest that is interfered with by his neighbor, which tort law itself assumes is decided independently beforehand: “No general theory of tort law, however powerful or profound, can tell us who owns what at the outset.” Epstein, *supra*, at 52. But it is this “initial delimitation of rights,” as Professor Coase wrote, which is the basic issue involved in resolving conflicts between beneficial uses of neighboring land. See Coase, *supra* note 32, at 8.
the words of the Restatement, a nuisance is “a nontrespassory invasion of another’s interest in the private use and enjoyment of land.” Unfortunately, the guidelines it provides for determining what is “reasonable” do not add much to advance clarity or provide guidance in the situation of beneficial but incompatible neighboring uses.

More specifically, the Restatement determines the reasonableness of land use by balancing the gravity of harm to the plaintiff against the utility of the defendant’s conduct. The Restatement then elaborates the standards further with more of them in the form of what amounts to “sub-standards.”

The Restatement explains that in order to determine the gravity of the harm, certain factors are important, such as the extent and character of the harm, the social value and suitability to the character of the locality of the use invaded, and the burden on the person harmed to avoid the harm. In terms of the utility of the defendant’s conduct, certain other factors are important, such as the social value of the primary purpose of the conduct, the suitability of the conduct to the character of the locality, and the impracticability of preventing or avoiding the invasion. After outlining these factors, the Restatement then concludes there are no general rules applicable across all cases.

The problem is that these sub-standards may be helpful for impartial decision makers trying to craft a just resolution to a case that goes

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66 Restatement (Second) of Torts § 821D (1979). See generally Daniel R. Coquillette, Mosses from an Old Manse: Another Look at Some Historic Property Cases About the Environment, 64 Cornell L. Rev. 761 (1979) (discussing two early cases highlighting the origins and evolution of the law of nuisance, including the early English view that balancing the social utility of incompatible uses was not appropriate once a nuisance plaintiff had established actionable damages).

67 Restatement (Second) of Torts § 826 (1979).

An intentional invasion of another’s interest in the use and enjoyment of land is unreasonable if: (a) the gravity of the harm outweighs the utility of the actor’s conduct, or (b) the harm caused by the conduct is serious and the financial burden of compensating for this and similar harm to others would not make the continuation of the conduct not feasible.

Id.; see also Prosser, supra note 32, at 596 (“In every case the court must make a comparative evaluation of the conflicting interests according to objective legal standards, and the gravity of the harm to the plaintiff must be weighed against the utility of the defendant’s conduct.”) (footnote omitted).

68 Restatement (Second) of Torts § 827(a)–(d) (1979).

69 Id. § 828(a)–(c).

70 See id. § 827 cmt. b (“no general rule as to the relative weight of particular factors”); § 827 cmt. c (in regards to degree and duration of invasion, it can range from slight annoyance to complete interruption and “may be momentary, temporary, recurrent or continuous”); § 828 cmt. b (noting the absence of a uniform scale for social values).
to litigation, but are less likely to be helpful for laypeople attempting to sort out how to get along without a lawsuit but with competing land uses both of which seem reasonable in the context. For example, the factor of the character of the use in the context of the neighborhood can be helpful in certain cases, such as conflicts between residential and non-residential uses, and is analogous to judicial “zoning,” but unlikely to be of much help if the uses are both appropriate to the area—just incompatible. Relying on the relative “social value” of the conflicting uses is not helpful where both are desirable and it would be understandable for each neighbor to prefer his or her own. Examining the burden of avoidance is not helpful where each neighbor is likely to feel burdened. For example, it is not clear that determining the cost of cutting trees versus building the solar collector elsewhere will be helpful where both the costs are not clear in advance and also there are non-economic issues at stake for the two neighbors.

In light of this lack of clarity, Professor Edward Rabin advocates analyzing nuisance cases by separating what should be done (the effi-

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71 Edward Rabin, *Nuisance Law: Rethinking Fundamental Assumptions*, 63 Va. L. Rev. 1299, 1318 (1977) (“Similarly, noise that would be actionable if annoying to an average person in his residence would not be actionable if it occurred in an industrial area. Liability seems to require a breach of a standard of conduct prevailing in a limited geographic area.”); *see also* Vill. of Euclid v. Ambler Realty Co., 272 U.S. 365, 388 (1926) (describing nuisance as “a pig in the parlor instead of the barnyard”).

72 *See* J. H. Beuscher & Jerry W. Morrison, *Judicial Zoning Through Recent Nuisance Cases*, 1955 Wis. L. Rev. 440, 452 (“[T]he state in nuisance cases is exercising, through the judicial arm, the same basic power of the sovereign that it exercises through the legislative arm in zoning.”). Judging a use based upon the character of the neighborhood is a common factor used in many court decisions on nuisance but suffers from some of the same problems as the Restatement test on reasonableness. It may be useful for courts with the time and resources to evaluate proposed or existing uses, but the character of the neighborhood factor is fairly useless for individuals looking to settle a matter between themselves. *See* Armory Park Neighborhood Ass’n v. Episcopal Cmty. Servs., 712 P.2d 914, 916, 923 (Ariz. 1985) (holding that soup kitchen located in upscale neighborhood was a nuisance); Abdella v. Smith, 149 N.W.2d 537, 539 (Wis. 1967) (holding that restaurant owner in rural area could not claim nuisance based on smells from nearby riding stable); Bove v. Donner-Hanna Coke Corp., 258 N.Y.S. 229, 233 (App. Div. 1932) (dismissing nuisance suit brought by owner whose grocery store was located in an industrial area). Additionally, a character of the neighborhood factor is best used in unique neighborhoods where a majority of the uses are in common with only one or a few outliers.


74 *See* Prah v. Maretti, 321 N.W.2d 182, 195 (Wis. 1982) (Callow, J., dissenting).
cient result) from who should pay for it (the fair result), with the latter issue being based on fault. More specifically,

[t]he procedure here proposed for resolving private nuisance cases involves two steps. The first step would be to determine who is morally more blameworthy for the existence of the conflict. That person should bear the burden of resolving the conflict . . . . The second step in the proposed procedure would be to determine how the conflict can be resolved with least expense.

But how is blame to be assigned when the uses are simply incompatible and no one is to blame? On the other hand, relative fault may be helpful in assigning liability to a polluting factory next door to a home, as in Boomer v. Atlantic Cement Co. In this famous New York case, the court found the operation of a cement plant was a nuisance, but declined to issue an injunction, instead awarding damages to the adjoining landowner. But the rationale of liability based on fault in cases like Boomer is of limited value where both neighboring land uses are presumptively equally valid, just incompatible in the circumstances.

Also, standards for allocation of harm such as negligence, or even strict liability for ultrahazardous activity, provide no help in deciding the case of incompatible but beneficial uses. Instead of a relatively clear rule by which neighboring landowners can make a decision as they do with trespass, there is only the standard that a landowner use

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75 See Rabin, supra note 71, at 1315–17.
76 Id. at 1309. To be fair to Professor Rabin, in his article he offers a helpful analysis of a principle other than blame—priority of use—to help resolve these issues, while acknowledging the importance of other factors as well, an idea echoed in this Article. See id. at 1321–23; infra Part III.
78 See id. at 874–75.

As we have recently stated in another context: “[t]he term ‘nuisance’ as a ground of liability usually results in confusion and frequently is a method of avoiding precision in analysis . . . .” What the plaintiffs in substance have alleged is that there has been an interference by the defendant with their use and enjoyment of land. Liability in such an action, however it may be labeled or designated, should be based upon a determination that the interference is intentional and unreasonable or results from conduct which is negligent, reckless or ultrahazardous.

Id. (quoting Delano v. Mother’s Super Mkt., 163 N.E.2d 920, 922 (Mass. 1960) (citations omitted)).
his land in a way that is not unreasonable vis-à-vis his neighbor, or vice-versa, which requires adjudication to sort out.\textsuperscript{80}

The situation of “good” neighbors in conflict, instead, more correctly involves reconciling or preferring one of two apparently equal rights, rather than righting an apparent wrong. For instance, it is difficult to imagine in the abstract that growing redwood trees or installing a solar collector, or drilling a well or installing a septic system, would expose either landowner to liability to his neighbor in tort, independent of statutory intervention, as in the California example.

G. Can Other Areas of Conflict Between Neighbors, Such as the Law of Surface Waters, Not so Grounded in Tort, Provide Helpful Standards?

Because the law of nuisance is so often framed as a tort—where there is a legal wrong to be righted—and nuisance is an area of law that has been defined by one commentator as an “impenetrable jungle,”\textsuperscript{81} it may be useful in cases of incompatible uses to look to the law of the legal rights of landowners to respond to how water flows on or off their property when it rains. This area of law relating to “surface waters” focuses more directly upon making a conscious choice between two legitimate and competing rights.\textsuperscript{82} Yet even that doctrinal area may not be of much help since in modern cases the “common enemy” doctrine, where a landowner had the right to shed surface rainwater to the detriment of his neighbor, has largely been superseded by a standard, as in nuisance

\begin{footnotesize}
\textsuperscript{80} See discussion, supra notes 46–54. Note that this situation is different from the “neighborliness” test that Professor Ellickson discussed, which is recast by Professor Epstein as representing the level of minor nuisances between neighbors. See Ellickson, supra note 53, at 731–33; Epstein, supra note 65, at 85. Epstein believes that the law often lets such disputes go unaddressed because each neighbor has the chance to do the same to the other, or may over time, in some sense of reciprocity of “live and let live.” Epstein, supra note 65, at 85. “Where that invasion falls below some background level—the level of the usual reciprocal risks that good neighbors inflict upon each other—then it is not actionable . . . .” \textit{Id.} But as Professor Epstein later points out, such principles are not enough when more than some background level is exceeded in a particular case, or the nature of the circumstances make it clear that reciprocity of opportunity for future harm in return does not exist, as in the case of a hotel which lost business due to construction activity next door. See \textit{id.} at 87. Thus, while one might imagine a court not intervening to stop noise on one neighbor’s land because the other neighbor can do the same later, such judicial forbearance does not offer much help for neighbors trying to sort out the two examples of wells and septic systems, or trees and solar collectors, which exemplify the desirable but incompatible—rather than modestly harmful—uses of adjoining land.

\textsuperscript{81} Prosser, supra note 32, at 571.

\textsuperscript{82} See Westland Skating Ctr. v. Gus Machado Buick, Inc., 542 So. 2d 959, 963–64 (Fla. 1989).
\end{footnotesize}
law, of reasonable use.\textsuperscript{83} For example, in \textit{Westland Skating Center, Inc. v. Gus Machado Buick, Inc.} a dispute arose over surface water drainage between a skating rink and an adjacent auto dealer.\textsuperscript{84} The rink owner changed the elevation of his land to prevent water from gathering on it, flooding the dealer’s car lot. In deciding which neighbor should prevail, the Supreme Court of Florida adopted a reasonable use standard:

\begin{quote}
We recognize that the application of the reasonable use rule may make the outcome of certain controversies less predictable. Yet, if the rigidity of the traditional doctrines made cases predictable, it also led to such arbitrary results that the courts began to modify those rules. \textit{Predictability should not be achieved at the expense of justice}. We believe that the rule of reasonable use employs the proper balance and will best enable surface water controversies to be fairly decided.\textsuperscript{85}
\end{quote}

H. \textit{The Problem of Relying on Standards to Do Justice Before Litigation}

The problem, as Professor Rose has written, is that a reasonable use standard—particularly useful for courts with the resources of counsel to argue the case—may be particularly unhelpful for ordinary citizens trying to sort out what to do when their otherwise benign uses conflict before going to court to get their relative entitlements adjudicated.\textsuperscript{86} In other words, predictability may be an aid to, rather than in opposition to, justice, if justice is also defined as helping neighboring landowners reach a principled accommodation between their uses without resort to litigation in order to have a judge determine how a “reasonable” use standard specifically applies to them. The question, however, is whether it is better to say clearly in advance that no relief short of litigation is possible, or whether there is some guideline that neighbors with desirable but incompatible uses can understand on

\textsuperscript{83} See Borchsenius v. Chicago, St. Paul, Minneapolis & Omaha Ry. Co., 71 N.W. 884, 885 (Wis. 1897) (“Surface water is recognized as a common enemy, which each proprietor may fight off or control as his will or is able . . . even if some injury occurs, causing damage.”). \textit{But see} Armstrong v. Francis Corp., 120 A.2d 4, 8 (N.J. 1956) (“[E]ach possessor is legally privileged to make a reasonable use of his land, even though the flow of surface waters is altered thereby and causes some harm to others, but incurs liability . . . .”).

\textsuperscript{84} \textit{Westland Skating Ctr.}, 542 So. 2d at 963.

\textsuperscript{85} \textit{Id.} (emphasis added).

\textsuperscript{86} See Rose, \textit{supra} note 53, at 604.
their own in response to the challenge posed by Professors Merrill and Smith for both “flexibility and legal certainty.”

What then should be done? The bias in the law is in favor of adjudication after the fact based on standards rather than rules. Also, while the literature discussed above suggests that flexible standards can encourage negotiation, they also encourage litigation, and clear rules are easier to administer and bargain around.

Is there some way to manage this tension to assist negotiation with a principle that is more clear than “reasonable use” but less definite than, for example, the right to exclude? In other words, if a bargained for resolution is worthwhile, would there not be value in having some guidelines for such neighbors to consider, before they get to the point of litigation, that would also lead them to make the choices together as they would if they were one owner? In framing such guidelines, are there social practice norms that might help? Professor Marc Poirier thinks there might be:

Assume Coase is right, that nothing tells us inherently which of two mutually interfering uses is the “harm” and which is not. To tell harm from benefit, one must have a sense where the neutral baseline is. To apply nuisance law thus requires one to refer to a baseline of social practice norms.

I. What Can Be Learned About Informal Dispute Resolution Using Social Norms?

This Article began with the assumption that law matters, that the correct legal standard would aid in the resolution of conflict between neighbors, enabling them to bargain “in the shadow of the law” as to which should prevail. Or in more poetic terms, good legal fences would make good neighbors. But as the discussion above has illus-
trated, it is difficult to construct a sound legal fence out of “reasonableness” alone. 92

Professor Ellickson, however, has suggested the opposite might be true; norms of reciprocity and continuing relationships between neighbors make neighborly disputes ones in which the law rarely intervenes, especially if the stakes are relatively low. 93 Also, these occasions may occur rarely because the applicable law is unknown, the cost of attorneys high, no third party insurer exists to pick up the bill, or the formal norms of law are proven less useful than the informal ones that may exist. 94 Therefore, it may be that good neighbors build good fences and just resolutions occur outside (or rather without) the law. Is it possible to look for some norms that would guide neighbors with conflicting benign uses, just as Professor Ellickson found some norms that appeared to guide the neighbors who were the subject of his research?

While there is much information available on norms relating to disputes over neighboring uses, Professor Ellickson examined other situations where neighbors rarely adopt formal legal rules or methods of intervention to resolve their disputes, but rely instead on informal norms to help shape positive outcomes. 95

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92 See supra Part I.E–F.
93 See generally Robert C. Ellickson, Order Without Law: How Neighbors Settle Disputes (1991) (describing, among other things, how ranchers in Shasta County, California build and maintain fences between their properties and others without resort to available rules of law, such as that entitling them to contribution from each other). This echoes the passage from Robert Frost’s Mending Wall:

I let my neighbor know beyond the hill;
And on a day we meet to walk the line
And set the wall between us once again.
We keep the wall between us as we go.
To each the boulders that have fallen to each.

94 Ellickson, supra note 93, at 283.
95 See id. at 98.

As prior investigators have found in other contexts, disputants are increasingly likely to turn to legal rules when the social distance between them increases, when the magnitude of what is at stake rises, and when the legal system provides an opportunity for the disputants to externalize costs to third parties . . . . To achieve order without law, people must have continuing relationships, reliable information about past behavior and countervailing power.

Id. at 283–84.
Citing examples from cattle ranching to whaling to bees in orchards, Ellickson concluded that at least relatively close-knit societies will prefer simple strict liability rules to ones which involve careful fact-based inquiry of “reasonableness,” because they are easier to understand and administer; for example, in open range situations, he who hits the cow, “buys the cow.” Professor Ellickson contrasted that with a closed range situation in which the cattle rancher pays, even when the legal rule is much more fact-sensitive because it is based on the relative negligence of the defendant rancher and the plaintiff automobile driver.

Also, his research indicated that neighbors evolved general cooperative models of behavior, such as “fencing in” rather than “fencing out,” where the cattle rancher routinely installs fencing to prevent neighboring landowners from having their property invaded by his cattle, even though the landowner could erect a fence to defend himself. While the right to exclude—or “keep out”—is considered one of the core, if not the core, element of property, as discussed above, what he saw was the reverse: a duty to “keep in.” Professor Ellickson also indicated that situations where specialized labor was needed, and a norm in which the least cost avoider would do the work and the other neighbor would pay, seemed to work. In short, social norms, or what we might call “rules of thumb,” even outside the law, facilitated neighbors getting along. The implication is that for reconciling a conflict between desirable uses of neighboring land, it is useful to explore if a similar rule of thumb might exist, or at least be proposed. But what might be the elements of such a rule of thumb?

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96 Id. at 82.
97 Id. at 82 & n.1.
98 Id. at 74–76.
99 Id. at 187.
100 Ellickson, supra note 93, at 187. While “fencing in” and “fencing out” are equally consistent with the exclusionary duty to “keep out,” “fencing in” reflects a cooperative mindset entirely different from that of “fencing out,” evidenced by the affirmative protection of others’ parcels, rather than simply one’s own. In addition, Professor Ellickson found that deviant behavior was generally punished informally by escalating social rather than formal legal sanctions, calling this practice “even-up” rather than “get even,” which had a more vengeful flavor. See id. at 225–29.
101 Id. at 211.
102 In addition to their utility in informal dispute resolution, such social norms and customs may ultimately inform legal standards. See Henry E. Smith, Community and Custom in Property, 10 Theoretical Inquiries L. 5, 38–41 (2009) (citing Miller v. Shoene, 276 U.S. 272 (1928)) (arguing that Virginia custom preferring more valuable apple trees over cedar trees host to a destructive fungus formed part of the baseline bundle of property rights enjoyed by landowners).
It may be useful to revisit the West Virginia case involving the well and septic system and how it was decided, as well as the California solar case and its aftermath.

II. THE WEST VIRGINIA AND CALIFORNIA EXAMPLES REVISITED TO SEARCH FOR CLUES TO A NORM-LIKE GUIDELINE

A. Priority in Time

Recall that in the Hendricks case, one West Virginia homeowner got permission to dig a well near his boundary line. Because of local regulations requiring 100 feet between wells for water and nearby septic systems, he effectively preempted his neighbor from installing and using a septic system on the part of his own property immediately adjacent to the well site. The owner of the septic system sued to have the well declared a nuisance. The trial court agreed, but the appellate court reversed, finding for the well owner. The appellate court reasoned that the well was not negligent, reckless, or abnormally dangerous, but needed to be evaluated in terms of its “unreasonableness,” relying on the Restatement (Second) of Torts, determined by “balancing the competing landholders’ interests.”

The court noted that each use burdened the adjacent property:

Clearly both uses present similar considerations of gravity of harm and social value of the activity alleged to cause the harm. Both a water well and a septic system are necessary to use this land for housing . . . . Neither party has an inexpensive and practical alternative . . . . In the case before us, we are

104 Id.
105 Id. at 200–02; see also Restatement (Second) of Torts § 826 (1977); Guido Calabresi & A. Douglas Melamed, Property Rules, Liability Rules, and Inalienability: One View of the Cathedral, 85 Harv. L. Rev. 1089, 1092–93 (1972) (making the distinction between “property” rules, which require voluntary transfer, with “liability” rules where, in effect, a property interest is transferred in return for payment of damages). In this context of incompatible but desirable neighboring uses, liability rules, which allow the buyer of an entitlement to purchase it for fair value even if the entitlement holder does not wish to sell, are problematic because they require a lawsuit, the avoidance of which is one of the goals of this Article. Property rules, which require the entitlement to be bought from the entitlement holder in a voluntary transaction, however, can be more easily understood in advance of a sale making them more useful in a bargaining context. However, choosing between property rules and liability rules is not yet clear, since it has been argued that in cases of conflicting uses of land whether a property or liability rule is to be preferred is entirely dependent on the individual situation. See Keith N. Hylton, Property Rules and Liability Rules, Once Again, 2 Rev. L. & Econ. 137, 167 (2006).
asked to determine if the water well is a private nuisance. But if the septic system were operational, the same question could be asked about the septic system.106

The court then went on to say that:

Because of the similar competing interests, the balancing of these landowners’ interests is at least equal or, perhaps, slightly in favor of the water well. Thus the Hendrickses have not shown that the balancing of interests favors their septic system. We find that the evidence presented clearly does not demonstrate that the water well is an unreasonable use of land and, therefore, does not constitute a private nuisance . . . . We find that because the evidence is not disputed and only one interference is reasonable, the trial court should have held as a matter of law that the water well was not a private nuisance.107

How did the appellate court reach a determination that the well should be preferred as a matter of law, rather than of fact, which would have upheld the trial jury decision for the septic system landowner? What led it to believe that in the balancing of interests the well was “slightly in favor”?108 Did it all come down to burden of proof? Specifically, the court said: “the Hendrickses have not shown that the balancing of interests favors their septic system.”109 In other words, when incompatible uses are involved, is it that he who sues loses? If that is the situation, it helps to decide lawsuits but gives little useful advance guidance to neighbors. Fortunately, the opinion and briefs of counsel in the case offer clues as to other criteria to explore.

The first clue is that the brief of the well owner indicated that he won a race for relative rights:

The problem in this case is a problem resulting from Health Department rules and regulations controlling property usage. Certainly Stalnaker as the owner of the property upon which his water well was drilled had an absolute right to drill a water well subject only to obtaining a permit therefore under the rules and regulations of the Department of Health; and certainly Hendricks as the owner of the property upon which the

106 Hendricks, 380 S.E.2d at 202–03.
107 Id. at 203.
108 Id.
109 Id.
septic system was to be constructed had an absolute right to construct the septic system on his property subject only to obtaining a permit therefore under the rules and regulations of the Department of Health. Because of the constraints imposed by the Department of Health rules and regulations, Stalnaker and Hendricks were placed in a competitive position, each needing to act quickly to preserve his right to use his property for absolutely legitimate purposes. Under the rules of the contest, which rules were established independently of either contestant, Stalnaker crossed the finish line first, and thus, is entitled to the benefits which the independently established rules afford to him even though Hendricks, the adjoining property owner, suffers a loss of right which he would otherwise have had. Had Hendricks arrived first with a permit, Stalnaker would have suffered a similar fate.\footnote{Brief for Appellant at 10–11, Hendricks v. Stalnaker, 380 S.E.2d 198 (W.Va. 1989) (No. 18489). Note that in the Hendricks case, the race for priority was very close, with one landowner obtaining his well permit one day before the other sought the permit for his septic system.}

Thus, the implication is that priority in time is priority in right.\footnote{See Hendricks, 380 S.E.2d at 202–03.} While there is no explicit reference in the opinion that the court relied on this “permit race” to decide the matter, the court concluded its opinion by citing an article by Professor Edward Rabin on how nuisance cases should be decided: “For an enlightening discussion of . . . the factors to be considered, including priority of use . . . .”\footnote{Id. at 203 n.9 (citing Rabin, \textit{supra} note 71). In his article, Professor Rabin suggested rewriting \textit{Restatement (Second) of Torts} § 840D: \textit{Coming to the Nuisance} instead as § 840DA: \textit{Priority of Use}, as follows: That the activity on defendant’s real property, when it was started, did not interfere with an activity on plaintiff’s real property is not, by itself, sufficient to bar plaintiff’s action. It is a factor, however, suggesting that defendant’s activity is not a nuisance. Similarly, if the activity on plaintiff’s real property existed before the activity on the defendant’s real property was started, this is a factor tending to suggest that defendant’s activity is a nuisance. Rabin, \textit{supra} note 71, at 1322–23.}

Priority of time also played a role in the California case, or at least its aftermath. While the facts of the case are complex, it is apparent that the redwoods involved were planted prior to the solar collector being installed, but they grew enough to shade it. It was evidently this situation which led to the amendment of the statute to protect trees planted earlier. Here’s what happened in more detail.
The two adjacent landowners were located in two neighboring municipalities in Santa Clara County, California, one in Sunnyvale and the other in Santa Clara. The property line dividing the two parcels also happened to coincide with the municipal boundary. When the Sunnyvale owners bought their land in 1969, the Santa Clara land was an orchard, but was subdivided into house lots in 1993 and sold. Between 1997 and 1999, eight redwood trees were planted on the Sunnyvale parcel. In 2001, the owner of the Santa Clara parcel began the process of constructing approximately 625 square feet of solar modules on a deck and overhanging trellis at the rear of his parcel adjacent to the side yard of the Sunnyvale parcel, having previously installed solar collectors on the main roof. Over the next few years, the solar collector owner sought enforcement of the California Solar Shade Control Act in regards to redwood trees which shaded a portion of his trellis solar collector. After mediation did not succeed, the Santa Clara County district attorney enforced the California Solar Shade Control Act against the neighboring Sunnyvale owners as to four of eight trees (one not affecting the collector and three others having been exempt under the statute since they had cast shadows on the solar collectors when they were installed). At the conclusion of the case, the court determined that two of the remaining trees shaded more than the statutory limit of ten percent of the collectors, and one of them was cut back to comply, as shown at the outset of this article.\(^{113}\)

As a consequence of this result, the California legislature amended the Act, effective January 1, 2009, to clarify the importance of being first in time in order to be first in right in that trees existing prior to the installation of a solar collector on neighboring land are now protected.\(^{114}\) More specifically, the general framework of the Act was re-

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\(^{113}\) E-mail from Valerie Armento, counsel involved in the the Sunnyvale litigation, to R. Lisle Baker, Professor of Law, Suffolk University Law School (Sept. 28, 2008) (on file with author); E-mail from Valerie Armento, counsel involved in the the Sunnyvale litigation, to R. Lisle Baker, Professor of Law, Suffolk University Law School (Sept. 23, 2008) (on file with author); Telephone Interview with Valerie Armento, counsel involved in the the Sunnyvale litigation (Sept. 29, 2008).

\(^{114}\) The revisions occurred when the Sunnyvale owners, whose redwood tree which had to be trimmed back, submitted their situation to democratic state senator Joe Simitian in response to his annual request to his constituents for “there ought to be a law.” He was later joined as a co-sponsor by his republican colleague, state senator Tom McClintock, who filed similar legislation. 2008 Cal. Legis. Serv. 1399 (West) (describing revisions to California Public Resources Code in amending or adding sections 25981, 25982, 25982.1, 25983, 25984, and 25985); Telephone interview with Edward Randolph, Staff Att’y for the Cal. Assembly, Comm. on Utils. & Commerce (Sept. 29, 2008). See John William Gergacz,
tained in that neighboring property owners are not to allow a tree or shrub to shade more than ten percent of the collector between 10:00 a.m. and 2:00 p.m., and local governments are authorized to pass ordinances exempting its jurisdiction from the provisions of the Act. The Act was amended, however, to respond primarily to the Sunnyvale-Santa Clara dispute. The amendments now explicitly exempt trees and shrubs planted prior to the installation of the solar collector, or their replacements if removed for protection of public health, safety, or the environment. The amendment also allows, but does not require, the owner of property where the solar collector is to be installed to give a statutory form of written notice by certified mail to his neighbor within no more than sixty days of collector installation, and for such notice to be communicated to successors to these neighbors. The amendments further specify that to be protected, the collector must not be intended to offset more than the building’s electricity demand and must be installed on the roof of a building, unless certain problems with such installation exist requiring it to be mounted on the ground. The amendment also removes the potential for a $1000 fine and makes the offense a private rather than a public nuisance.115

In effect, the amendments to the California statute echo Professor Rabin’s recommendation to examine priority of use.116 Note that this principle is relatively easy to explain and perhaps even to apply. Further, it is consistent with informal norms by which people ordinarily line up in queues, and it is how some state legislatures have shaped their responses to solar collectors.117

The most widely known application of priority of use involves water rights in the West, where “priority, along with anti-waste and anti-speculative rules, limits individual use and produces a relatively broad and stable distribution of water use opportunities.”118 In an informal sense, a customary parallel to the first user rule can be found in the

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116 Rabin, supra note 71, at 1326 (“By protecting early innocent development from penalty, except for compelling reasons involving the health or comfort of neighbors who are following a well-established neighborhood pattern, the prior use rule encourages useful development of land when that development will not immediately damage neighbors.”).
adherence to this principle in the allocation of public space to private uses, such as street vendors\textsuperscript{119} or parking spaces, especially if the space has been cleared as a result of shoveling snow.\textsuperscript{120}

The doctrine of priority in time has been criticized on the grounds that it would allow the first user to “arrogate to himself a good deal of the value of the adjoining land.”\textsuperscript{121} Another problem with the doctrine is that it may encourage unnecessary and economically inefficient use of land in order to gain legal advantage over neighboring uses in the

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{pic4.png}
\caption{Photograph of lawn chair occupying space shoveled out on a Boston Street, Boston, Massachusetts. \copyright 2010 Boston Globe/David L. Ryan/Landov (used with permission)}
\end{figure}


\textsuperscript{121} Rabin, \textit{supra} note 71, at 1321 (quoting \textit{Restatement (Second) of Torts} § 840D cmt. b (Tentative Draft No. 16, 1970)).
future.\textsuperscript{122} Also, the doctrine was not sufficient to explain cases where priority in time appeared not to matter, such as the English case, cited by Professor Coase in his article, where a pre-existing confectioner lost out to a late coming physician next door who needed peace and quiet to perform his medical examinations.\textsuperscript{123} So while the first in time principle may be useful, it may benefit from being complemented by another. Here again, revisiting the Hendricks case and the California solar conflict may be helpful.

B. The Effective Use of the Neighboring Land by the Adjacent Use

The West Virginia court also noted this distinction between the two uses:

We note that either use, well or septic system, burdens the adjacent property. Under Health Department regulations, a water well merely requires non-interference within 100 feet of its location. In the case of a septic system, however, the 100 foot safety zone, extending from the edge of the absorption field, may intrude on adjacent property. Thus, the septic system, with its potential for drainage, places a more invasive burden on adjacent property.\textsuperscript{124}

This language indicates that a second factor that may have played a role in the court’s decision was the relative intrusiveness of the two conflicting uses, with the well being less so than the septic system and its field.\textsuperscript{125} Also, Professor Rabin’s article discusses the idea that preferred

\textsuperscript{122} See Donald Wittman, \textit{First Come, First Served: An Economic Analysis of “Coming to the Nuisance”}, 9 J. LEGAL STUD. 557, 558–61 (1980) (arguing that determining who should have been first on efficiency grounds is a better precondition for imposing liability); see also Richard A. Epstein, Torts § 14.6.2 (1999) (arguing against a “coming to the nuisance” defense based on priority in time, as it would encourage premature development and precipitate unnecessary conflict).

\textsuperscript{123} See Coase, \textit{supra} note 32, at 8–10 (citing Sturges v. Bridgman, (1879) 11 Eng. Rep. 852 (Ch.D.)). Indeed, Professor Richard Epstein has argued that priority in time is irrelevant in such “coming to the nuisance” cases, which are completely explained by the traditional physical invasion test. See Richard A. Epstein, \textit{Takings: Private Property and the Power of Eminent Domain} 119–20 (1985); Epstein, \textit{supra} note 65, at 72–73.

\textsuperscript{124} Hendricks v. Stalnaker, 380 S.E.2d 198, 202 & n.7 (W. Va. 1989) (“Rules and Regulations of the [West Virginia] Health Department . . . require a recorded easement or authorization for use of or crossing of adjacent property for off lot disposal of sewage or effluent.”).

ring one use to the other is the equivalent of imposing a servitude on the adjoining land.\textsuperscript{126}

The implication for reconciling incompatible but benign uses is that it is important to acknowledge, when it occurs, that one use will be more “active” than the other, such as the solar collector compared with the tree, or the septic system compared with the well, which the easement analogy helps clarify.\textsuperscript{127} That is a different standard than one focusing on which of the two uses is hypersensitive and arguably not entitled to preference.\textsuperscript{128} For example, the solar collector in Sunnyvale

invasion as important factors in the law of nuisance, despite the growth of the utility-balancing approach to the law of private nuisance). Smith states that “[w]here two owners with rights in nearby parcels come into conflict, the presumption is that there is a violation by the more active party.” \textit{Id.}

\textsuperscript{126} Rabin, \textit{supra} note 71, at 1327.

The drafters of the \textit{Restatement ((Second) of Torts)} . . . were tort lawyers, not property lawyers . . . . Perhaps for [this reason] . . . the owner of land who has a good cause of action in nuisance has, in effect, a dominant estate, with the land on which the nuisance exists being the servient estate. That is, the defendant’s land is subject to a servitude in favor of the plaintiff’s land.

\textit{Id.}

\textsuperscript{127} See Smith, \textit{supra} note 33, at 76. (“When the polluter has an entitlement to pollute, it is either a privilege and not a right, or a separately acquired easement—a right in the lands of another.”). Note that both a well and a septic system use the aquifer, and if the case involved two competing wells, then priority initially would be more important. See Tawny L. Alvarez, \textit{Comment, Don’t Take My Sunshine Away: Right-to-Light and Solar Energy in the Twenty-First Century, 28 PACE L. REV. 535, 538–43 (2008) (offering an update on statutes relating to solar easements and related local ordinances). Note that if such a statute exists, it may shape the context for neighbor to neighbor resolution.

\textsuperscript{128} Some commentators have suggested using standards for decision such as the hypersensitivity of the use which seeks to be protected. \textit{See generally} Rose, \textit{supra} note 53. The initial problem with this standard is that it requires, to some degree, a subjective valuation of the nature of the use and/or the surrounding area, while the pre-statement seeks to use factors that are as objective as possible. Sensitivity, in particular, requires an understanding of the circumstances surrounding the use and the user. \textit{See id. at 577–80; see also} Ellickson, \textit{supra} note 53, at 751. Professor Ellickson uses \textit{Amphitheaters, Inc. v. Portland Meadows}, 198 P.2d 847 (Or. 1948) as an example of the application of a hypersensitive standard because the outdoor theatre lost due to it being a hypersensitive use. Ellickson, \textit{supra} note 53, at 753–54. The \textit{Amphitheaters, Inc.} case can, however, be explained from a standard of intrusiveness as well. In \textit{Amphitheaters, Inc.} the court ruled against the theater because, like the California solar collector, it required something not to occur on the adjoining land (bright light) in order to be operational on its own terms. 198 P.2d at 853. At the same time, not creating a shadow is different from actively intruding into neighboring land, which has a more conventional nuisance-like character to the adjoining landowner. For example, the City of Newton, Massachusetts, has adopted an ordinance providing protection for neighbors from both general light pollution as well as direct “light trespass.” \textit{Newton, Mass., CODE art. IV, § 20-25} (2007), \textit{available at} \textit{http://www.ci.newton.ma.us/legal/ordinance/Chapter-20.pdf}. Also, applying the hypersensitivity test to solar energy might well
might be seen as hypersensitive compared to the neighboring tree, but it did not save the tree. The West Virginia well might have been seen as hypersensitive compared to the intrusive septic system, but the *Hendricks* court chose to favor the well as the less intrusive use. These examples may indicate that relative intrusiveness may be more accurate in reflecting experience, and perhaps also easier for lay neighbors to understand and apply as a normative guideline.\(^\text{129}\) While perhaps useful in some litigation contexts, raising the question of which use is more hypersensitive in a conversation between neighbors might appear to be equivalent to blaming the victim. If so, the hypersensitivity guideline would then risk injecting relative fault into a dialogue which is likely to be more productive if focused away from blame and toward resolution on some objective standard that honors the neighbors’ sense that each is acting properly, but in a way that is incompatible with the neighboring use.

**C. Testing Priority in Time and Effective Use of the Neighboring Land**

Assume for the moment that two factors which may have led the *Hendricks* court to prefer the well use to the septic field were priority in time and whether one use potentially intruded into or required the use of neighboring land. How would these factors play out in the California case of the solar collector and the redwoods absent legislative determination?

The trees themselves require sunshine but there is no evidence that they required any sunshine coming over the land of the neighbor with the collector. They were more like the well, not requiring any of the neighbor’s land. On the other hand, the solar collector, like the septic system, needed something incompatible not to occur on adjoining land to work, in effect making some collateral use of the neighboring property. Thus one could imagine that if the solar collector landowner had sued the redwood tree landowner in West Virginia, the collector owner would not have prevailed, absent a statute like California’s prior to 2008.\(^\text{130}\)

\(^\text{129}\) See *Amphitheaters, Inc.*, 198 P.2d at 855.

\(^\text{130}\) See *Sher v. Lederman*, 226 Cal. Rptr. 698, 705–06 (Ct. App. 1986) (holding that the California Solar Shade Control Act controlling trees is not applicable to house designed to maximize sunlight use but not to collect it); see also *Fontainebleau Hotel Corp. v. Forty-Five Twenty-Five, Inc.*, 114 So. 2d 357, 359–60 (Fla. Dist. Ct. App. 1959) (shading a hotel pool by adjacent neighboring building is not actionable even if it is spiteful in motive). *But see* *Rattigan v. Wile*, 841 N.E.2d 680 (Mass. 2006) (holding that activities on one’s property...
III. A “Pre-Statement” Guideline as a Starting Point

While one can agree or quarrel with the decision of the West Virginia Supreme Court of Appeals or the amendment to the California statute, one important function of both is to decide whose use of land would be preferred. Therefore, assuming for the moment that a definitive determination of whose use should prevail would require judicial or legislative action, is there some simple, workable but principled guideline like a social norm that could assist neighbors with benign but conflicting uses, short of proceeding to litigation or getting a statute amended in your favor? Note that any such guideline would not be the equivalent of a judicial decree or specific legislation and the more tailored justice which they may provide, but such a guideline may facilitate in neighbors enough of a sense of rough justice to avoid litigation in the first place. In other words, can a social norm be created or at least proposed?\footnote{Professor Ellickson has argued that, generally, norms arise organically through processes that tend to mirror the free market, but governmental determination can also spur the development of norms due to the inherent weight a governmental decree can carry. See Robert C. Ellickson, \textit{The Market for Social Norms}, 3 Am. L. & Econ. Rev. 1, 36–42 (2001). An example of this is the well-known broken window scenario where the presence of broken windows in an area leads to the perception that the neighborhood is run down, and where the government or other authority steps in, either through encouragement or direct action to fix the broken windows, the general perception of the neighborhood changes. Robert C. Ellickson, \textit{Controlling Chronic Misconduct in City Spaces: Of Panhandlers, Skid Rows, and Public-Space Zoning}, 105 Yale L. J. 1165, 1171–73 (1996); see also William J. Bratton, \textit{The New York City Police Department’s Civil Enforcement of Quality-of-Life Crimes}, 3 J.L. & Pol’y 447, 448–50 (1995); Carolyn Y. Johnson, \textit{Breakthrough on ‘Broken Windows’ in Lowell}, Boston Globe, Feb. 8, 2009, at A1; James Q. Wilson & George L. Kelling, \textit{Broken Windows: The Police and Neighborhood Safety}, Atlantic Monthly, Mar. 1982, at 29, 29–38, available at http://www.theatlantic.com/doc/198203/broken-windows.}

A. A Possible “Pre-Statement” Guideline to Help Avoid Litigation

Instead of resorting to nuisance litigation, which appears to rely on the \textit{Restatement (Second) of Torts} standard of reasonableness, to resolve their conflict, perhaps neighbors with mutually incompatible uses might negotiate a fair and efficient accommodation between them using a more specific but informal norm. Because it is designed to help them clarify their relative rights as a baseline for negotiation in advance of litigation, perhaps it might be called instead a “pre-statement.”\footnote{Private eminent domain offers another potential solution to the problem of neighboring incompatible land uses, at least where the initial entitlement is clear. For example,}
so, what would such an informal norm say to be most helpful? While the idea is exploratory, here is one way such a pre-statement might be framed:

When it appears that land uses which independently would be beneficial if conducted on one of two adjoining parcels are so conducted on both properties so that the uses are incompatible, the neighboring landowners are encouraged to collaborate to adjust the location, duration or intensity of the conflicting uses between them as if they owned both parcels together. In determining the appropriate allocation of any adjustment of the uses, their location, or the associated expenses between them, it may be helpful for them to give primacy to (1) which neighboring use first occurred, and (2) which neighboring use in effect required something to occur or not occur on the neighboring land for it to take place successfully, while the other use involves only its own land.

To bring the analysis full circle, how does this “pre-statement” guideline, lying between a more specific formal rule (or its equivalent, like the landowner’s right to exclude) and a general standard of mutual “reasonableness” as in nuisance cases, assist in resolving conflicts like the solar collector and the redwoods, or the well and the septic system? It would likely give the entitlement to the owner of the redwoods and the well rather than the owner of the solar collector or the septic system, both in terms of priority of use (since the trees predated the collector, and the well was permitted before the septic system), and also some states have enacted statutes enabling owners of landlocked parcels to apply for the creation of an easement by necessity over an adjoining parcel in order to gain road access, with compensation to the owner of the land burdened by the easement. Joseph W. Singer, Introduction to Property 200 (2d ed. 2005). The problem with applying a similar approach in the case of beneficial but incompatible uses is that it cuts both ways: each landowner in a case like the California dispute involving the solar collector and the trees has a legitimate public policy argument that his or her use should be favored. Thus, while such a private eminent domain solution might help where one beneficial use in effect requires access over neighboring land, it does little to clarify the relative rights of the parties and set up a starting point for negotiations or its exercise in the extreme case.

Similar to this idea, Texas courts have proposed a judicial doctrine of “accommodation” to deal with benign, yet incompatible land uses, where the surface and mineral rights are divided between wind power developers and gas and oil prospectors. See Becky H. Difffen, Note, Energy from Above and Below: Who Wins When a Wind Farm and Oil and Gas Operations Conflict?, 3 Tex. J. Oil Gas & Energy L. 240, 246–47 (2008). The accommodation doctrine states that while the mineral owner generally owns the dominant estate, where there is a reasonable alternative for the mineral owner to carry on his activities without interfering with the surface uses, that alternative will be preferred. See id.
because, in effect, the solar collector and the septic system required something of the neighboring land to succeed, analogous to an easement by necessity. Thus, both the well and the trees would prevail under this guideline.

B. Choosing Between Priority in Time and Effective Use of the Neighboring Land?

But what if the pre-statement principles of priority of use and need for the “use” of the adjacent land are not aligned but in conflict? Which principle is the better guide? This is a challenging issue. Suppose the septic system had preceded the well in *Hendricks*, so that the system was first, but the well was the less intrusive use, not requiring the soil on the other parcel to succeed, as might the septic system. Or suppose the solar panel system had preceded the tree, but the tree is the less intrusive use, not needing sunshine passing over the adjacent land to thrive. Should the less intrusive use prevail over the first use or the other way around? If, after all, there is a principle that is supposed to guide landowners, which should it be when the two subsidiary pre-statement principles conflict?

While both have legitimate claims to primacy, it seems that priority in time of use, at least in the case of desirable but incompatible uses, should generally prevail. However, favoring priority of use in all circumstances becomes the sort of rigid rule that many scholars routinely criticize. Instead, borrowing a principle from nuisance statutes, like the preference for farming over other uses, the intrusiveness of the use could be allowed to control the relative priority in time of the competing uses if the two uses are in conflict, unless and until a use has been in place for a period of time and its priority is well established. This principle maintains Professor Rabin’s ideal of “protecting early inno-

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134 Easements by necessity arise not from a pattern or prior use, but from the recognition that without them, a severed parcel would be almost “use-less,” as in the case of a severed parcel landlocked without access to a public road. John W. Weaver, *Easements Are Nuisances*, 25 REAL PROP. PROB. & TR. J. 103, 118–19 (1990). Examples include not only landlocked parcels but others such as utility lines underneath a neighboring parcel. See *Westbrook v. Wright*, 477 S.W.2d 663, 666–67 (Tex. Civ. App. 1972) (granting owners implied easement for sewer lines running across property of neighboring lots); see also *Traders, Inc. v. Bartholomew*, 459 A.2d 974, 979–80 (Vt. 1983) (discussing the policy of easements by necessity to remedy the idle-ness of land); JAMES W. ELY, JR. & JON W. BRUCE, *THE LAW OF EASEMENTS AND LICENSES IN LAND* § 4:5 (2008); Weaver, supra, at 118–19 (noting that easements by necessity arise either from implied intent or public policy favoring the utility of land).

135 See Merrill, supra note 12, at 47.

136 See supra notes 29–31 and accompanying text.
cent development from penalty.”¹³⁷ He says that “except for compelling reasons involving the health or comfort of neighbors who are following a well-established neighborhood pattern, the prior use rule encourages useful development”¹³⁸ and “promotes both efficiency and fairness.”¹³⁹ Yet, this principle also prevents the first user from completely arrogating all competing neighboring uses of the land. Finally, such a principle maintains the simplicity of the basic framework of the proposed pre-statement and should be relatively easier for laypeople to understand and to apply, compared to the judicially interpreted general standard of “reasonableness.”

With that in mind, an appropriate revision of the pre-statement would be as follows:

When it appears that land uses which independently would be beneficial if conducted on one of two adjoining parcels are so conducted on both properties so that the uses are incompatible, the neighboring landowners are encouraged to collaborate to adjust the location, duration, or intensity of the conflicting uses between them as if they owned both parcels together. In determining the appropriate allocating of any adjustment of the uses, their location, or the associated expenses between them, it may be helpful for them to give primacy to (1) which neighboring use first occurred, so long as it has been in place for at least a year, and if not, (2) which neighboring use in effect required something to occur or not occur on the neighboring land while the other use involves only its own land.

C. The Initial Examples Revisited

How would this “norm” resolve the various cases we have examined?

• The solar collector versus the tree.¹⁴⁰ Here the pre-existing tree would have priority, since it had been in place more than a year and the solar collector needed something not to occur on the neighboring land.

¹³⁷ Rabin, supra note 71, at 1326.
¹³⁸ Id.
¹³⁹ Id. at 1328.
- **The well versus the septic system.** Here the well would again prevail. The well occurred first, while the septic system “needed” something not to occur on the neighboring land.

- **The Prah case.** Here the solar collector had been in place before the adjoining building, but also required something not to occur on the adjoining land. Because under this formulation, priority in time, if well-established, “trumps” intrusiveness, then the *Prah* case would come out the same.

**D. Finally, Not All Neighbors Need to Compete**

Note that there is another dimension to this problem. Coase’s model assumes a norm of human behavior that has each neighboring property owner acting in a competitive fashion. The assumption is that each landowner seeks to maximize his gain, which each then does by trading their respective property entitlements (either consensually or through a liability assignment system, for example, a court), making each relatively better off. But human behavior can include non-competitive conduct. Indeed, it may include cooperative conduct which becomes competitive only as a last resort. This model explains why the prisoner’s dilemma seems inexorable but doesn’t account for the wild card of mutual cooperation even without collusion. Such cooperation is a choice made by some and indeed collectively by all; otherwise, a property regime in which neighbors respected each other’s rights would not be possible. The implication is that rather than hos-

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142 Prah v. Maretti, 321 N.W.2d 182 (Wis. 1982).
143 Coase, supra note 32, at 2–8.
144 See id.
145 See Carol M. Rose, *Property as Storytelling: Perspectives from Game Theory, Narrative Theory, Feminist Theory*, 2 *Yale J.L. & Human.* 37, 49–51 (1990) (discussing “prisoner’s dilemma” as illustrating different models of human behavior in which dominant competitive model has been avoided—at least in establishing a regime of private property—in favor of cooperative one). “Even if the property regime is just a matter of customary practices that develop over time, the participants have to cooperate to the extent of recognizing and abiding by the indicia of ownership that their customs set out.” *Id.* at 51; see also David A. Lax & James R. Sebenius, *The Manager as Negotiator* 29–41, 91–105, 158–66 (1986) (describing “negotiator’s dilemma” as situation where best outcome for one person not necessarily best for both, but if both pursue their best option, they will often both get the worst outcome). *See generally* G. Richard Shell, *Bargaining for Advantage* (2d ed. 2000) (discussing competitive, accommodating, compromising, avoiding, and collaborating negotiation styles); *The Dark Knight* (Warner Bros. Pictures 2008) (containing a surprise for the Joker when his attempt to invoke defecting behavior in citizens of Gotham City in peril breaks down).
tility, neighbors may wish to cooperate, as Professor Ellickson’s research indicated, especially if offered a norm which seems just and fair, indeed even “reasonable,” without resort to litigation. Professor Ellickson advised that “lawmakers who are unappreciative of the social conditions that foster informal cooperation are likely to create a world in which there is both more law and less order.”

**Conclusion**

This article started from the assumption that the rules and standards for solving the problem of beneficial, yet inconsistent land-uses would be indicated through researching cases and other relevant literature. However, examination of the relevant research revealed that the problem of benign, yet inconsistent land uses is not so simple. The current nuisance-tort model is inadequate to deal with land disputes where neither party is at fault. Moreover, the balancing test used in the Restatement, while useful for a court trying to find a fair and equitable solution, is insufficiently clear to guide parties who wish to negotiate a solution rather than resort to the court system. This Article offers some simple guidelines built on case and statutory responses instead of social norms, which are not clearly defined in such situations. The hope is that this Article and the solutions it offers can serve as a way to guide negotiations between neighbors by providing a starting point from which negotiations can proceed. Of course, how to approach a neighbor regarding such a dispute and how the conversation proceeds is a problem unto itself. But even with a good process in mind, such

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146 Ellickson, supra note 78, at 4.
147 Id. at 285–86.
148 See generally Eisenberg, supra note 6 (discussing the importance of rules and norms as a background against which negotiations between parties take place).
149 Boston mediator David Hoffman tells the story:

A family in a rural Native American village was upset because the incessant barking of their neighbor’s dog was keeping them awake. Their neighbor did not ordinarily leave the dog out, but recently the dog had been out every night. The family’s complaints to their neighbor produced no response, no change. At their wit’s end, they went to the village’s chief, a respected elder of the community, and asked for his assistance. He visited the neighbor the next morning. The neighbor was on his front porch, and the chief stepped up onto the porch and sat down. The two men talked about the weather and the crops, but no one said anything about the dog. The morning wore on, and soon the chief left. But he came back the next morning, and the scene was repeated. The chief joined the neighbor on the porch and they talked about one thing and another, but nothing about the dog. This continued each day that week—an unusual number of visits from the chief, who ordinarily would
as articulated in Difficult Conversations,\textsuperscript{150} it is helpful to know where to begin. It may be that good neighbors make good fences, but even the best-intentioned neighbors need a non-legal “fence” or guideline from which they can effectively, fairly, and quickly deal with their disputes. Perhaps this Article’s pre-statement can help provide one.

SITING GREEN INFRASTRUCTURE: LEGAL AND POLICY SOLUTIONS TO ALLEVIATE URBAN POVERTY AND PROMOTE HEALTHY COMMUNITIES

ALEXANDRA DAPOLITO DUNN*

Abstract: Green infrastructure is an economically and environmentally viable approach for water management and natural resource protection in urban areas. This Article argues that green infrastructure has additional and exceptional benefits for the urban poor which are not frequently highlighted or discussed. When green infrastructure is concentrated in distressed neighborhoods—where it frequently is not—it can improve urban water quality, reduce urban air pollution, improve public health, enhance urban aesthetics and safety, generate green collar jobs, and facilitate urban food security. To make these quality of life and health benefits available to the urban poor, it is essential that urban leaders remove both legal and policy barriers to implementing green infrastructure projects. This Article argues that overcoming these obstacles requires quantified methods and regulatory reform. Increased public financing and other incentives are also necessary. Furthermore, legal structures that facilitate green solutions must be put in place. Lastly, awareness of green infrastructure solutions among policy makers and

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the wider public must be enhanced so that our nation’s more distressed urban populations may realize the benefits that such solutions yield.

**INTRODUCTION**

The inevitability of rainfall, snow melt, and wet weather storm events presents a suite of water quality and management challenges to communities across the nation. Increased amounts of impervious surfaces in urban areas alters runoff and drainage patterns, making natural events such as rain and snowmelt an enabling pathway for oil, grease, toxins, pathogens, nutrients, and other pollutants to reach nearby waterways. High volume and high velocity storm flows cause additional adverse environmental consequences, such as flooding, streambank scouring, sewer overflows, riparian habitat loss, and increased stream temperatures. Impervious surfaces prevent rainwater from soaking into the ground, thereby preventing groundwater recharge. The end result in urban communities across the nation is waterways that are unsafe for swimming and direct body contact, increased risk of illness for swimmers and subsistence fishers, unhealthy waters for fish, amphibians, and birds, and unmet water quality goals.

Polluted waters are a health hazard as well as an eyesore, diminishing property values and detracting from community revitalization efforts. The adverse impact of these problems will only continue to grow as our world’s population increases, urban dwelling becomes more concentrated, and even more significantly, as development in the United States continues at twice the rate of population growth. These densely populated, highly developed urban centers, characterized by significant

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1 The sewer systems most overloaded by storm flows are known as combined sewer systems and the overflows as combined sewer overflows. These systems were designed with one common set of underground pipes and conveyances for sanitary and storm water. Thus, when it rains or when there is snowmelt, combined sewer systems can become overloaded. See infra note 78 and accompanying text (providing information about the regulatory protocols for combined sewer systems); see also Charles Duhigg, As Sewers Fill, Waste Poisons Waterways, N.Y. Times Nov. 23, 2009, at A1 (describing how combined sewer overflows routinely occur in and around New York City).

2 Jennifer Cheeseman Day, U.S. Census Bureau, National Population Projections (2008), http://www.census.gov/population/www/pop-profile/natproj.html; see also Matthew E. Kahn, Green Cities: Urban Growth and the Environment 102–03 (2006) (“Urban population growth can also overwhelm local efforts to provide key services, such as clean water. As poor migrants enter a city, they increase the demand for basic services but are often incapable of contributing financially to their supply. As existing services become overtaxed, their quality falls.”).
areas of impervious surfaces and reduced open space, contribute to heat island effects and reduce air quality. Global warming—which is predicted to adversely impact water resources and shorelines, increase storm severity and flooding, exacerbate sewerage overflows, and decrease snowpack—will only further deteriorate the quality of the urban environment.

One important way that cities around the nation are tackling these urban water pollution and heat island challenges is by making green infrastructure investments. The term “green infrastructure” has many definitions because it is used on a variety of scales—watershed or sub-watershed, neighborhood, or site. In this Article, the term is used to apply to natural systems, or to designed or engineered systems, that use soil and vegetation to capture water, reduce ambient temperatures, and otherwise protect and enhance both environmental quality and public health. Urban green infrastructure in this Article refers to trees, rain gardens, vegetated swales, pocket wetlands, constructed wetlands, open

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Impervious surfaces alter the natural hydrology, prevent the infiltration of water into the ground, and concentrate the flow of stormwater over the landscape. As the imperviousness of a watershed increases, the greater volume of stormwater increases the possibility of flooding and reduces the potential for pollutants to settle out; meaning that more pollution is delivered to drinking water streams and aquifers.


4 See, e.g., Thomas Johnson, U.S. Envtl. Prot. Agency, Factoring the Impacts of Climate Change into Combined Sewer Overflow Mitigation 8 (2008) (noting that some models, though based on inconclusive data, predict that global warming will increase the frequency of combined sewer overflows by up to fourteen percent and that the volume and velocity of stormwater flows will increase).


space, urban agriculture and farming, and vegetated median strips—essentially soil and vegetation incorporated into the urban landscape—and engineering techniques which foster such incorporation such as green roofs, tree boxes, infiltration planters, and permeable pavement.

This Article makes a case for increasing urban green infrastructure investments in a specific way. By showing how urban green infrastructure can directly benefit the urban poor, this Article urges cities to concentrate green infrastructure investments in poverty stricken urban areas—where cities might be less likely to pursue such projects due to the lower profile and visibility of such projects to the general public.

This Article discusses some of the legal barriers which can prevent cities from making green infrastructure investments and proposes ways to remove or minimize the deterrent effect of these barriers. In conclusion, this Article finds that with prioritization and desire, and with increased funding and a heightened awareness of the direct poverty reducing benefits of green infrastructure, cities can achieve two important goals—a healthier environment and a more stable, prosperous, and healthy citizenry.

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8 For purposes of this Article, poverty is characterized broadly to include not only traditional elements of poverty such as reduced family income but also poverty-exacerbating indicators such as lack of productive assets (for example, clean water and land) and lack of access to employment. Key U.N. reports support the approach taken in this Article to include environmental conditions in characterizing poverty.

In Development as Freedom, Sen defines poverty as the deprivation of basic capabilities that provide a person with the freedom to choose the life he or she has reason to value. These capabilities include good health, education, social networks, command over economic resources, and influence on decision-making that affects one’s life. Income is important because money allows a person to develop his or her capabilities, but it is only a means to live a valuable life. From this perspective, poverty is a condition with many interdependent and closely related dimensions which can be summarized in three broad categories:

(a) Lack of regular income and employment, productive assets (such as land and housing), access to social safety nets;
(b) Lack of access to services such as education, health care, information, credit, water supply and sanitation;
(c) Lack of political power, participation, dignity and respect.


9 See infra Parts I–II.
10 See infra Part III.
11 See infra Part III.
I. How Green Infrastructure Improves Quality of Life for the Urban Poor

Urban areas are crowded, not only with people but with environmental burdens and challenges that have direct, and frequently adverse, impacts on the urban poor who make their homes and livelihoods in these places. These burdens commonly come in the forms of air and water pollution, stagnant water, reduced drinking water quality, lower groundwater tables, and more. Various data sources suggest that morbidity and mortality rates are higher in densely populated urban centers. For example, cancer and “[a]sthma morbidity and mortality are disproportionately high in urban centers,” and some studies suggest that overall life expectancy and healthy life expectancy “decreased steadily as area of residence became more urban.” The U.S. Department of Health and Human Services has reported that Americans who live in the suburbs fare significantly better in many key health measures.

12 See generally John W. Mellor, The Intertwining of Environmental Problems and Poverty, Environment, Nov. 1988, at 8 (describing the interconnection between poverty and environmental quality in the developing world).


14 Varying degrees of association are reported between cancer incidence and urban/rural environments, but the association between atmospheric pollutants and cancer rates is fairly well established, to the extent that it can be argued that increased exposure to pollution can have significant health impacts. See Adele C. Monroe et al., Cancer in Rural Versus Urban Populations: A Review, 8 J. Rural Health 212, 218–19 (1992) (suggesting that rural populations have a lower risk of developing cancer than urban populations); Philip Nasca et al., Population Density as an Indicator of Urban-Rural Differences in Cancer Incidence, Upstate New York, 1968–1972, 112 Am. J. Epidemiology 362, 372–74 (1980) (identifying a statistically significant linear trend of increasing incidence with increasing population density for cancers of the buccal cavity and pharynx, esophagus, bronchus and lung, stomach and colon); Mark Wake, The Urban/Rural Divide in Head and Neck Cancer—The Effect of Atmospheric Pollution, 18 Clinical Otalaryngology & Allied Sci. 298, 298–302 (1993) (noting a trend of higher cancer rates among urban residents as compared to their rural counterparts). Green infrastructure implementation can decrease pollutants in the air and the water, likely having positive impacts on human health.


than those who live in the most rural and most urban areas. Varying socio-economic and environmental conditions associated with urban development also can negatively impact the health of urban residents. These realities provide an incentive for urban leaders to find ways to reduce the concentration of pollutants in the air and water in order to directly benefit the health and social wellbeing of their constituents. This is where green infrastructure can make a meaningful difference.

A. Green Infrastructure Improves Urban Water Quality

Rather than the traditional approach to stormwater management of capture, convey, and treat, green infrastructure manages rain where it falls, recognizing it as a valuable resource. This can have a number of beneficial outcomes, such as reducing volume to combined sewer and stormwater systems, reducing treatment costs at wastewater treatment plants, and enhancing the aesthetics of the urban area. Avoiding the addition of new infrastructure or diminishing the size and scope of capacity improvements can also generate substantial cost savings. Other decentralized storage and infiltration approaches, including the use of permeable pavement, rain barrels, and cisterns to capture and reuse rainfall for irrigation or other non-potable onsite uses, often accompany green infrastructure. All of these have the benefit of keeping rainwater out of storm and sewer systems so that it does not cause overflows. Instead, soil and vegetation absorbs and cleanses it. The stormwater is then reused or allowed to flow back into surface water resources or recharge groundwater.

Green infrastructure can also enhance water quality when it takes the form of constructed wetlands, which can actually treat and remove pollutants before they enter urban water bodies.

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17 MARK S. EBERHARDT ET AL., NAT’L CTR. FOR HEALTH STATISTICS, HEALTH, UNITED STATES, 2001, at 4 (2001) (concluding that that people who live in the most rural and most urban areas have higher mortality rates for working age adults than suburban residents).

18 See CYNTHIA GIRLING & RONALD KELLETT, SKINNY STREETS & GREEN NEIGHBORHOODS: DESIGNS FOR ENVIRONMENT AND COMMUNITY 118–34 (2005) (providing a variety of green stormwater strategies, and discussing the evolution of planners’ views of stormwater as a resource rather than a waste to be captured and removed).

19 See infra Part II.


21 See generally U.S. ENVTL. PROT. AGENCY, CONSTRUCTED WETLANDS FOR WASTEWATER TREATMENT AND WILDLIFE HABITAT (1993) (using seventeen case studies to discuss techniques used to develop constructed wetlands and the ecosystem services they provide).
B. **Green Infrastructure Reduces Urban Air Pollution and Advances Energy Efficiency**

Not only can green infrastructure protect and improve water quality, which can render urban streams accessible to urban dwellers for recreation and enjoyment, green infrastructure also can improve urban air quality. It is documented that “ambient air pollution worsens as city populations grow.” Green infrastructure, like green roofs, community gardens, water retention ponds, and green space preservation and creation, increases vegetative cover, thereby filtering airborne pollutants, offsetting urban heat island effects, uptaking carbon, and reducing the heating and cooling demands of buildings. The energy efficiency of green buildings can reduce energy costs for the urban poor, yielding more affordable energy bills.

Green infrastructure such as green roofs can also reduce the urban “heat island effect.” This effect can also be mitigated through implementation of permeable pavement on common spaces like basketball courts, which have been shown to be notably cooler in the summer when they are constructed of permeable pavement.

C. **Green Infrastructure Enhances Urban Aesthetics and Safety**

Green infrastructure also benefits the urban poor by enhancing the aesthetic appeal of communities with trees and vegetation. Studies suggest that ready access to green spaces has positive correlations with lon-

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22 Kahn, supra note 2, at 100.

23 For example, temperatures above a green roof on city hall in Chicago, IL average 10–15°F lower than a nearby black tar roof, with the difference being as much as 50°F in August. The associated energy savings for the building are estimated to be $3600 annually. Chris Kloss & Nancy Stoner, Controlling Urban Runoff with Low Impact Development, WaterWorld, July 2007, at 28, 29.

24 A study of Chicago’s urban forest found that increasing tree cover by ten percent (roughly equivalent to three additional trees per building) would reduce total heating and cooling energy use by up to ten percent, and on the national level, researchers estimate that planting three additional trees per building could cut more than $2 billion in energy costs. See Natasha Kassulke, A Green Workforce, Wis. Nat. Resources Mag., Aug. 2006, at 1, 5, available at http://dnr.wi.gov/wnrmag/html/supps/2006/sep06/green.htm.


gevity and quality of life. Trees and vegetation can offer expanded wildlife habitat, open space and parks, thereby conveying energy savings by reducing ambient housing temperatures, raising property values, reducing crime, and promoting a greater sense of community. Green space helps to increase property values, revitalize blighted neighborhoods, enhance street life and community aesthetics, and provide free recreation. Open, active green space draws people out of their homes and with more individuals present in the community, crime can be reduced. Positive experiences at public housing projects serve to highlight the societal value of green infrastructure.

27 See J.R. Ashton, Health and Greening the City, 56 J. Epidemiology & Community Health 896, 896 (2002); Takano et al., Urban Residential Environments and Senior Citizens’ Longevity in Megacity Areas: The Importance of Walkable Green Spaces, 56 J. Epidemiology & Community Health 913, 916–18 (2002).


29 Some land use planners identify a distinction between active and passive open space. David E. Johnson, Fundamentals of Land Development 100–01 (2008). Active open space—which may include designated athletic fields, courts, or other outdoor amenities such as community gardens and well-maintained trails and parks—encourages community interaction. Passive space, such as open spaces and preserved areas, provide space for multiple uses that are not limited to designated athletic fields. See, e.g., Bruce Hartley, Costa Mesa Parks & Recreation Comm’n, Agenda Report: Designating Parks and Park Areas for Passive or Active Use 1–3 (July 23, 2008), available at http://www.ci.costamesa.ca.us/council/parks/actions/2008-07-23/Active%20&%20Passive%20Parks.pdf.

30 Notably, the fact that people outside, watching, improves community safety has long been documented. Jane Jacobs, The Death and Life of Great American Cities 34–35 (1961) (a particularly insightful and even radical book for its time).

31 See Kassulke, supra note 24, at 7 (“The simple act of planting trees provides opportunities to connect residents with nature and each other,” says Dr. Greg McPherson, director of the USDA Center for Urban Forest Research. “Neighborhood tree plantings and stewardship projects stimulate investment by local citizens, business and government in the betterment of their communities.”).

32 Recent research indicates that the presence of trees actually reduces the incidence of crime. This may, in part, be due to the higher natural surveillance of well-used greenspace, as sites with trees have been found to attract more people than those without. Research has also linked the presence of vegetation to mitigation of mental fatigue, often “a precursor of outbursts of anger and violence.” Chris Hastie, The Benefits of Urban Trees 2–3 (2003).

33 See Kassulke, supra note 24, at 8.

The study by University of Illinois researchers Frances E. Kuo and William C. Sullivan explored how well residents of the Chicago Robert Taylor Housing Project were doing in their daily lives based upon the amount of contact they had with trees. Kuo and Sullivan found that trees are a canopy against crime. Trees have the potential to reduce social service budgets, decrease police calls
ton, is one city advancing green affordable housing, framing its initiatives around environmental sustainability and environmental justice.\textsuperscript{34} Similarly, Enterprise Community Partners and the Natural Resources Defense Council entered a five-year, $555 million “green communities initiative” to build more than 8500 environmentally healthy, affordable homes across the United States.\textsuperscript{35} According to Enterprise founder, James Rouse, green affordable housing “is simply part of a healthy city infrastructure both on the human and physical capital side,” creating “gardens for growing people.”\textsuperscript{36}

Green spaces can be successful and valuable even on a small scale.\textsuperscript{37} The aesthetic benefits gained from green infrastructure implement for domestic violence, strengthen urban communities and decrease the incidence of child abuse. Buildings with high levels of greenery had 52 percent fewer total crimes than apartment buildings with little or no greenery. Residents of buildings with more vegetation knew their neighbors better because they were more apt to come outside. Based on study findings, the city of Chicago spent $10 million to plant 20,000 trees as a means of social change.

\textit{Id.}

\textsuperscript{34} Enterprise Green Communities, Sustainable Cities, http://www.greencommunitiesonline.org/green/benefits/cities.asp (last visited Jan. 6, 2010) [hereinafter Green Communities] (“Greening affordable housing is part of Mayor Nickels’ agenda to help promote more sustainable approaches to managing the built environment in a socially equitable way so those in our communities who can least afford it will benefit from healthy, high-quality affordable housing.”).

The SeaGreen Program’s guiding principles for affordable housing are that they are cost-effective to build; are durable and practical to maintain; result in a high quality, healthy living environment; reduce utility costs to residents; enhance the residents’ connection to nature; protect the environment by conserving resources, including energy, water and materials; and advance the health of local and regional ecosystems. Office of Housing, Seattle, SeaGREEN: GREENING SEATTLE’S AFFORDABLE HOUSING, at iii (2002), available at http://www.seattle.gov/housing/SeaGreen/SeaGreen.pdf. \textit{See generally Seattle Sustainable Development Program, 5-Year Report: 2000–2005} (2005), available at http://www.seattle.gov/DPD/static/5-year_report_LatestReleased_DPD_009930.pdf (providing background on Seattle’s program).

\textsuperscript{35} Green Communities, \textit{supra} note 34.

\textsuperscript{36} \textit{Id.}; see also \textsc{Jerry Yudelson, The Green Building Revolution} 129–30 (2008) (“Why shouldn’t people in subsidized housing have access to lower utility bills, healthier indoor air; and the other benefits of green buildings?”).

\textsuperscript{37} A. Cassidy, J. Newell & J. Wolch, \textsc{USC Ctr. for Sustainable Cities, Transforming Alleys into Green Infrastructure for Los Angeles} 12 (2008).

\textsc{[E]x]tensive research as well as experience in Los Angeles suggests that it is possible to create small green public spaces of extraordinary quality and value to the community that are safe (and are perceived as such). For example, Bimini Slough Ecology Park (built on a vacated street) is located in a poor, high-density East Hollywood community plagued by many problems including crime and gangs, yet it is intensely used by community members without incident. Similarly, Augustus Hawkins Natural Park, in South Los Angeles,
mentation may be difficult to quantify, but can be considered critical for healthy, thriving, and sustainable communities.\textsuperscript{38} When applied in the area of public housing projects, green infrastructure may improve the psychological well-being of individuals, promoting community self-image and fostering community pride.\textsuperscript{39} Community-based organizations can promote green projects as well. For example, the New York Restoration Project (NYRP) funds green improvements and upkeep in economically and environmentally burdened areas in New York. One NYRP effort, the Target East Harlem Community Garden, successfully fused community gardening with the installation of solar panels, wind turbines, and a drip irrigation system.\textsuperscript{40}

D. Green Infrastructure Yields Green Jobs

Green infrastructure also can yield safe and reliable jobs, which with training can be made available to local low-income individuals.\textsuperscript{41} While green infrastructure requires certain skilled individuals, such as architects, designers and engineers, its implementation yields “green collar” jobs in construction, maintenance, and installation. Between built on a small brownfield, is extraordinary because of its superior design and security features that create a sense of protection and calm.

\textit{Id.}

\textsuperscript{38} See T. Takano, \textit{supra} note 27, at 913–18 (suggesting that ready access to “green spaces” has positive correlations with longevity and quality of life).

\textsuperscript{39} Kassulke, \textit{supra} note 24, at 8–9; Green Communities, \textit{supra} note 34.

When San Francisco Mayor Newsom announced in August 2005 that all city-supported affordable housing developments would be required to include holistic environmental standards based on the Green Communities Criteria, he emphasized children’s health: “Children in low-income neighborhoods often suffer from childhood diseases like asthma or lead-poisoning that are exacerbated by unhealthy housing. By signing up to be the country’s first citywide Green Community, we’ll prove that it’s possible to build affordable housing and to build it green.”

Green Communities, \textit{supra} note 34.

\textsuperscript{40} Anne Raver, \textit{Healthy Spaces, for People and Earth}, N.Y. TIMES, Nov. 5, 2008, at D6.


The green-collar economy includes all “green jobs” like construction work on green buildings, organic farming, solar panel manufacturing, and bicycle repair. Cognizant of Oakland, California’s “literal do-or-die struggle to build a sustainable local living economy strong enough to lift people out of poverty,” community leaders under the banner of the local Alliance are committed to “job creation for the low-income and people of color in the green, sustainable economy” . . . “[B]y their nature, green jobs are local jobs.”

\textit{Id.} (citations omitted).
July 2007 and January 2009, there was a thirty-one percent increase in people being hired specifically for green jobs, and by 2010, optimistic predictions anticipate 5.8 million green jobs and, by 2020, 6.9 million.\textsuperscript{42} President Obama’s economic stimulus plan commits to green projects such as the weatherization of one million homes.\textsuperscript{43} University of Colorado Law Professor Maxine Burkett wisely notes that “[t]he campaign for green-collar jobs is just as much about economic and social recovery for [environmental justice] communities as it is about environmental dividends . . . . The green-collar economy includes all ‘green jobs’ like construction work on green buildings, organic farming, solar panel manufacturing, and bicycle repair.”\textsuperscript{44} The U.S. Environmental Protection Agency recently cataloged training opportunities for green infrastructure jobs.\textsuperscript{45}

Thoughtfully planned efforts can effectively synthesize several important outcomes for the urban poor, such as energy efficiency and green jobs. For example, in Stamford, Connecticut, Jonathan Rose Companies’ Metro Green affordable housing apartment project “integrate[s] features that enhance the urban environment, promote better health for residents, are energy efficient, and save residents money” while creating green collar construction jobs.\textsuperscript{46} The project includes “a high-performance roof and insulation system . . . that reduces [the] heat island effect,” “operable double hung windows” that reduce heating and cooling costs, and “a rainwater harvesting system that will funnel water from the roof into storage tanks to be used for drip irrigation and filtered for use in washing machines.”\textsuperscript{47} Thus, green infrastructure not only helps to elevate families from poverty by reducing heating and cooling bills, but also can stimulate the local economy by creating local, green collar jobs.


\textsuperscript{44} Burkett, \textit{supra} note 41, at 225.


\textsuperscript{47} Id. \textit{See generally Global Green USA, Blueprint for Greening Affordable Housing} (2007).
E. Green Infrastructure Facilitates Urban Farming and Affordable Food

Urban hunger and hungry city dwellers are growing problems. Green infrastructure can lower food costs for the urban poor by creating space to grow produce that can supply an urban center. The urban poor pay more for their food, particularly produce, than suburban or rural residents. Thus, through adding green space to the urban landscape, local agriculture, and in particular urban farming can become a valuable part of life for the urban poor.

The United Nations has noted that

> [g]iven prices and income, the ability of a poor urban household to buy food may be less than that of a poor rural household, because the urban poor must buy most of their food. In many cases, the urban poor pay up to 30 per cent more for their food than the rural poor, and spend 60 per cent or more of their total expenditure on food. Transport costs and post-harvest losses are the main causes of the higher cost of food in urban areas.

Exacerbating these disparities is the fact that “food markets that are located in low-income neighborhoods are often smaller, with less selection in general and less and lower quality produce,” making it more difficult for low-income families to achieve the balanced food intake necessary for a healthy diet.

Thus, urban agriculture can be not only an important environmental strategy, providing drainage and stormwater management services, but an equally important strategy to combat poverty, enhance food security, promote local economic development, and provide nutri-

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48 Food & Agric. Org. of the U.N., The State of Food Insecurity in the World 2008, at 22–23 (2008). This problem is even more severe outside the United States. By 2020, predictions are that eighty-five percent of the poor in Latin America, and about forty to forty-five percent of the poor in Africa and Asia will be found in urban areas. RUAF Found., Why is Urban Agriculture Important?, http://www.ruaf.org/node/513 (last visited Jan. 6, 2010).

49 ECOSOC, supra note 8, at 5.

50 Tjeerd Deelstra & Herbert Girardet, RUAF Found., Urban Agriculture and Sustainable Cities 46 (2002) (noting that urban farming can be even more valuable during times of recession).

51 ECOSOC, supra note 8, at 5.

tious foods. Urban gardeners have been shown to be able to obtain forty to sixty percent of their household food from their gardens.\textsuperscript{53}

As urban areas continue to expand and convert areas previously used for agriculture, increasing the amount of food grown in diminishing space is necessary. With the high unemployment rates and food scares, it is predicted that 10 million people planted their first gardens in 2009.\textsuperscript{54} In addition to encouraging permeable garden spaces that reduce water runoff and decreasing the food delivery distances that minimize transportation-related carbon output, community gardens can improve “nutrition, physical activity, community engagement, safety and economic vitality for a neighborhood and its residents.”\textsuperscript{55} When green infrastructure is seen as including urban agriculture, not only is the environment cleaner, but residents have greater economic opportunities, both as producers and consumers of affordable, healthy produce.

\section*{II. Green Infrastructure Success in the United States}

Quite a number of U.S. cities have achieved significant success in the green infrastructure arena. These investments, largely driven by water quality needs and a need to control urban stormwater, have yielded key environmental benefits while improving the aesthetic value of neighborhoods and public health. For example, an $8 million subsidized downspout disconnection program in Portland, Oregon saved $250 million in water infrastructure improvements, successfully keeping 1 billion gallons of rain annually out of the city’s combined sewer system, promoting groundwater recharge.\textsuperscript{56} In Seattle, Washington, the Street Edge Alternative pilot project reduced the total volume of stormwater leaving the street by ninety-nine percent.\textsuperscript{57} In the Rouge River area of Michigan, the Inkster Wetlands demonstration project, completed in 1997, featured nine constructed and five natural acres of wet-

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\begin{itemize}
\item \textsuperscript{53} RUAF Found., \textit{supra} note 48.
\item \textsuperscript{54} Elizabeth Royte, \textit{Street Farmer}, N.Y. \textit{Times}, July 5, 2009, (Magazine), at 22.
\item \textsuperscript{55} \textit{Local Gov’t Comm’n, Cultivating Community Gardens} 1, http://www.lgc.org/freepub/docs/community_design/fact_sheets/community_gardens_cs.pdf (last visited Jan. 6, 2010); \textit{see also} Municipal Research and Services Center of Washington, Community Gardens, http://www.mrsc.org/Subjects/Parks/comgarden.aspx (last visited Jan. 6, 2010).
\item \textsuperscript{56} Alexandra Dapolito Dunn & Nancy Stoner, \textit{Green Light for Green Infrastructure}, \textit{Env’tl. F.}, May/June 2007, at 32, 32.
\item \textsuperscript{57} Seattle Public Utilities, Street Edge Alternatives Project, http://www.seattle.gov/util/About_SPU/Drainage_&_Sewer_System/GreenStormwaterInfrastructure/NaturalDrainageProjects/StreetEdgeAlternatives/index.htm (last visited Jan. 8, 2010).
\end{itemize}
lands that filtered stormwater before it entered the river. This project replaced a prior system that involved discharge pipes carrying stormwater around the wetlands and directly discharging into the river. A subsequent five-year monitoring study focused on stormwater quality improvement found that in addition to reducing flows, the wetlands reduced total suspended solids by eighty percent, total phosphorus by seventy, and oxygen depleting substance and heavy metal concentrations by sixty percent.

While green infrastructure projects require commitment in terms of vision, policy, and personnel, cities have also found that they can be cost-efficient. For example, Philadelphia, Pennsylvania’s use of green infrastructure in urban planning and development has saved approximately $170 million since 2006 by reducing flow into the city’s combined sewer system. Cities such as Portland, Oregon, Chicago, Illinois, Milwaukee, Wisconsin, Pittsburgh, Pennsylvania, and Seattle,

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In an effort to promote sustainable development, Portland has implemented multiple green infrastructure projects and programs and become a leader in the green infrastructure movement. In addition, the city has developed a series of policy decisions, which include requiring new municipal buildings to [sic] a green roof and paying homeowners for disconnecting their downspouts.

Id.

Washington have taken meaningful steps towards green infrastructure implementation, offering financial incentives to install green roofs and to undertake infrastructure improvement projects.

It is important to note that enhanced progress and innovation in adopting green practices correlates with those cities that are at the forefront of the policy and institutional changes necessary to enable and empower such programs. These cities have devoted the necessary public funding to promote and sustain green infrastructure projects. For example, in 2006, Chicago’s Department of the Environment received 123 applications when it announced that it would provide twenty $5000 grants for small-scale commercial and residential green roofs.

Similarly, leading cities have revised their stormwater regulations to emphasize the importance of on-site retention and treatment and to explicitly state a preference for green infrastructure approaches. For example, Seattle has a “Green Factor Ordinance” that allows green roofs to fulfill a requirement that commercial structures, residential structures, and parking lots over a certain size achieve a “green factor.” Seattle Public Utilities is also attempting to integrate green roofs into the Seattle stormwater code by quantifying the stormwater benefits of green roofs through use of its Western Washington Hydrologic Model. While green roofs are not mandated, these proactive steps encourage current and future developers to consider green roofs in development projects.

There also are many green roof incentive programs throughout the United States. For example, Portland, Oregon has an “eco-roof” incentive program whereby developers can earn larger development spaces if their proposals include plans for a green roof. These bo-

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nuses are given in relation to the amount of area the proposed eco-roof will cover in proportion to the area of the development project.\textsuperscript{72} Similarly, Chicago offers an incentive fund that promotes the use of green roofs and encourages their installation in the downtown area.\textsuperscript{73}

Progressive cities have also structured their utility fees to provide a fee discount when green controls are installed.\textsuperscript{74} Notably, some researchers have demonstrated that city leadership through green roofs on publicly-owned buildings can effectively establish an educated roofing industry and experienced installers for future green roof construction.\textsuperscript{75} Cities like Chicago and New York City have even started tax incentive programs to encourage urban gardening.\textsuperscript{76}

**III. Removing Identified Legal and Policy Barriers to Green Infrastructure**

In light of the fact that green infrastructure makes environmental sense and can directly benefit urban life for poverty stricken residents, it is all the more crucial that barriers to green infrastructure be removed, and that incentives be created. This Part of the Article discusses the origin of some of the common barriers to green infrastructure implementation, and offers suggestions as to how city councils and other authoritative bodies can remove these barriers.

**A. Promote Acceptance Through Quantification Models and Regulatory Reform**

As noted in this Article, one of the primary drivers for urban green infrastructure is managing urban stormwater and controlling combined sewer overflows (CSOs).\textsuperscript{77} Cities are required to undertake these actions to meet important regulatory objectives, such as compliance with municipal storm sewer regulatory regimes\textsuperscript{78} and significantly re-

\textsuperscript{72} See id. at 1-9.


\textsuperscript{74} *Green Infrastructure Yields Benefits*, supra note 67.


\textsuperscript{77} See supra Part. I.A.

ducing combined sewer overflows under the Clean Water Act. The power of regulation to transform, to spur change, and to direct investment cannot be overstated. Research shows that a common driver among many cities using green infrastructure is the need to assure compliance with regulatory requirements. For example, Portland, Oregon’s sophisticated green infrastructure program is designed to promote the city’s compliance with several Clean Water Act regulatory requirements, such as controlling and reducing CSOs, protecting groundwater and removing pollutants. Thus, it is imperative to explore the role of regulatory requirements and to modify them to facilitate and promote—and to identify regulatory barriers to—the choice of green infrastructure.

When green infrastructure projects—particularly those designed to minimize and control storm flows—are undertaken to facilitate compliance with regulations, compliance is expected to be shown certainly and definitively; it is rarely an imprecise science. Consequently, many cities are deterred from choosing green infrastructure over pipe and concrete “grey infrastructure,” as the regulatory effectiveness of grey infrastructure has been shown over time, while green infrastructure is perceived as more uncertain. For example, models have shown that trees with mature canopies can absorb the first half-inch of rainfall. Given that trees, however, do not reach canopy maturity for some time, they inevitably yield regulatory uncertainty. One way to promote green infrastructure, then, is to find ways to modify or adjust compliance timeframes to accommodate the inherent uncertainty that accompanies the growing field of green infrastructure techniques and approaches.

The unavoidable reality of demonstrating compliance with regulatory standards makes it incumbent on proponents of green infrastructure to refine models that can quantify green infrastructure approaches and their costs, measure the various benefits yielded by green infrastructure, and enhance the likelihood of their approval by regulatory authorities. Small scale projects have been effectively implemented and

80 See Klaus Bosselmann, Poverty Alleviation and Environmental Sustainability Through Improved Regimes of Technology Transfer, 2 LAW ENV’T & DEV. J. 19, 32 (2006).
81 See CTR. FOR NEIGHBORHOOD TECH., GREEN INFRASTRUCTURE COMMUNITY PROFILE: PORTLAND, OREGON 1 (2007).
measured by cities. For example, Chicago, Illinois successfully implemented a program with measurable impacts through its Green Alley Program. 83 To control flooding caused by runoff from one alley, Chicago officials removed asphalt and replaced it with a permeable paving system. The city then measured the alley’s capability to infiltrate and retain the volume of a three-inch, one-hour rain event. 84 Being able to quantify the effectiveness of green infrastructure on a small scale is one way to promote regulatory and enforcement acceptance, which thereby enhances its appeal to city officials.

Models for measuring large scale green infrastructure projects are likewise important. University of California at Davis researchers estimated that for every 1000 deciduous trees in California’s Central Valley, stormwater runoff is reduced by nearly one million gallons, saving thousands of dollars in treatment costs. 85 With the Obama Administration promoting economic recovery through green projects and a green economy, cities may find regulatory officials more willing to endorse green infrastructure as part of municipal Clean Water Act compliance programs. To facilitate access to models for measuring green infrastructure projects, the United States Environmental Protection Agency (EPA) has greatly increased its resource library of green infrastructure calculators, showing that while there are a variety of ways to approach the mathematics, savings and measurable results are calculable. 86

B. Increase Public Funding and Incentives for Green Infrastructure Projects

As demonstrated earlier in this Article, when public funding is available, cities more aggressively move forward with green projects. 87 Thus, to spur green projects in urban areas, federal, state, and local funding needs to be made available; and to direct those efforts to the more poverty stricken parts of cities, those funding programs should prioritize funds for green infrastructure projects directed at these areas.


87 See Green Infrastructure Yields Benefits, supra note 67 and accompanying text.
To promote awareness of funding available for green infrastructure projects, EPA has cataloged a variety of federal programs where funding for green infrastructure projects may be available. Meaningful funding for such projects at the state and local levels remains generally elusive, but is starting to become more common.

There are a variety of other ways to create funding for, and to incentivize, green solutions. For example, introduced on May 7, 2009, House Bill 2336, the Green Resources for Energy Efficient Neighborhoods Act would make “energy efficiency practices more affordable, accessible and achievable by consumers, businesses and government entities.” The bill also promotes green building by nonprofit affordable housing developers by allowing the creation of grants to nonprofit organizations to increase low-income community development capacity; authorizes an energy efficiency and conservation demonstration program for project-based Section 8 multifamily housing developments; and establishes a loan fund to allow states and tribes to help home and apartment building owners improve energy efficiency via renewable energy and related methods.

The American Recovery and Reinvestment Act of 2009 dedicates at least $1.2 billion to green infrastructure, prioritizing sustainable, environmentally responsible development. To receive these green infra-

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88 See Models & Calculators, supra note 86.
92 H.R. 2336 § 18.
93 “Section 8, or the Housing Choice Voucher Program, is a [f]ederal housing program which provides housing assistance to low-income renters and homeowners. This assistance comes in the form of rental subsidies, limiting the monthly rent payment of the assistance recipient.” Affordable Housing Online, Section 8 Housing and Apartments: Common Questions, http://www.affordablehousingonline.com/section8housing.asp (last visited Jan. 8, 2010).
94 H.R. 2336 § 5.
95 Id. § 23.

The American Recovery and Reinvestment Act of 2009 provides significant funding for states to finance high priority infrastructure projects needed to ensure clean water and safe drinking water . . . . EPA is making Recovery Act grants to states and Puerto Rico to capitalize their State Revolving Fund (SRF) programs, from which assistance is provided to finance eligible high priority wa-
structure funds, states must provide at least twenty percent of their grants for green projects such as green roofs, rain gardens, pocket wetlands, native vegetation, sustainable streets and parking lots, and other landscape-based water-conserving measures. The Act acknowledges the relationship between these green projects and water quality by noting that “these and additional ‘environmentally innovative activities’ [are] keys to shoring up the nation’s aging, over-stretched waste water and drinking water infrastructure.”

Making public dollars and incentives available for green infrastructure should be seen as an economic boon, not subsidization. The economic potential of the green infrastructure industry has been documented, with some reports finding that a “$10 billion investment in water efficiency projects would produce a total economic output of $25–28 billion, create 150,000–220,000 jobs and save 6.5–10 trillion gallons of water.” Recognizing that America’s water infrastructure is in dire need of investment, it only makes sense to find ways to make the needed investments using green infrastructure methods due to their ancillary human health, poverty mitigating, and environmental benefits, rather than traditional pipe and concrete solutions.

C. Develop Legal Structures that Facilitate Green Solutions

Just as important as direct funding and incentive programs to green infrastructure are legal structures that can promote discretion and resources at the local level to facilitate green projects. For example, many geographic areas in the United States are finding that the creation of infrastructure projects. The states will set priorities based on public health and environmental factors, in addition to readiness to proceed to construction, and identify which projects will receive funding. States must provide at least 20% of their grants for green projects, including green infrastructure, energy or water efficiency, and environmentally innovative activities.


97 Implementation of Recovery Act, supra note 96; Ctr. for Neighborhood Tech., supra note 96.
98 Ctr. for Neighborhood Tech., supra note 96.
99 Hewes, supra note 66, at 3.
of stormwater utilities\(^\text{101}\) allows them to collect fees from system users, and then apply those dedicated funds in part to green infrastructure solutions or to incentivize the voluntary implementation of green infrastructure.\(^\text{102}\) Alternatively, Portland’s Clean River Rewards program credits up to thirty-five percent of the standard stormwater fee when properties retain stormwater on site.\(^\text{103}\) Another option is dedicating a certain portion of collected local tax revenues to a stormwater fund.\(^\text{104}\) This approach has the beneficial effect of protecting stormwater funds from diversion to other local priorities, and allows municipalities to identify a preference for green infrastructure or allocate funds based upon proportionate use of green management techniques.\(^\text{105}\) Even more revolutionary would be to develop programs that target these green investments in impoverished portions of cities—accomplishing the poverty alleviating benefits outlined earlier in this Article.\(^\text{106}\) Cities may need to design organizational structures to achieve these goals, and modify or change revenue collection mechanisms; however, the results could dramatically transform cities and the lives of the residents of their most blighted neighborhoods.

Construction permits are another area where green infrastructure requirements in regulations may be beneficial. General construction permits for the Big Darby Creek Watershed near Columbus, Ohio include riparian setbacks and infiltration requirements.\(^\text{107}\) In North Carolina and Baytown, Texas. See e.g., City of Baytown, Storm Water Utility Fund (2009), available at www.baytown.org/budgetfiles/11-StormWaterUtilityFund.pdf (detailing the stormwater utility fund in the context of Baytown’s 2009-2010 budget).

\(^\text{101}\) U.S. ENVTL. PROT. AGENCY, EPA 901-F-09-004, FUNDING STORMWATER PROGRAMS 1 (2009) ("More than 800 communities or districts across the country have adopted a stormwater utility to help fund the costs of stormwater programs, including the costs of regulatory compliance, planning, maintenance, capital improvements, and repair or replacement of infrastructure.").

\(^\text{102}\) See, e.g., Press Release, Dep’t of Pub. Works, City of Indianapolis, City’s Pilot Separation Project to Utilize Green Infrastructure, (June 25, 2009), http://www.indy.gov/eGov/City/DPW/Environment/CleanStream/PR/Pages/FallCreekGreenInfrastructurePilotProjectNewsRelease.aspx (describing the city’s green infrastructure and stormwater control pilot project that uses sanitary sewer user fees).


\(^\text{104}\) Quite a few U.S. cities have local stormwater funds, such as Chapel Hill, North Carolina and Baytown, Texas. See e.g., CITY OF BAYTOWN, STORM WATER UTILITY FUND (2009), available at www.baytown.org/budgetfiles/11-StormWaterUtilityFund.pdf (detailing the stormwater utility fund in the context of Baytown’s 2009-2010 budget).

\(^\text{105}\) See CHICAGO METRO. AGENCY FOR PLANNING, supra note 20, at 17–18.

\(^\text{106}\) See supra Part I.C–E.

\(^\text{107}\) See Ohio Envtl. Prot. Agency, Modification of NPDES General Permit No. OHC100001 (June 8, 2007).
lina, a general permit to construct, operate, and maintain impervious areas associated with residential developments disturbing less than one acre requires that “[s]tormwater runoff shall be managed” using rain cisterns or rain barrels, construction of uncovered driveways, parking areas and walkways out of permeable pavement, installation of rain gardens, and any other stormwater best management practices that meet statutory requirements.\textsuperscript{108} New Jersey’s Stormwater Management Rules require that a “major development” project—one that disturbs at least one acre of land or creates at least 0.25 acres of new or additional impervious surface—either demonstrate that the site and its stormwater management measures maintain 100 percent of the average annual preconstruction groundwater recharge volume for the site or show that the increase of stormwater runoff volume is infiltrated.\textsuperscript{109} Even local policies can be crafted to reflect a community’s commitment to green, healthy, sustainable living.\textsuperscript{110}

Many stormwater regulations focus on peak flow rate control and flood control, and not on retention of stormwater and recharge of groundwater resources or other green infrastructure benefits. Another policy solution would be to focus on revising such regulations to promote green infrastructure by requiring the minimization of impervious surfaces, the protection of existing vegetation, maintaining pre-development runoff volume and infiltration rates, and achieving water quality goals. A good example of such a program is the one adopted by New Jersey. The state’s stormwater program requires 300-foot riparian buff-

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SWP3 shall describe the conservation development strategies, BMPs and other practices deemed necessary by the permittee to maintain or improve pre-development rates of groundwater recharge. Protection of open space (infiltration areas) shall be by binding conservation easements that identify a third party management agency, such as a homeowners association/condominium association, political jurisdiction or third party land trust.
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\textsuperscript{Id.}

\textsuperscript{108} North Carolina Dept. of Env’tl. & Natural Res., General Permit No. SWG050000 (Nov. 19, 2008).


and stipulates a preference for non-structural best management practices.\textsuperscript{111}

Existing earlier, local zoning requirements and building codes can have the unintended consequence of discouraging the implementation of green infrastructure. For example, cities used to require downspouts to be connected to the storm sewer system. When these requirements remain in place, they can deter downspout disconnection programs, which have been shown to be effective and promote the use of captured water for irrigation, green roofs, or other on-site applications.\textsuperscript{112} Stormwater regulations often specify street widths and building setbacks, which can add to the amount of impervious surface cover.\textsuperscript{113} Some communities are now evaluating their ordinances to identify and remove inadvertent barriers to green infrastructure.\textsuperscript{114} Though recent laws allow rain capture, in parts of the western United States, it is illegal to catch rainwater due to prior appropriation laws.\textsuperscript{115}

Another green infrastructure barrier can be the challenge of retrofitting existing urban areas to incorporate green infrastructures.\textsuperscript{116} Today, green approaches are more readily included in building plans for new development; however, the stresses on urban city budgets and the urgency of repairs can make it difficult to change traditional approaches. For example, budget constraints and urgency may impede a transition from impervious pavement to permeable pavement when making street repairs. However, with attention and the requisite political will, retrofit barriers can be removed.


\footnote{Dunn & Stoner, supra note 56, at 35–36.}

\footnote{See, e.g., Posting of Liz Shaw to Mlive.com, http://blog.mlive.com/get-healthy-ingenesee/2009/07/flint_to_consider_ordinance_ch.html (July 7, 2009, 09:25 CST) (noting that zoning regulations in Flint, Michigan were developed at a time when green considerations were not a priority).}

\footnote{Kirk Johnson, It’s Now Legal to Catch a Raindrop in Colorado, N.Y. Times, June 29, 2009, at A1 (noting that it is illegal to catch rain in Utah and parts of Washington State; however, it is mandatory for some new buildings in Santa Fe, New Mexico).}

To facilitate urban farming, local regulations may need to be adopted or changed to clearly allow urban farming. Concerns about toxins in urban soil may need to be investigated, and commercial growing may need to be regulated differently than non-commercial activities. Furthermore, urban planners will need to play a role in furthering urban farming by considering it when scoping and charting a city’s future and by seeking to promote these opportunities in low income areas where the benefits of lower food costs can directly impact those living in poverty.

D. Raise Public and Policy Makers’ Awareness

One way to promote green infrastructure and all its ancillary benefits is to increase public awareness of its availability so that they can advocate for these types of investments in their communities. Similarly, the more policy makers are aware of green infrastructure, the more

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117 Martha Groves, Pocket Farm May Get Turned Out, L.A. TIMES, July 31, 2009, at A12 (documenting that vague zoning regulations and toxic concerns could stop a local farming operation); see also Bill Cleverley, Revised Bylaw Will Welcome Urban Farming, TIMES COLONIST (Victoria, B.C.), Oct. 4, 2008, at A6. (documenting changes to bylaws in Victoria, Canada to facilitate fruit and vegetable urban agriculture).

118 See Shaw, supra note 114 (noting that toxins may limit the viability of some urban sites for farming in Flint, Michigan).

119 See, e.g., Heather Knight, Mayor Has Food on His Mind, S.F. CHRON., July 9, 2009, at A1. (describing how San Francisco Mayor Gavin Newsom has ordered city departments to “conduct an audit of unused land—including empty lots, rooftops, windowills and median strips that could be turned into community gardens or farms that could benefit residents, either by working at them or purchasing the fresh produce”); Farm Fresh Rhode Island, Urban Agriculture in RI, http://www.farmfreshri.org/learn/urbanagriculture_providence.php (last visited Jan. 8, 2010) (showing how advocates in Providence, Rhode Island are urging the city to consider urban farming as part of its comprehensive planning efforts); Shaw, supra note 114 (discussing how Flint, Michigan is looking at its zoning ordinances to explore urban agriculture).

120 Several campaigns are already underway to raise public awareness of green infrastructure and its benefits. See, e.g., U.S. Envtl. Prot. Agency, Managing Wet Weather with Green Infrastructure, http://cfpub.epa.gov/npdes/home.cfm?program_id=298 (last visited Jan. 8, 2010) (showing how the EPA has dramatically increased the number of resources to support green infrastructure that area available on its website); Nat’l Assoc. of Reg’l Councils, Green Regions, http://narc.org/uploads/greenregions/GreenRegions.htm (last visited Jan. 8, 2010) (describing Green Regions as “a public awareness campaign and website created to support regional councils ... and metropolitan planning organizations ... in their role of environmental stewards and managers” and assisting regional leaders “in applying innovative and cost-effective solutions and in harnessing the benefits of the green economy”). The Green Infrastructure Foundation “was founded in 2007 to respond to the need for greater awareness and resources to promote green infrastructure in local communities.” Green Infrastructure Found., http://www.greeninfrastructurefoundation.org (last visited Jan. 8, 2010).
they can promote its adoption within their jurisdictions. Leadership at the local, state, and national level is critical to furthering the investigation and implementation of green infrastructure.

Notably, while the green infrastructure movement has accelerated in many cities, and community outreach programs and political speeches are promoting the value of green infrastructure, as this Article has demonstrated, green infrastructure is still predominantly driven by a water compliance agenda. Due to their aesthetic appeal, green infrastructure projects may be not be targeted to lower income areas of a city where they could be considered less visible. A meaningful opportunity exists to enhance the conversation about the value of green infrastructure. Not only does it help to achieve water quality goals, but it also can directly improve the quality of life for the urban poor. When the myriad of benefits yielded by green infrastructure are explained, the reasons for its implementation in lower income areas of cities become more compelling.

**Conclusion**

Finding an effective approach to improve urban water quality has been elusive for cities across the nation. Raising the overall quality of life for the urban poor is also a daunting challenge. This Article demonstrates that cities are developing a track record of success in the green infrastructure arena. They are demonstrating that green infrastructure is an economically and environmentally viable approach for water management and natural resource protection in urban areas. What this Article argues that green infrastructure has additional and exceptional benefits which are not frequently highlighted or discussed. Not only can it achieve water quality goals, protect sewer systems, and recharge groundwater supplies, but it also can improve air quality, provide green collar jobs, become a source for affordable produce, reduce

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121 See Knight, supra note 119 (documenting the leadership of San Francisco Mayor Gavin Newsom on urban agriculture). Chicago’s Mayor Daley and Milwaukee, Wisconsin’s mayor Tom Barrett also have been vocal advocates for green infrastructure for stormwater and sewer control. See Efforts to Address Urban Stormwater Runoff: Hearing Before the Subcomm. on Water Res. & Env’t of the H. Comm. on Transp. & Infrastructure, 111th Cong. 9 (2009) (testimony of Hon. Tom Barrett, Mayor, Milwaukee, Wis.); Press Release, Mayor Richard M. Daley, Mayor Daley Unveils Water Agenda: Sets Standards for Water Management (Apr. 8, 2003) (on file with Boston College Environmental Affairs Law Review) (“By expanding our use of green infrastructure, Chicago can demonstrate the common-sense approach of managing storm water before it reaches the sewer system.”).

122 See supra Part III.A.

123 See supra Part I.
crime, promote community interconnectedness, and reduce energy costs for the urban poor. With these considerations in mind, it is essential for our legal systems to remove barriers to green infrastructure implementation, for regulators and enforcers to promote its acceptance, and for public advocates and policy makers to embrace its incorporation into urban design and planning, particularly in distressed communities. Given the growing stresses on urban centers and the urban poor, taking proactive steps to make city life healthier and more sustainable can only yield further benefits in the future.
THE FAILURE OF INTERNATIONAL GLOBAL WARMING REGULATION TO PROMOTE NEEDED RENEWABLE ENERGY

STEVEN FERREY*

Abstract: Renewable power generation technologies exist today and comprise the foundation for the bridge to a sustainable international power generation infrastructure. However, the Kyoto Protocol (Kyoto) has failed to utilize these technologies. Kyoto also missed the forest for the trees: it disallowed forest preservation to count in its carbon currency. It also missed including the correct chemical base in developing countries. This Article examines what led international law not to focus on development in renewable power alternatives where they are most required in the international order: developing nations. It analyzes the critical role of international multilateral organizations to create the new architecture of carbon control before it is too late. This Article concludes by highlighting a little-noticed template for renewable power and carbon mitigation success that has been demonstrated in several developing countries. It highlights the changes to Kyoto and international law that are necessary to construct a bridge to the development of sustainable power generation infrastructure.

Some say the world will end in fire,
Some say in ice . . .
And [either] would suffice.

—Robert Frost

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INTRODUCTION: Why the Renewable Energy Connection Matters in the Vernacular of Developing Nations

The world can perish with either fire or ice. The world is growing warmer from our universal use of fire to manipulate the universe. In turn, this use of fire is causing the loss of massive quantities of the Earth’s cryosphere, including polar ice, which contains over 80% of the fresh water in the world.

To slow global warming, there must be a fundamental shift of the technological base for power-generation from fossil fuels to renewable energy resources. The Kyoto Protocol (Kyoto), the multinational agreement on greenhouse gas (GHG) mitigation, is fundamentally unsuited to shift the balance of GHG emissions in the energy sector; therefore it is inadequate to reduce global GHG emissions to sustainable levels. The urgency is increasingly apparent: the Fourth Report of the Intergovernmental Panel on Climate Change (IPCC), published in 2007, concluded that the evidence of human-made global warming is “unequivocal.” However, the nations that will soon make up the majority of the world’s carbon-emitting countries are not covered parties to, or otherwise bound by, Kyoto.

There are at least two major international law problems. The first problem is that Kyoto is not shifting the world’s energy base to renewable power in lieu of fossil-fuel-fired power resources. This is true in both developed countries that are subject to regulation under Kyoto and in the many developing countries that are not covered by Kyoto.

The second problem is that the Kyoto Protocol contains a legal void and does not speak the carbon language of the 80% of the world’s nations, which may be characterized as developing countries. Kyoto does not contain provisions that provide carbon credits or offsets for preserving existing forests that absorb carbon in these developing countries. Developing countries harbor many of the largest forest tracts in the world that, if preserved, could absorb and convert CO₂ to various sugars and oxygen during photosynthesis, thereby reducing at-

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3 Id. at 30; Working Group I of the IPCC, Climate Change 2007: The Physical Science Basis 341 (Susan Solomon et al., eds. 2007) [hereinafter The Physical Science Basis].
4 Physical Science Basis, supra note 3, at 341.
6 See infra Part III.A.
mospheric CO₂ concentrations. Kyoto also misses other opportunities to mitigate the emission of black carbon. Even though black carbon is one of the most significant GHG chemicals emitted in developing nations, efforts to mitigate its emission are not eligible for any carbon credit under Kyoto. These oversights put blinders on international legal mechanisms and bias Kyoto’s short- and long-term effectiveness.

This Article examines these legal and policy shortcomings of international law on global warming. Part I sets forth the chemistry and basic international policy regarding global warming, while the international regulatory structure of the Kyoto Protocol is analyzed in Part II. Part III analyzes the regulatory omission of the critical role of forest preservation and the definitional omissions of international carbon policy for developing countries. Part IV examines the evolving role of international multinational organizations. Part V profiles the successful implementation of renewable-energy-generation infrastructure in developing countries that provides a critically important model that can be implemented in other developing countries. Developing countries in Asia have demonstrated experience on how to motivate the successful installation of a renewable energy base in lieu of a power-generation infrastructure that relies on more fossil fuel exploitation. The Kyoto Protocol has ignored these successful models; therefore, it requires future reforms.

I. TIME AND CARBON VALUE: THE UNIVERSAL REALITY

A. PROVERBIAL REALITY

The proverb states that time is money. Nowhere is it truer than with international efforts to abate carbon concentrations in the atmosphere. More than a decade has transpired in the effort to control carbon emissions. In 1990, the world emitted about 40 billion tons of carbon dioxide equivalence (CO₂e), while today it has increased by about

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8 See infra Part III.B.
9 See infra Parts I–II.
10 See infra Part III.
11 See infra Part IV.
12 See infra Part V.
13 See infra Part V.
40% to 55 billion tons annually. There is no sign that world carbon emissions are decreasing. Global carbon concentrations in the atmosphere are now accelerating at nearly four times the rate that they did during the 1990s.

The U.S. Department of Energy forecasts that a worldwide carbon increase of 54% over 1990 levels could occur by 2015. The Energy Information Administration (EIA) forecasts a 50% world-wide increase of carbon emissions between 2005 and 2030 as the most likely reference scenario. The Intergovernmental Panel on Climate Change (IPCC) forecasts a 25–90% increase over the same period. The International Energy Agency (IEA) concluded that absent a major policy change, CO₂ emissions could increase 130% by 2050. Most of the predicted increases will occur in developing countries, whose emissions are projected to grow five times as fast as those from industrialized countries over the next twenty-five years. By 2030, developing countries are forecasted to exceed CO₂ emissions from developed countries by 72%.

A major driver of the forecasted growth in CO₂ emissions is the expansion of the electric power generation infrastructure in developing countries. From any perspective, there is a fast growing problem, and the degree to which developing countries plan to rely on coal resources to expand power generation lies at the center of it. Between 1970 and 2004, total global emissions of GHGs regulated by Kyoto increased by 70%. The combustion of fossil fuels accounted for 70% of GHG emissions and electric power generation accounted for 40% of these CO₂ emissions. In 2003, coal-fired electric power generation

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18 Working Group III of the IPCC, Climate Change 2007: Mitigation of Climate Change 97 (Bert Metz et al., eds. 2007) [hereinafter Mitigation of Climate Change].
20 Energy Outlook 2008, supra note 17, at 89.
21 Id.
22 Mitigation of Climate Change, supra note 18, at 97 n.1.
accounted for about 70% of the CO₂ emissions from that sector. Global energy-related emissions are expected to increase by 57% from 2005 to 2030.

According to a 2007 report from the United Nations Environment Programme, forecasters do not see the international mix of power generation sources changing appreciably over the next several decades. Without a substantial change to renewable or other low-carbon technologies, the percentage of fossil fuels used in power generation—and thus the potential sources of additional GHGs emanating from the power sector—are forecast to remain relatively constant. The IEA forecasts that by 2030, world demand for energy will grow by 60% and fossil fuel sources will supply 85% of the increased demand and 82% of the total energy demand; non-carbon renewable energy sources will supply only 6% of the global energy demand, with the largest increase in renewable power generation taking place in Europe because of governmental investments.

A recent assessment concludes that in order to avoid catastrophic effects of global warming, we need to limit the increase in Earth "surface temperature to no more than 2°C–2.5°C" above the 15°C Earth temperature present during the decades preceding the American Revolution. This will require a sharp reduction of GHG emissions “by 2050 and to near zero by 2100.” This will only be possible if we can demonstrate that a modern society can function without relying on CO₂-emitting technologies.

Moreover, since the pace of reform has been slow, the atmospheric concentrations of GHGs may already be too high and it may already be too late for abatement actions to mitigate the effects of global warming.

24 Id. at 4.
26 The Physical Science Basis, supra note 3, at 17.
28 Id. at 225.
30 Id.
31 See id.
Climatologist and NASA scientist, James Hansen, notes that by merely waiting eight years until 2018 to stop the “growth of greenhouse gas emissions,” we would have nearly no chance of avoiding the catastrophic effects of warming.\(^{32}\) Hansen forecasts global warming to exceed the tipping point once the atmosphere concentration of GHGs exceeds 400–425 parts per million (ppm).\(^{33}\) According to Hansen, there is no ice left on the planet when GHG concentrations reach 450 ppm.\(^{34}\) Since the beginning of the Industrial Revolution, CO\(_2\) has increased about a third to 382 ppm.\(^{35}\) A top official with the IPCC has indicated that developed nations will need to slash CO\(_2\) emissions by 80–95% by 2050 to hold GHGs to less than 450 ppm in the atmosphere.\(^{36}\) Dr. John Holdren—advisor to President Barack Obama for Science and Technology, Director of the White House Office of Science and Technology Policy, and Co-Chair of the President’s Council of Advisors on Science and Technology—calculates that if U.S. greenhouse emissions even somehow plateau as early as 2015, we will have reduced our chances to avoid climate catastrophes by only 50%.\(^{37}\) Time is of the essence; time is money. The world is seizing neither.

B. Addressing Fossil Fuel Emissions

The scientific consensus is that there is a global warming problem.\(^{38}\) Carbon dioxide is the best known GHG.\(^{39}\) It is the main byprod-

\(^{32}\) See James Hansen et al., Target Atmospheric CO\(_2\): Where Should Humanity Aim? 2 Open Atmospheric Sci. J. 217, 229 (2008) [hereinafter Target CO\(_2\)].


\(^{34}\) See Target CO\(_2\), supra note 32, at 217.

If humanity wishes to preserve a planet similar to that on which civilization developed and to which life on earth adapted, paleoclimate evidence and ongoing climate change suggest that CO\(_2\) will need to be reduced from its current 385 ppm to at most 350 ppm. . . . If the present overshoot of this target CO\(_2\) is not brief, there is a possibility of seeding irreversible catastrophic effects.

\(^{35}\) See Synthesis Report, supra note 2, at 37–38.


\(^{38}\) Synthesis Report, supra note 2, at 30.

\(^{39}\) Id. at 36.
uct of fossil fuel combustion and results from any energy production that burns oil, coal, natural gas, or other solid waste fuels.\textsuperscript{40} Eighty-one percent of anthropogenic CO$_2$ emissions are from combustion of fossil fuels, and 83\% of GHG emissions in the United States are attributable to CO$_2$.\textsuperscript{41} More than one-third of CO$_2$ emissions are attributable to the electric power sector.\textsuperscript{42} Global CO$_2$ emissions are rising at the rate of approximately 10\% per year.\textsuperscript{43}

Prior to the Industrial Revolution, average Earth temperature had been naturally maintained at 59°F.\textsuperscript{44} Since the Industrial Revolution, carbon emissions resulting from combusting fossil fuels to provide mechanical and electrical energy have poured into the atmosphere.\textsuperscript{45} Current atmospheric CO$_2$ levels are approximately 33\% higher than in pre-industrial times.\textsuperscript{46} Temperature changes move in direct relation to atmospheric GHG concentrations.\textsuperscript{47} Within a century, if all nations of the world do not limit GHG emissions, average global temperatures will climb anywhere from 1.4°C–5.8°C.\textsuperscript{48} Consider the context: “In the last 10,000 years, the Earth’s temperature hasn’t varied by more than 1.8°F.”\textsuperscript{49} Global mean surface temperature rose 1.33°F over the last decade, and the rate of warming over the past fifty years has almost doubled.\textsuperscript{50}

More than just numbers, the changes associated with these forecasts about global warming have discernible impacts. For instance, the

\textsuperscript{40} Id. at 30, 37.
\textsuperscript{42} See id. at 22 tbl.5.
\textsuperscript{46} Reitz, supra note 16, at 10,254 (“CO$_2$ levels have increased from 270–280 ppm in pre-industrial times to more than 360 ppm in 1999, and continue to mount. Nitrous oxide levels increased from 270 ppm to 310 ppm and methane concentrations have increased from 770 ppb to 1700 ppb over the same period.”).
\textsuperscript{47} Synthesis Report, supra note 2, at 5, 7 fig.5.
\textsuperscript{48} Id. at 8 tbl.SPM.1. The IPCC 4th Assessment Report, talks of temperature increases ranging from 2.4°C–6.4°C. This would yield a 7–23 inch rise in sea levels during the twenty-first century. Id.
\textsuperscript{50} The Physical Science Basis, supra note 3, at 237.
extreme 5.8°C (approximately 10°F) increase in average global temperature would not only lead to the starvation of hundreds of millions of people, but is forecasted to result in the mass extinction of half of the species on Earth.\(^5^1\) Global warming will reduce food production and crop yields in lower latitudes\(^5^2\) and promote the rapid spread of infectious diseases and cardiovascular diseases,\(^5^3\) while spurring competition for dwindling water resources.\(^5^4\)

Long-term projections forecast no abatement in the warming trend associated with GHG emissions. Energy use and the construction of fossil-fuel-fired power generation facilities are increasing as populations grow and economic development continues, especially in developing nations.\(^5^5\) Unabated, this increase in power demand in developing nations will tip the global environmental thermostat and render irreversible the risks and consequences associated with global warming, regardless of the measures that the United States and other developed nations take to reign in their carbon emissions.\(^5^6\) If unaddressed, the annual increase in GHG emissions in India, China, Brazil, Indonesia, or any one of several dozen fast-growing nations, will swamp all of the collective GHG reductions of the developed nations complying with Kyoto’s modest requirements.\(^5^7\) In particular, most of the expansion in

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\(^5^2\) *See Working Group II of the IPCC, Climate Change 2007: Impacts, Adaptation and Vulnerability* 296–97 (Martin Parry et al., eds. 2007).

\(^5^3\) Id. at 407.

\(^5^4\) Id. at 191.


\(^5^7\) Kyoto will not meet its target of achieving an average of 7% below 1990 GHG emission levels by 2012. It will not even be close. Between 1990 and 2004, the forty-one Annex I developed nations, excluding the countries with “economies in transition” (the failed former Soviet economies), increased GHG annual emissions by 12.1%. United Nations Framework Convention on Climate Change [UNFCCC], *National Greenhouse Gas Inventory Data for Period 1990–2004 and Status of Reporting*, 8 fig.4, U.N. Doc. FCCC/SBI/2006/26 (Oct. 19, 2006). These developed countries were responsible for 18.6 billion tons of GHGs emitted annually. Id. at 7 fig.2. One hundred twenty-two developing nations reported 11.7 billion tons of GHG emissions in 1994. UNFCCC, *Sixth Compilation and Synthesis of National Communications from Parties Not Included in Annex I to the Convention*, U.N. Doc. FCCC/SBI/2005/18 (Oct. 25, 2005). Therefore, approximately 40% of GHGs are from developing countries. This may actually understate the percentage because only 122 of about 160 developing nations are included in this U.N. report and database, and there may be data gaps and underreporting in some of the 122 countries that do report. Assuming that the Kyoto targets are achieved by 2020, a world reduction in carbon is only achieved if the
energy and power generation will occur in Asia during the next decades.\textsuperscript{58}

Developed countries cannot solve the global warming problem alone. Even if all thirty-five developed Kyoto Annex I countries\textsuperscript{59} could achieve a reduction of 80\% of their GHG emissions by 2050, the reduction would be insufficient to achieve Kyoto’s goals without vigorous participation by developing countries.\textsuperscript{60} Therefore, it is essential that international law is amended to provide a mechanism to significantly reduce GHG emissions in developing countries, particularly those emissions that are associated with electric power generation.\textsuperscript{61} Major developing countries will make their investments in energy infrastructure over the next decade; that provides a particularly tight window in which to make the best choices to achieve Kyoto’s goals.\textsuperscript{62} After all, energy choices and climate security are intertwined and must be addressed effectively at the same time.\textsuperscript{63}
II. THE FAILURE OF THE KYOTO PROTOCOL LEGAL FRAMEWORK TO FUNCTION IN THE INTERNATIONAL CONTEXT

A. The Legal Choice of Global Chemicals

Seven commonly recognized compounds augment the process of climate change, and thus are classified as GHGs. Four of these compounds are natural: (1) water vapor, which is not regulated; (2) CO₂, released during combustion; (3) nitrous oxide (N₂O), which mainly comes from animals; and (4) methane (CH₄).³⁴ Three other compounds are synthesized by humans.³⁵ One group consists of perfluorocarbons (PFCs), which are used in aluminum production, semi-conductors, and manufacturing.³⁶ Another is hydrofluorocarbons (HFCs), which are associated with refrigerants and fire extinguisher products.³⁷ The final compound is sulfur hexafluoride (SF₆),³⁸ the most potent GHG,³⁹ amounting to 22,000 times the warming effect, molecule-for-molecule, of CO₂ over a 100-year period.⁴⁰

The history of fluorocarbons under international environmental controls is itself a fascinating transposition in international means and ends. In 1987, the Montreal Protocol sought to phase out chlorofluorocarbons (CFCs), such as Freon, in developed nations by 1996 and in developing nations by 2010 because they degraded the stratospheric ozone layer.⁴¹ Hydrochlorofluorocarbons (HCFCs), which under the Montreal Protocol are to be phased out in developed nations by 2030 and in developing nations between 2016 and 2040,⁴² are on a voluntary expedited phase out in the United States. Under section 606 of the Clean Air Act, HCFCs are to be phased out by 2010.⁴³

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³⁶ Id. at 68–69.
³⁷ Id. at 64.
³⁸ Id. at 69.
⁴² Id. art. 2.F.
Given these phase outs, the refrigeration industry turned to hydrofluorocarbons (HFCs) as a substitute. HCFCs are 90% less damaging to the stratospheric ozone layer than CFCs.\textsuperscript{74} This transition to HCFCs addresses the stratospheric ozone problem under the Montreal Protocol; however HCFCs and HFCs have global warming potentials ranging from 90 to 11,700 times that of CO$_2$, depending on the specific HCFC or HFC compound.\textsuperscript{75} The environmental solution of substituting refrigerants to preserve the stratospheric ozone layer—seemingly a victory for international environmental policy makers—may actually exacerbate global warming.\textsuperscript{76}

Kyoto does not regulate all GHGs, but instead regulates six families of global warming chemicals.\textsuperscript{77} The combustion of fossil fuels results in 64% of the total atmospheric CO$_2$ introduced into the atmosphere since 1850.\textsuperscript{78} The regulated GHGs in Table 1 are displayed in descending order of their impacts on the environment, which is a function of their quantity released, their heat radiation properties, and their residence time in the atmosphere.

<table>
<thead>
<tr>
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<tr>
<td>Carbon Dioxide (CO$_2$)</td>
<td>1</td>
<td>100</td>
<td>85</td>
</tr>
<tr>
<td>Methane (CH$_4$)</td>
<td>21</td>
<td>12</td>
<td>11</td>
</tr>
<tr>
<td>Nitrous Oxides (NO$_x$)</td>
<td>310</td>
<td>120</td>
<td>2</td>
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<tr>
<td>Hydrochlorofluorocarbons (HFCs)</td>
<td>140-11,700</td>
<td>Varies</td>
<td>&lt; 1</td>
</tr>
<tr>
<td>Chlorofluorocarbons (CFCs)</td>
<td>6,500</td>
<td>Varies</td>
<td>&lt; 1</td>
</tr>
<tr>
<td>Hexafluoride (SF$_6$)</td>
<td>23,900</td>
<td>Varies</td>
<td>&lt; 1</td>
</tr>
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\textsuperscript{74} Steven Ferrey, The Law of Independent Power § 6.7.1 (2009).
\textsuperscript{75} The Physical Science Basis, supra note 3, at 212–13 tbl.2.14.
\textsuperscript{76} See Sindya N. Bhanoo, Ozone Hole Is Mending. Now for the ‘But,’ N.Y. Times, Jan. 26, 2010, at A7 (noting that some studies report that global warming may accelerate as the ozone hole mends due to changes in winds and cloud formation in the Antarctic).
The molecule-by-molecule global warming impact of many of the secondary and less prevalent GHGs is significantly greater than CO₂. However, because these secondary GHGs are released in smaller quantities and/or have shorter residence times in the atmosphere before they dissipate, CO₂ remains the dominant GHG and therefore receives the greatest international policy focus. Reducing the most potent, less prevalent chemicals produces greater value by creating additional offsets or credits. Therefore, there is a choice of international law mitigation strategy that can look beyond regulating the emission of CO₂.

The common assumption has been that control of carbon will result in the implementation of renewable energy technologies as the new world energy base. Some form of renewable, power-generating resource is available to every party governed by the Kyoto Protocol (Kyoto). For instance, the amount of solar radiation reflecting off of the Earth is about 1000 times the Earth’s commercial energy use. This means that converting less than 1% of the appropriate land area of the Earth to utilize solar energy could satisfy much of the Earth’s electricity requirements when solar radiation is available. Storing that energy efficiently is another matter.

However, this is not what the Kyoto Protocol is accomplishing. Jim Hansen, widely regarded as the leading American climate scientist, gives the world less than a decade to dramatically reverse the growth and magnitude of global GHG emissions. To do this, there must be a massive shift in the power generating base from CO₂-emitting fossil fuels to renewable power; this transition simply is not occurring under the Kyoto regime.

80 See id. at ES-3 ESTable.1.
82 See infra Part III.B.
84 Jeffrey Sachs, U.S. Must Invest in Reinventing Energy, Korea Herald (Seoul), Apr. 24, 2008 (LEXIS).
86 See generally Ferrey, supra note 74, § 2:2.
87 See infra Parts III–IV.
B. The Relevant Legal Pieces of the Kyoto Protocol

The Framework Convention on Climate Change treaty was agreed upon at the Rio de Janeiro United Nations (U.N.) Conference on Environment and Development in 1992 and the Kyoto convention in 1997.\textsuperscript{89} The Rio Declaration articulated the principle of “common but differentiated responsibility” and created the U.N. Framework Convention on Climate Change (UNFCCC) to administer a carbon mitigation scheme.\textsuperscript{90} One hundred seventy eight countries signed the Rio Declaration.\textsuperscript{91} By February 2005, 55% of Annex I signatories (developed nations) adopted the Kyoto Protocol, triggering the minimum ratification provision and allowing Kyoto to go into effect.\textsuperscript{92} More than 180 countries attended the Bali Conference in 2007,\textsuperscript{93} and as of 2007, 175 of these nations had ratified Kyoto.\textsuperscript{94} The United States has not ratified Kyoto, and Australia did not ratify it until December 2007.\textsuperscript{95}

Developing nations successfully resisted efforts to include them in binding international obligations and opposed encouraging their voluntary commitments to GHG reduction.\textsuperscript{96} The rationale behind this decision is that Kyoto reflects “common but differentiated” responsibilities between developed and developing countries.\textsuperscript{97} Under Kyoto, there is no responsibility assigned to developing countries. China, which is


\textsuperscript{90} Id. princ.7.


\textsuperscript{97} United Nations Conference on Climate Change: Framework Convention on Climate Change, art. 4, May 9, 1992, S. TREATY DOC. NO. 102-38 (1992), 31 I.L.M. 849 (“All Parties, taking into account their common but differentiated responsibilities . . . .”). The concept was originally part of the Montreal Protocol. See Montreal Protocol, \textit{supra} note 71, art. 5.
considered a developing country under Kyoto even though it is the largest CO₂ emitter in the world, is not an Annex I country.⁹⁸ India is not an Annex I country either.⁹⁹ The Copenhagen Conference in December 2009 ended in no consensus on this issue.¹⁰⁰

Kyoto requires the thirty-five Annex I nations to reduce CO₂ emissions by an average of 5% below 1990 baseline levels by 2012.¹⁰¹ The other GHGs must also be reduced to 5% below either their 1990 or 1995 baseline levels between 2008 and 2012.¹⁰² Kyoto seeks to achieve these reductions through a cap-and-trade regulatory system. Each of the thirty-five developed, Annex I nations is allocated a national emissions cap, which applies to certain large industrial emitters of carbon within these nations. In 1997, Kyoto assigned to each Annex I country a maximum quantity of GHG emissions for the period 2008 to 2012.¹⁰³ At the end of each compliance period, each emitter must have acquired—through allocation from their governments or through purchase or trade of additional allocation credits—enough credits to cover its carbon emissions during that period. In essence, each emitter must cover its emissions with regulatory allowances or newly created offset credits to emit carbon.

Annex I countries must set up national registries to issue their assigned amount units (AAUs), which correspond to their legally binding cap under Kyoto.¹⁰⁴ Registry removal units (RMUs), which reflect removal of GHGs due to forestry and land-use practices, are tracked as

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⁹⁹ Id.

¹⁰⁰ See Eric J. Lyman & Dean Scott, Delegates Reach Agreement in Copenhagen But Look to 2010 for Resumption of Talks, 41 Env’t Rep (BNA) 40 (Jan. 1, 2010).

¹⁰¹ See Kyoto Protocol, supra note 77, art. 3, para. 1. While most countries have committed to achieve an 8% reduction below 1990 levels for CO₂, there has been a reallocation among European Union countries so that some countries are allowed to emit more than these baseline levels while others are required to reduce up to 28%, with the weighted average for the European Union overall being an 8% reduction. Power Paradox, supra note 56, at 549 n.77.

¹⁰² See Kyoto Protocol, supra note 77, art. 3, para. 1.

¹⁰³ See generally id.

well. Each AAU and RMU is tracked with a unique serial number. AAUs and RMUs are converted into emission reduction units (ERUs) to facilitate international trade, which is allowed under Kyoto. For instance, any party can purchase European Union (E.U.) credits, even if the purchaser does not require them for compliance.

Kyoto also includes the creation of offsets. The inclusion of offsets in a cap-and-trade system offers several advantages: First, they allow lower-cost reduction opportunities outside the capped countries to be pursued as lower-cost reduction options. Second, economic sectors that are covered by the carbon emissions caps can be the source for reductions. This can include emission sources not otherwise cost-effectively addressed. Third, offsets can promote technology transfer to developing countries.

The use of offsets increases the compliance options by decreasing the total costs of compliance. Industrial emitters in each country are able to trade emission credits. They may also create new credits through mechanisms that allow for the possession of additional credits. Clean Development Mechanisms (CDMs) and Joint Implementation (JI) projects are two such avenues for GHG emitters to accrue these additional credits.

CDMs allow projects that reduce GHGs in developing nations to earn CERs for each ton of CO$_2$e of GHGs reduced. Those CERs are then traded or sold to entities in Annex I countries, which increases that country’s emissions cap allocation under Kyoto. CERs—other

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106 See Kyoto Protocol, supra note 77, art. 6.

107 This includes those traders who wish to speculate in these regulatory commodities.


109 Plater et al., supra note 104, at 1283.


111 Kyoto Protocol, supra note 77, arts. 12, 17; Montreal Report 2, supra note 110, add.; Emissions Trading, supra note 110. “Credits earned after 2000 can be used to achieve compliance during the first commitment period[,] which begins in 2008. Two and a half
than those for afforestation—have a seven-year lifetime, with the possibility of either two renewals for a total of twenty-one years or a single term of ten-years.\footnote{Montreal Report 1, supra note 105, add.} CDM projects may only be pursued by Annex I countries.\footnote{Kyoto Protocol, supra note 77, art. 6.} As of the end of 2006, the World Bank reports that 61\% of CDM projects were located in China, 12\% were in India, 7\% were in other Asian countries, 10\% were in Latin America, most significantly Brazil, and 3\% were in Africa.\footnote{See Lauren Etter, In China, A Plan to Turn Rice into Carbon Credits, WALL ST. J., Oct. 9, 2007, at A-1; see also Andrew Schatz, Note, Discounting the Clean Development Mechanism, 20 GEO. INT’L ENVTL. L. REV. 703, 724 & nn.156–57 (2008) (providing additional figures on CDM allocation and distribution).}

The Kyoto Protocol process to register and verify CERs requires between eighteen to twenty-four months.\footnote{Craig A. Hart, The Clean Development Mechanism: Considerations for Investors and Policymakers, SUSTAINABLE DEV. L. & POL’Y J., Spring 2007, at 41, 46.} It is estimated that the cost of developing a new methodology for approval of CDM projects is approximately $150,000.\footnote{Id.} Methodologies often require an average of 280 days for approval.\footnote{Id.} The E.U. has announced that it may reduce CDM imports from outside the E.U. after 2012.\footnote{See Press Release, Eur. Union, Questions and Answers on the Commission’s proposal to revise the E.U. Emissions Trading System (Jan. 23, 2008), available at http://europa.eu/rapid/pressReleasesAction.do?reference=MEMO/08/35&format=H.}

A second mechanism for compliance is JI. JI allows developed nation signatories to implement projects in their or other Annex I nations that remove GHGs or create additional carbon sinks.\footnote{See Kyoto Protocol, supra note 77, art. 6.} The carbon emission reductions are then quantified in an ERU.\footnote{Plater et al., supra note 104, at 1283–84.} An ERU transfers a unit of allowed carbon emissions from a selling country’s cap to the purchasing country’s cap. Unlike a CDM CER, which creates an additional emission unit added to the cap, a JI project transfers a percent of ERUs and CERs may be carried over to the second phase of implementation after 2012.” Ferrey, supra note 83, at 638 n.266.


\footnote{Montreal Report 1, supra note 105, add.} \footnote{Kyoto Protocol, supra note 77, art. 6.} \footnote{See Lauren Etter, In China, A Plan to Turn Rice into Carbon Credits, WALL ST. J., Oct. 9, 2007, at A-1; see also Andrew Schatz, Note, Discounting the Clean Development Mechanism, 20 GEO. INT’L ENVTL. L. REV. 703, 724 & nn.156–57 (2008) (providing additional figures on CDM allocation and distribution).}
credit under the existing cap from one nation to another nation.\textsuperscript{122} Whereas the CDM process creates additional room in the envelope of permissible carbon emissions by developed nations, the JI process transfers a static quantity of existing allocated credits under the cap from one developed nation to another. “However, JI projects have less burdensome transaction costs than CDM projects” because “the former are approved and administered by the parties involved rather than the U.N. Kyoto Executive Board.”\textsuperscript{123} In addition, “they are not subject to detailed periodic monitoring.”\textsuperscript{124}

CDM CERs and JI ERUs are required to be “additional” to baseline project emissions.\textsuperscript{125} This involves establishing an individual emissions baseline as well as taking account of sector reform initiatives, barriers to expansion, and sector expansion plans.\textsuperscript{126} Early entrants in the CDM protocol established guidelines of additionality that are not as stringent as the guidelines that are now in place.\textsuperscript{127} There are at least eight different tests of additionality, none of which are widely accepted as credible.\textsuperscript{128} Offset retailers often provided little information or claimed that their offsets were additional, but the U.S. GAO found that some sellers could not explain how they defined additional and could not provide a meaningful amount of verifiable information to buyers.\textsuperscript{129} This undermined the credibility of offsets, and could compromise the integrity of a carbon reduction system going forward.\textsuperscript{130}

\begin{footnotesize}
\begin{enumerate}
\item \textsuperscript{122} See id.
\item \textsuperscript{123} Ferrey & Ferrey, supra note 94, at 664–65 & n.59.
\item \textsuperscript{125} See Kyoto Protocol, supra note 77, art. 3; Ferrey, supra note 83, at 639.
\item \textsuperscript{126} \textit{Montreal Report 1}, supra note 105, add.
\item \textsuperscript{127} See Schatz, supra note 114, at 725. \textit{See generally} Ferrey, supra note 82 (providing background on the additionality requirement).
\item \textsuperscript{128} \textit{Carbon Offsets}, supra note 108, at 26–27 & tbl.2. The eight additionality tests that the GAO describes are:
  \begin{itemize}
  \item barriers,
  \item common practice,
  \item investment or financial,
  \item legal, regulatory or institutional,
  \item performance bench mark,
  \item project in, project out,
  \item technology,
  \item timing.
  \end{itemize}
\item \textsuperscript{129} Id. at 30–31. The lack of a single standard may further erode offset credibility. Id. at 28.
\item \textsuperscript{130} Id. at 31.
\end{enumerate}
\end{footnotesize}
The requirement for CDM CERs also includes the certification by the host developing nation that the project supports its goals for sustainable development.\textsuperscript{131} Sustainable development has been defined as “development that meets the needs of the present without compromising the ability of future generations to meet their own needs.”\textsuperscript{132} Long-term renewable energy developments clearly satisfy this definition, while many of the other CDM projects that have created CERs may be more questionable.\textsuperscript{133}

Taken together, these different forms of credits and offsets form a country’s emission cap. This cap includes assigned Kyoto credit units; RMUs from forestation projects that remove CO\textsubscript{2} from the atmosphere; and JI ERUs and CDM CERs. Under the Kyoto Protocol CDM CERs, and JI ERUs can be used in future compliance to satisfy up to 2.5% of the party’s annual allowed emissions. However, CERs and ERUs obtained prior to 2008 can be fully banked for use in the 2008–2012 compliance period.\textsuperscript{134} Kyoto does not place limits on the use of excess allowances other than that tradable allowances must be supplemental to significant domestic measures to reduce GHG emissions.\textsuperscript{135}

In summary, the Kyoto Protocol collects thirty-five developed nations into a voluntary agreement to limit their carbon emissions. Each of these nations decides how to impose these limitations on its local industries. The covered carbon emitters that need additional allowances can either create or purchase them through JI or CDM projects. In both Kyoto Annex I countries and in the United States, trading platforms have arisen in private markets allowing offsets trading.\textsuperscript{136}

\footnotesize{\textsuperscript{131} Kyoto Protocol, \textit{supra} note 77, art. 12. Under the Kyoto Protocol this certification by the host nation is embodied in a Letter of Approval (LoA) from the host country’s Designated National Authority. UNFCCC, CDM-Glos-05, GLOSSARY OF CDM TERMS 7/31 (2009). After receiving the LoA and verification by an authorized third party, the CDM project is ready to be certified as creating CERs. \textit{Id.} This is done by the CDM Executive Board, or for a JI project, the JI Supervisory Committee. \textit{See id.; CDM Rulebook, What is the Letter of Approval, http://cdmrulebook.org/92 (last visited Feb. 10, 2010).}


\textsuperscript{133} \textit{See infra} Part II.D.

\textsuperscript{134} FERREY, \textit{supra} note 74, § 6:7.1; \textit{see Kyoto Protocol, \textit{supra} note 77, art. 12.

\textsuperscript{135} FERREY, \textit{supra} note 74, § 6:7.1.

C. The Actual Response to Kyoto Requirements

A cap-and-trade system is generally deemed a more cost-effective means of eliminating carbon than a specific requirement to adopt renewable technologies. The Kyoto Protocol does not require the installation of renewable technologies, but rather requires the reduction of carbon emissions, which may or may not involve the installation of renewable power generation technologies. The installation of typical renewable technologies costs more than other options to reduce carbon emissions; therefore, this higher cost for renewable offset options is not the “low hanging fruit” for someone speculating in carbon offsets. Renewable options are estimated to require an investment of $200 billion over the next two decades just to hold world carbon emissions at current levels, let alone reduce them.

Electric power is the crucial carbon-emitting sector of world economies because of its contribution to global warming and, more importantly, because of its rate of growth. Electric power production accounts for 34% of fossil fuel consumption in the United States, and accounts for 40% of the carbon released from the burning of such fuels. These emissions from stationary power production sources are increasing more quickly each year than emissions from other fossil fuel sources, including the transportation sector.

137 Mandating the adoption of renewable technologies is deemed to raise the cost of carbon reduction by as much as 400%. See Neal Cabral, The Role of Renewable Portfolio Standards in the Context of a National Carbon Cap-and-Trade Program, SUSTAINABLE DEV. L. & POL’Y J., Fall 2007, at 13, 14–15, 16. (describing Australia’s debate between the options).

138 Renewable Portfolio Requirements, as employed in about half of the United States, actually reward the installation of renewable electric generation technologies. See Steven Ferrey, Sustainable Energy, Environmental Policy, and States’ Rights: Discerning the Energy Future Through the Eye of the Dormant Commerce Clause, 12 N.Y.U. ENVTL. L.J. 507, 646-47 tbl.3 (2004). They typically require the distributing retailer of power to satisfy a retail portfolio standard, and with deregulation of power resources in many states, many utilities no longer own generation resources to satisfy these standards as the distributing retailer. See generally id.

139 Cabral, supra note 137, at 14.

140 See Schatz, supra note 114, at 719.


nergy development, energy-related CO$_2$ emissions in 2050 will be 250% higher than their current levels.\textsuperscript{144} At that rate, the battle against warming will be lost.\textsuperscript{145}

Deployment of renewable energy generation bases will be required to alter this trend. Renewable power is one of the few win-win scenarios for developing nations. Renewable energy can provide opportunities for poverty alleviation and enhances energy security by relying on domestic resources.\textsuperscript{146} Renewable power generation in developing nations can also qualify to create additional CDM allowances through offsets.\textsuperscript{147}

However, the CDM provision in the Kyoto Protocol has not generated these kinds of benefits. CDM projects to date have been limited to a small number of countries and only a few gases while making little contribution to the transition to sustainable, renewable technologies.\textsuperscript{148} A report prepared by the Öko-Institut for the World Wildlife Fund found that many Kyoto CDM programs fail to support sustainable development in host CDM countries.\textsuperscript{149} Additionally, many of the CDM projects would have occurred notwithstanding CDM credit qualification.\textsuperscript{150} The report highlighted that numerous projects in India failed to demonstrate their additionality from what would have been implemented without CDM credit qualification.\textsuperscript{151} The report charged that future multilateral agency investments will be targeted at countries with the largest emissions, rather than those most needing a transition to renewable energy resources.\textsuperscript{152} This focus will result in the production of a large quantity of cheap carbon credits that allow businesses and developed countries to avoid a fast transition to renewable resources and/or to keep discharging copious quantities of CO$_2$.\textsuperscript{153}

Renewable power investments are not recognized as carbon offsets because “the emission reduction doesn’t occur at the site of the renewable generator,” but rather, it occurs in backing out other carbon-

\begin{thebibliography}{99}
\bibitem{144} El-Ashry, \textit{supra} note 60, at 4.
\bibitem{145} See Hansen, \textit{supra} note 51, at 12, 16.
\bibitem{146} El-Ashry, \textit{supra} note 60, at 3.
\bibitem{147} See \textit{supra} Part. II.B.
\bibitem{148} Lamber Schneider, Öko-Institut, \textit{Is the CDM Fulfilling Its Environmental and Sustainable Development Objectives? An Evaluation of the CDM and Options for Improvement} 10, 47 (2007).
\bibitem{149} Id.
\bibitem{150} Id.
\bibitem{151} Id. at 46.
\bibitem{152} Id. at 10.
\bibitem{153} See id. at 10–11.
\end{thebibliography}
intensive generation. The intermittent nature of several renewable power sources and their integration with the power grid make each situation different. Environmental groups have questioned the additionality of renewable energy projects if their construction is not because of the value of the offset sale. The media has also questioned the credibility of CDM carbon offset projects and the efficacy of such offsets.

It is not clear whether Kyoto’s goals translate to the logical deployment of an expanded renewable energy base. There are enough available conventional fossil fuel resources in the intermediate term to make this a real choice. Resource economists believe that Asia has fossil fuel reserves that are sufficient to last for over 100 years. However, more than 90% of these fossil fuel reserves are coal, and several of these nations, most notably China and India, are already highly dependent on coal as their principal energy source. In 2003 alone, China’s oil consumption jumped by nearly one-third, domestic coal production increased by 100 million tons, and electricity consumption rose by fifteen percent. India, in the latter part of 2008, sought to acquire ownership of existing coal mines in the United States and elsewhere to fuel its coal-fired power industry. Looking to spend $4 billion, India stated that “money [was] not a problem.”

The average annual growth rate in primary energy use in developing countries from 1990 to 2001 grew by 3.2% per year, compared to industrialized countries where growth over the same period was 1.5% annually. U.S. Department of Energy (DOE) predicts a 2.3% per year increase in demand by developing countries over the next twenty

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155 See SCHNEIDER, supra note 148, at 19, 40–41.
160 See FERREY & CABRAAL, supra note 158, at 21–24.
163 Id.
164 WORLD ENERGY COUNCIL, supra note 57, at 31.
years. \textsuperscript{165} DOE also forecasts that energy demand in developing Asia will double over the next twenty-five years. \textsuperscript{166} The International Energy Agency (IEA), with its headquarters in Paris, forecasts that over half of all future energy demand will originate in China and India. \textsuperscript{167}

“China and India harbor around one-quarter of the world’s coal reserves, and they are deploying them rapidly to fire electric power plants.” \textsuperscript{168} China is currently installing 1000 megawatts (MW) of coal power generation each week, \textsuperscript{169} and predictions are that by the year 2030, coal-fired power in India and China will add 3000 million extra tons of CO\textsubscript{2} to the atmosphere every year. \textsuperscript{170} Therefore, the additional CO\textsubscript{2} emissions from China and India’s electric power sectors will total approximately 34\% of all world CO\textsubscript{2} emissions from all sources in 2030. \textsuperscript{171}

Urbanization and population growth in India have driven growth in India’s energy consumption during the last twenty years. \textsuperscript{172} By 2025, one-quarter of the world’s population will be living in Asian cities. \textsuperscript{173} Some projections estimate that by 2030, China’s GHG emissions will more than triple, \textsuperscript{174} and Asia alone will emit 60\% of the world’s carbon emissions. \textsuperscript{175} “China currently meets 70\% of its electricity demand through coal plants, the most prolific emitters among fossil fuel plants in terms of both CO\textsubscript{2} and particulate matter.” \textsuperscript{176} India also relies on coal, generating 57\% of its electricity in coal-fired plants, \textsuperscript{177} and it has ambitions to add 90,000 MW in new capacity by 2012. \textsuperscript{178} In July 2009,
just before the G8 climate talks in L’Aquila, Italy, China and India renewed their refusals to commit to any mandatory GHG emission cuts.\textsuperscript{179} Furthermore, chaos, rather than consensus, ended the Copenhagen Conference, held in December of 2009.\textsuperscript{180}

Before recently surpassing the United States for the highest gross carbon emissions, China’s total installed electric generation capacity grew from 65 gigawatts (GW) in 1980 to 353 GW in 2002, at the time making it the second largest carbon emitter in the world after the United States.\textsuperscript{181} China’s electricity demand between 1996 and 2000 grew at an average rate of 6.3\% annually, and it is expected to almost match this pace into the future.\textsuperscript{182} In order to avoid shortages and satisfy demand, China will have to increase electric capacity by approximately 40 GW annually.\textsuperscript{183} At the December 2009 Copenhagen Conference, China stated only that it would reduce carbon intensity for production, while ambitiously increasing total carbon output.\textsuperscript{184}

It is essential that renewable energy projects worldwide—especially those located in fast-growing and industrializing Asian countries—re-


\textsuperscript{182} Yeah & Rajaraman, \textit{supra} note 181, at 61. Despite this growth in demand, China’s per capita installed generation of 0.25 kilowatt with per capita annual consumption of 1078 kilowatt-hour is fairly meager by global standards. \textit{Id.} These figures are “less than half [the value] of world averages and only about 1/6 to 1/10” of the average consumption in developed countries. \textit{Id.}

\textsuperscript{183} \textit{Id.} at 62.


China demanded that the United States, Europe and Japan cut carbon emissions immediately and continue reductions over the next 40 years, while China—and any other “developing” country—may continue to increase emissions until such time as they reach the total 150-year “per capita aggregate” that the Western citizens—both dead and alive—have enjoyed thus far.

\textit{Id.}
ceive funding in order to prevent these nations from becoming even more reliant on a high-carbon fossil fuel-based energy generation infrastructure. At the Bonn International Conference on Renewable Energies in June 2004, China committed to adding about 6 GW of renewable energy annually until 2020.\textsuperscript{185} The IEA projected that it will require an investment of $16 trillion by 2030 to meet the world’s energy requirements, with $5 trillion of this amount allocated to electric power production, primarily in Asia and Africa.\textsuperscript{186} In the ten years since the ratification of the Kyoto Protocol, energy demand has expanded much more vigorously than the transition to renewable sources of power generation.

D. CDM Projects: Investor Interests Versus Renewable Resources Needed in Developing Nations

CDM projects dominate the action compared to JI projects under Kyoto: the volume of CDM CERs created was approximately forty times that of JI ERUs in 2006.\textsuperscript{187} There are almost one thousand CDM projects, with twice that many in the project development pipeline.\textsuperscript{188} The existing CDM projects have generated 117 million issued CERs, with an estimated 2.6 billion CERs to be generated by 2012.\textsuperscript{189}

The economic value of trading offsets for a price provides a market incentive for both host CDM countries\textsuperscript{190} and CDM investors to maximize the number of CERs created rather than invest in a needed technological transition to new power sources.\textsuperscript{191} By 2012, the CDM mechanism will have produced enough carbon offsets to equal the carbon emissions of the United Kingdom over three years.\textsuperscript{192} By 2020, the


\textsuperscript{188} Capoor & Ambrosi, \textit{supra} note 187, at 22.


\textsuperscript{190} Under the Kyoto scheme, the host country for the CDM project gets to determine whether the project satisfies its sustainable development goals. UNFCCC, Nairobi, Nov. 6-17, 2006, \textit{Report of the Conference of the Parties to the Protocol}, 3, U.N. Doc. FCCC/KP/CMP/2006/10/Add.1 (Mar. 2, 2007).

\textsuperscript{191} Voigt, \textit{supra} note 189, at 15.

value of carbon credits and offsets is forecast to increase in value from $11.8 billion currently to $278 billion.\textsuperscript{193}

Moreover, the impact of CDM projects has not been to promote appropriate renewable investments in developing countries, as much as it has served to create additional credits for Annex I countries.\textsuperscript{194} CDM projects to date have been limited to a number of countries and only a few gases, “with little contribution to sustainable development.”\textsuperscript{195} There is no mandatory environmental or sustainability assessment in Kyoto CDM projects or public input, which was rejected as an infringement on host country sovereignty.\textsuperscript{196}

Stanford Law Professor, Michael Wara, noted that “[b]y January 1, 2008, more than 1150 million tons (Mt) CO\textsubscript{2} equivalent (CO\textsubscript{2}e) had been registered for delivery via the CDM by the end of the first compliance period.”\textsuperscript{197} He noted further that a “small number of very large projects dominate the supply of CERs from registered projects. In fact, the forty-five largest projects,” which are only 5\% of the total number of CDM projects, nonetheless “represent 64\% of the total supply to the end of the [f]irst [c]ommitment [p]eriod.”\textsuperscript{198} The amount of projects in the CDM pipeline represents approximately 2.8\% of Annex B countries’ 1990 GHG emissions for each year of the first commitment period.\textsuperscript{199}

There is one indisputable premise for carbon control: the long-term success of climate warming control will involve financing a fundamental shift of power production to renewable resources, especially in developing countries. However, the Kyoto Protocol does not explicitly reflect this premise.\textsuperscript{200} CDMs treat carbon as a global commodity, ignoring its source or location and encouraging business to seek out and exploit the cheapest carbon-reduction technologies, regardless of whether or not they lead to replacement of the power-generating base with renewable alternatives.\textsuperscript{201}

\textsuperscript{193} Id. These figures are converted from €8.5 billion and €200 billion respectively to U.S. dollars at an exchange rate of $1 to €0.719248, the prevailing rate on February 3, 2010, as provided by http://www.xe.com.

\textsuperscript{194} Voigt, supra note 189, at 18.

\textsuperscript{195} El-Ashry, supra note 60, at 5.

\textsuperscript{196} Voigt, supra note 189, at 20.

\textsuperscript{197} See Lessons Learned, supra note 25, at 35 fig.4; Michael Wara, Measuring the Clean Development Mechanism’s Performance and Potential, 55 UCLA L. Rev. 1759, 1775 & fig.2 (2008).

\textsuperscript{198} Wara, supra note 197, at 1776.

\textsuperscript{199} See id.

\textsuperscript{200} Power Paradox, supra note 56, at 525.

\textsuperscript{201} See Lessons Learned, supra note 25, at 43–44.
In developing countries, CDMs encourage “cream-skimming” carbon reduction investments.\textsuperscript{202} For instance, developers of CDM projects in developing nations are trapping methane and flaring it\textsuperscript{203} without turning it into renewable electricity in the process.\textsuperscript{204} Even in the United States, methane is flared to garner offsets, even though such flaring is not additional, and the methane could create power resources rather than just being flared as a waste material.\textsuperscript{205} These easy solutions to just flare methane reduce GHGs but perpetuate the community’s need for electricity from other traditional sources. Flaring converts the methane into CO\textsubscript{2}, which is a less potent GHG. However, burning methane in an engine is the ideal application because this process can produce electricity that would offset other fossil-fuel electric production and/or serve as a local electricity need.\textsuperscript{206} Because of conversion factors to equate GHG reduction into CO\textsubscript{2}es, some critics have argued that the Kyoto mechanism is overpaying for reduction of certain non-CO\textsubscript{2} gases.\textsuperscript{207} Therefore, while the Kyoto Protocol CDM process encourages carbon reduction in developing countries, it does not always result in a substitution of renewable power for conventional fossil-fuel power.\textsuperscript{208} Renewable energy projects account for 28\% of CDM CERs. Methane capture and flaring projects—“mostly located at large


\textsuperscript{203} Flaring burns off gas for no productive purpose. See generally Rethinking Offsets, Carbon Control News, Oct. 9, 2008 (LEXIS) [hereinafter Rethinking Offsets].

\textsuperscript{204} Power Paradox, supra note 56, at 525. CDM projects are credited by capturing or destroying carbon gases, rather than maximizing efficiency. Because one receives 2100\% greater credit from destroying methane than CO\textsubscript{2}, many CDM projects capture rural or agricultural methane and flare it (converting it to CO\textsubscript{2}). But in that flaring process, it is not used to produce electricity, which is otherwise locally supplied by traditional sources. Rather than invest in the lifecycle cost-effectiveness that improves electric generation technology, CDM investors often minimize capital investments by flaring methane and ignoring essentially free-at-the-margin electric generation. See World Bank, International Trade and Climate Change: Economic, Legal, and Institutional Perspectives 91 (2008).

\textsuperscript{205} See Rethinking Offsets, supra note 203.

\textsuperscript{206} See Power Paradox, supra note 56, at 525. For example, Wisconsin Energy Corporation generates enough energy from facilities that combust methane to power nearly 18,000 homes. See Pew Ctr. on Global Climate Change, Energy Solutions, http://www.pewclimate.org/policy_center/policy_maker_s_guide/business/business_solutions.cfm (last visited Feb. 10, 2010) (detailing renewable energy solutions by power companies).


\textsuperscript{208} See Voigt, supra note 189, at 18.
landfills, coal mines, and CAFOs [concentrated animal feeding operations]”—that do not produce electricity, account for 19% of CERs.\textsuperscript{209}

The carbon offset market has misjudged regulatory risk, as well as market and host country risks, inherent in carbon offset markets. There are weak counterparts, often lower than anticipated administrative capacity, and financing risks. The risk of CDM projects is a function of the following factors:

- The level of CDM project experience in the host country where the host country’s track record contributes to reducing delivery risk;
- The success of the host country base project, since subsequent rejects rely on the achievements of that base project; and
- The degree of the design and construction risk of certain projects.\textsuperscript{210}

If carbon credits become the biggest market in the world, as expected, the quality of the credits traded becomes a crucial factor. Questions have been raised as to whether the Kyoto Executive Board and panels have the ability to correctly police the incentive to inflate CERs.\textsuperscript{211} The typical CDM project now takes about 300 days from the comment period, which starts the validation process, to registration of the project.\textsuperscript{212} The value of carbon aggregators has plunged, with the share prices of five public carbon market makers and CDM development companies plunging between 13 and 98% from mid-2007 to mid-2008.\textsuperscript{213}

The majority of CDM projects, which all must be sited in (non-Annex I) developing countries, have been projects to reduce by-product emissions of trifluoromethane (HFC-23), a refrigerant.\textsuperscript{214} An HFC-23 gas mitigation CDM project in a developing country does not shift or promote the power-generating base in either the developing host country or in the country which imports and counts the CDM CERs. While HFC-23 reduction does limit world carbon emissions, there must be a long-term fundamental shift to a renewable energy base.

To date, CERs address high global warming potential industrial gases such as HFC-23, nitrous oxide ($\text{N}_2\text{O}$), and methane ($\text{CH}_4$) emit-

\textsuperscript{209} Wara, supra note 197, at 1779.
\textsuperscript{210} Carbon Rating Agency, supra note 192, at 4.
\textsuperscript{211} Voigt, supra note 189, at 16.
\textsuperscript{212} Carbon Rating Agency, supra note 192, at 9.
\textsuperscript{213} Id. at 4 tbl.1.
\textsuperscript{214} Ball, supra note 207.
Adipic acid is the feedstock for the production of nylon-66 and releases abundant N₂O as a production byproduct. HCFC-22 has two major applications. It is one of two major refrigerants that were phased in to replace the CFCs under the Montreal Protocol to Protect Substances that Deplete the Ozone Layer. HCFC-22 is also the primary feedstock in the production of Dupont Teflon.

The relatively small refrigerant and Teflon industries represent nearly 55% of the supply of issued CERs in the CDM to date. Indeed, the industrial gas emissions that account for one-third of CDM reductions do not even occur in the developed world, not because of an absence of adipic acid or HCFC-22 manufacture, but because industries abate them voluntarily and destroy them. Producers of HCFC-22 in developing countries can earn twice the amount from CDM subsidies when compared with the sales of the primary product, thus tripling revenues and profits. “It appears quite likely that the sector is also gaming the system by modifying its behavior in order to generate extra credits that can then be sold to developed countries with compliance obligations.”

Under the CDM, a profit-maximizer goes after non-fossil-fuel gases because one can rationally earn relatively more credits given a level of investment, even though that reduction technology may be more expensive per molecule conserved. Because of the 11,700 times greater CO₂e credits earned from reducing a molecule of HFC emissions for an investment of $100 million, it generates CDM credit revenues worth $4.6 billion, an impressive return on investment. Ironically, HFC emitters earned almost twice as much from these HFC by-product reduction activities than they did from selling their refrigerant gases pro-

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215 Wara, supra note 197, at 1778–79.
216 See id.
217 Id.
218 Id. at 1779.
219 Id. at 1782. Prior to CDMs, the HCFC-22 manufactures vented the HFC-23 into the atmosphere. Id.
220 Id. at 1784.
221 Wara, supra note 197, at 1789.
duced as the salable commodity in the process. HFCs constitute less than 1% of GHGs, but they have received almost half of the investment in GHG mitigation.

When one can reduce HFCs and create CDM offsets for less than $1/ CDM credit created, compared to renewable energy projects that can cost $10/credit created, the market is responding rationally when it favors investments in the former. Minimizing the costs of producing a CER by a factor of ten or greater is economically sound within the incentives and rewards of the Kyoto scheme. Market mechanisms favor the most cost-effective private investments in CERs rather than the publicly optimal types of investments for the long-term welfare of the host country.

The problem is that HFC capture and destruction projects do nothing to shift the energy base of the world’s economies to sustainable, renewable technologies. The major necessary structural energy sector transformations to low-carbon technologies are not occurring. It is of note that CDM programs were originally a late minor add-on to the original Kyoto Protocol. However, they have become the regulatory conduit for altering the key carbon-emitting activities of world economies.

Emphasis on HFC-23 containment in the market, rather than a transition to renewable generation and sustainable development alternatives, is manifest. While these HFC reductions do limit world carbon emissions, the long-term success of global warming mitigation must involve financing a fundamental shift of power production to renewable resources, especially in developing countries.

The General Accounting Office (GAO) concluded that the “evidence indicates that the CDM has had a limited effect on sustainable development.” GAO concluded that by encouraging the lowest-cost means for a developer to reduce carbon, the CDM scheme disadvantages measures that contribute to sustainable development. It also concluded that CDM projects have not been successful in promoting

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223 Id.
224 Ball, supra note 207.
225 See id.
226 See Power Paradox, supra note 56, at 525.
227 Ball, supra note 207.
228 See id.
229 Voigt, supra note 189, at 19.
230 See id. at 18.
231 Lessons Learned, supra note 25, at 43.
232 Id. at 44.
technology transfer, and that such technology transfer was most likely to occur to assist renewable power development. GAO concluded that the emphasis on reduction of HFC-23 GHGs “do little to promote efficient energy use or contribute to long-term sustainable development objectives.” GAO determined that because of the very emphasis of CDM on low-cost GHG projects, it may not be able to encourage development of projects that promote sustainable development.

With some scientists suggesting that we have less than a decade to achieve a significant world reduction in carbon emissions before the effects of global warming become irreversible, time is of the essence. However, there is little prospect that renewable energy will emerge as the focus of near- or intermediate-term efforts. Permitting and constructing renewable energy projects require significant lead time. Furthermore, no reauthorization of the Kyoto Protocol is expected to take effect for at least another 3 years.

E. The Residual Preference for King Coal Alternatives

None of the countries with the largest coal reserves—the United States, China, India, and Indonesia—has a carbon policy to regulate the release of CO₂ from the deployment of such coal reserves. None of these four counties is regulated by the Kyoto Protocol. About 40% of carbon emissions in the United States are attributed to coal-fired electricity generation. The Sierra Club has made the closure of all coal-fired power plants in the United States its Beyond Coal Campaign. It has been predicted that Russia’s CO₂ emissions will climb dramatically by 2020 due to a 123% increase in Russia’s coal consumption. Over

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233 Id.
234 Id. at 45.
235 Id. at 46.
the next five years, Italy is expected to more than double the percentage of coal used to generate electricity.\footnote{240} Germany, England, and other major European countries also are planning new coal plants.\footnote{241}

This is contrary to the recommendation of climate scientist James Hansen: “Building new coal-fired power plants is ill conceived . . . . We need a moratorium on coal now, with phase-out of existing plants over the next two decades.”\footnote{242} However, coal remains attractive to power suppliers because of its abundance, its dispersion as an energy resource across mineral seams in many countries, and the fact that there is no coal cartel, as there is with oil producers.

However, consumption of energy is increasing exponentially as population increases and the energy intensity of (particularly developing) nations increases. China and India are building almost two new coal plants each week.\footnote{243} According to former British Prime Minister, Tony Blair, “the vast majority of new power stations in China and India will be coal-fired; not ‘may be coal-fired’, will be.”\footnote{244}

As noted above, “China and India harbor around one-quarter of the world’s coal reserves,”\footnote{245} and both nations are deploying them rapidly to fire electric power plants.\footnote{246} China’s future energy use is projected to grow faster than its GDP.\footnote{247} “Over two-thirds of its energy is produced from coal.”\footnote{248} China is currently installing over 1 GW of coal power generation each week, and predictions are that by the year 2030, coal-fired power in India and China will add 3000 million extra tons of CO$_2$ to the atmosphere every year.\footnote{249} China plans to build almost 200 additional coal plants over a few years. In 2007, China built more new

\footnote{241} Id.
\footnote{242} Id. (internal quotation marks omitted); see also James Hansen, The Need for an International Moratorium on Coal Power, Bull. of the Atomic Scientists, Jan. 21, 2008, http://www.thebulletin.org/web-edition/op-eds/the-need-international-moratorium-coal-power (discussing how the creation of additional coal plants pushes the global climate system closer to its tipping point).
\footnote{244} Blair, supra note 14, at 6.
\footnote{246} See Ferrey, supra note 168, at 19; supra text accompanying notes 168–169.
\footnote{248} Id.
\footnote{249} Purdy, supra note 43, at 23.
coal-fired power plants than Britain, the seat of the coal-fired industrial revolution, built in its entire history.\textsuperscript{250}

India, with 1.1 billion people, is the second most populous nation in the world. According to the EIA, it also contains the world’s fourth largest coal reserves.\textsuperscript{251} India maintains about 144,000 MW of generation capacity,\textsuperscript{252} compared to over 600,000 MW in China\textsuperscript{253} and approximately 1,000,000 MW in the United States.\textsuperscript{254} Furthermore, 70\% of India’s electricity comes from coal,\textsuperscript{255} and India has targeted 65,000 MW in new power generation capacity over the next ten years.\textsuperscript{256}

China currently meets 70\% of its electricity demand through coal plants, which are the most prolific emitters among fossil fuel plants in terms of both CO\textsubscript{2} and particulate matter.\textsuperscript{257} China uses its coal resources to a greater degree than the United States uses its domestic coal resources.\textsuperscript{258} If China used energy as the United States does, world energy consumption would double; satisfying China’s oil demand would require oil production equal to 500\% of Saudi Arabia’s current oil production.\textsuperscript{259} China would also have to produce 600\% more coal.\textsuperscript{260} Each year, China adds forty times more new coal capacity than new wind power.\textsuperscript{261} It is no wonder that China now contains seven of the ten most (air) polluted cities in the world.\textsuperscript{262}

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\bibitem{255} India Energy Data, \textit{supra} note 252.


\bibitem{257} China Energy Data, \textit{supra} note 253; Posting of Frederik Balfour to Eye on Asia, \textit{China Has World’s Fastest Growing Wind Power Capacity}, http://www.businessweek.com/globalbiz/blog/eyeonasia/archives/2009/04/china_has_world.html (Apr. 28, 2009); \textit{see Power Paradox}, \textit{supra} note 56, at 519.


\bibitem{259} Id. at 2.

\bibitem{260} Id.

\bibitem{261} Id. at 4.


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The challenge is substantial. “The stakes, for all life on the planet, surpass those of any previous crisis.”263 “If we stay our present course, using fossil fuels to feed a growing appetite for energy-intensive life styles, we will soon leave the climate of the Holocene, the world of prior human history.”264 Does this work in a carbon-constrained age? “The single-point nature of power plants’ emissions, the centralized nature of most power plant decisions in developing nations, and the exploding demand for electricity, make electricity generating-plants the logical choice for a frontal assault on GHG emissions.”265

III. THE FATAL DISCONNECTS: DEVELOPING NATIONS’ FORESTS AND THE CHEMICAL REALITY

We are recklessly burning and clearing our forests and driving more and more species into extinction. The very web of life on which we depend is being ripped and frayed.

—Al Gore266

A. Forest Preservation Ineligibility Under Kyoto

Kyoto does not cover developing countries,267 and in some ways even fails to speak their language.268 Developing countries harbor some of the great forests of the world: the great rain forests of South America and Indonesia are just two examples. Forests should be looked at as an opportunity to sequester carbon dioxide (CO₂) in the atmosphere, rather than the proposed controversial sequestration underground in

263 Target CO₂, supra note 32, at 229.
264 Id. at 228.
265 Power Paradox, supra note 56, at 520 & nn.74–75.
mines or in the ocean. The carbon market creates an opportunity to radically alter forest management and improve livelihoods in rural areas of developing countries. Forest preservation is most valuable in the tropics, as forests in snowy climates can retard the reflection of warmth by snow cover. Forest preservation plays a critical role in mitigating climate change. Annually in the world, about 32 million acres (13 million hectares) of forest are destroyed and not replanted.

The net concentration of CO₂ in the environment is a function not only of the output of CO₂, but the conversion of CO₂. Up to 20% of annual greenhouse gases (GHGs) are linked to deforestation. That conversion is accomplished by the plant canopy. Leading carbon scientists have submitted that the way to reduce carbon concentrations to even 90% of current levels is to adopt “forestry practices that sequester carbon” or there will be “irreversible catastrophic effects.”

To illustrate the importance of forest preservation and replanting/afforestation, the United States estimates that in 2006 it had 7054 million metric tons of carbon dioxide-equivalent (CO₂e) emissions, but that carbon sinks absorbed or converted approximately 900 million metric tons of these CO₂es, reducing the total to 6170 net million metric tons of emissions. The carbon stored in the existing forests of the contiguous forty-eight states equal about twenty years of industrial carbon emissions in the United States.

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269 See generally Sangyong Lee et al., CO₂ Hydrate Composite for Ocean Carbon Sequestration, 37 Env’t Sci. & Tech. 3701, 3701 & nn.2–9 (discussing the potential to store CO₂ emissions in the world’s oceans and other large bodies of water); U.S. Envtl. Prot. Agency, Underground Injection Control Program, http://www.epa.gov/ogwdw000/uic/index.html (last visited Feb. 3, 2010) (providing links to information of underground sequestration and the EPA’s efforts to regulate such underground injection).

270 El-Ashry, supra note 60, at 3.


274 Dean Scott & Eric Lyman, Negotiators Finalize Measure on Forests, Fund for Adapting to Global Warming Effects, 38 Env’t Rep. (BNA) 2699 (Dec. 21, 2007).

275 See Target CO₂, supra note 32, at 229.


Deforestation accounts for 18–25% of global carbon emissions. A World Bank report in 2007 found that 83% of Indonesia’s annual GHG emissions and 60% of Brazil’s GHG emissions come from the destruction of their forests. Collectively, these emissions account for almost 10% of the world’s total emissions of GHGs. Deforestation destroys forests equal to the size of Portugal each year, and the resulting change in land use accounts for 18% of global GHG emissions. Half of this destruction is from illegal logging that is not effectively policed.

Yet, the Kyoto Protocol does not recognize this reality. Under Kyoto, offset carbon credits can be obtained for planting trees but not for preserving existing forests even though these existing forests are life’s buffer against global warming. A new Australian study claims that natural forests are 60% more efficient in mitigating CO₂ than replacement forests. So perhaps preservation of forests, which is not eligible to create any credits under either Kyoto or the Regional Greenhouse Gas Initiative (RGGI), are more critical than afforestation of new areas, which are eligible. If so, there is a significant carbon

278 Andrew W. Mitchell et al., Global Canopy Programme, Forests First in the Fight Against Global Climate Change 1 (2007).
284 Id.; see also Growing Forestry Offsets, Carbon Control News, Aug. 11, 2008 (LEXIS).
285 See Perry, supra note 283; Growing Forestry Offsets, supra note 284. Some Kyoto CDM CERs related to forestry projects are deemed temporary for a period up to sixty years, subject to verification—which occurs every five years—that burning or logging will not later release carbon from the forest. UNFCCC, Montreal, Can., Nov. 28–Dec. 10, 2005, Report of the Conference of the Parties Serving as the Meeting of the Parties to the Kyoto Protocol, 61, U.N. Doc. FCCC/KP/CMP/2005/8/Add.1 (Mar. 30, 2006); Seb Walhain, Carbon Trading –
sequestration loss once original natural forest is destroyed and replaced with new afforestation acreage.

Efforts of some developing countries to include avoiding deforestation as a CDM project was tabled in 2005 meetings, and not resolved at the Bali Kyoto meetings in late 2007.286 Kyoto parties have tabled until 2012 conservation of forests. Consequently, the most cost-effective solution in developing countries is off the Kyoto table.

No credit of any kind is given to developing countries—or any countries for that matter—for preserving forest. Leading up to Kyoto, developed nations objected to such credit, arguing that it would be difficult to monitor and measure the amount actually preserved, as well as to ensure that preservation would endure over time.287 There is no effective enforcement or incentive for the protection of forest cover.288 This is something that many developing nations have in abundance—especially Brazil and Indonesia with the world’s two largest rain forests—yet are not protecting. Thankfully, some modest demonstration programs on preserving forests were finally launched in 2008.289

For forestation projects, the integrity and credibility of offsets is one of the controversial issues.290 Whether the forestation is “additional,” monitored, and verified are issues as well. Legal additionality goes to the issue of whether the project would have happened anyway without qualifying as an offset.291 In the RGGI scheme, only afforestation on land that has not been a forest for at least 10 years and is covered by a permanent conservation easement counts for creating an offset.292

Effective adaptation of forests, agriculture, and water resources will require the broad planning and regulatory capacity of a range of ministries in developing countries. Enhancements of these capabilities will require aid for international frameworks.

\footnotesize{the View from the Floor, in Climate Change: A Guide to Carbon Law and Practice, supra note 111, at 87, 96–97 tbl.2.}

286 Richards et al., supra note 272, at 13; Scott & Lyman, supra note 274, at 2699; see Dean Scott & Leora Falk, Sensenbrenner Applauds Bali Agreement; Connaughton Defends U.S. Action at Meeting, 38 Env’t Rep. (BNA) 2700 (Dec. 21, 2007).

287 Scott & Lyman, supra note 272, at 2699; see Scott & Falk, supra note 286, at 2700.

288 Scott & Lyman, supra note 272, at 2699.

289 See id.


291 Id. See generally Ferrey, supra note 83 (providing a more detailed discussion of additionality).

292 RGGI Model Rule, § XX-10.5(c) (1)(i), (2)(iii) (2008).}
B. Black Carbon: A Chemical of Concern That Is Ignored by the Kyoto Protocol

As set forth earlier, the Kyoto Protocol does not include all key warming chemicals.\textsuperscript{293} Black carbon (BC) particulate emissions have recently been identified as the second most important climate changing agent, trapping heat as an aerosol, and changing the albedo of snow and ice.\textsuperscript{294} “[E]missions of black carbon are the second strongest contribution to current global warming, after carbon dioxide emissions,” according to Dr. V. Ramanathan and Dr. G. Carmichael.\textsuperscript{295}

BC, also known as soot, is a significant but underappreciated GHG emission of concern. BC is an important warming chemical, particularly in the Arctic and the Himalayas, that has an especially pronounced effect on the loss of the west Antarctic ice sheets.\textsuperscript{296} According to Dr. James Hansen and Dr. Larissa Nazarenko “Soot deposition increases surface melt on ice masses, and the meltwater spurs multiple radiative and dynamical feedback processes that accelerate ice disintegration.”\textsuperscript{297}

If Dr. Hansen and Dr. Nazarenko’s assertion is true, the irony is that the two most important chemical emissions affecting warming are not covered by the Kyoto Protocol or other international global warming regulation mechanisms. The most significant global warming gas, water vapor,\textsuperscript{298} is not covered under any global warming regulatory schemes.\textsuperscript{299} BC is not covered in any way under the Kyoto Protocol, nor

\begin{itemize}
  \item \textsuperscript{293} See supra Part II.A (discussing the chemicals covered by Kyoto).
  \item \textsuperscript{294} James Hansen & Larissa Nazarenko, Soot Climate Forcing via Snow and Ice Albedos, 101 Proc. Nat’l Acad. Sci. 423, 423 (2004); Veerabhadran Ramanathan & Gregory R. Carmichael, Global and Regional Climate Changes Due to Black Carbon, 1 Nature Geoscience 221, 221 (2008).
  \item \textsuperscript{295} Ramanathan & Carmichael, supra note 294, at 221. Other scientists estimate that BC may be second only to CO$_2$ in its contribution to climate change. See, e.g., Tami C. Bond & Haolin Sun, Can Reducing Black Carbon Emissions Counteract Global Warming, 39 Envtl. Sci. & Tech. 5921, 5921 (2005) (“BC is the second or third largest individual warming agent, following carbon dioxide and methane.”); James Hansen, A Brighter Future, 52 Climatic Change 435, 435 (2002).
  \item \textsuperscript{296} Ramanathan & Carmichael, supra note 294, at 221.
  \item \textsuperscript{297} Hansen & Nazarenko, supra note 294, at 427–28 (“The soot effect on snow albedo may be responsible for a quarter of observed global warming.”).
  \item \textsuperscript{298} Tapio Schneider et al., Water Vapor and the Dynamics of Climate Changes, 47 Rev. of Geophysics (forthcoming 2010), available at http://www.gps.caltech.edu/~tapio/papers/revgeophys09.pdf.
  \item \textsuperscript{299} Kyoto Protocol, supra note 77, Annex A. Nitrogen trifluoride, an industrially manufactured synthetic gas that is used to make plasma screens and flat panel televisions, is yet another highly potent warming gas that is not regulated by any international carbon restriction laws even though it may trail only after sulfur hexafluoride in potency. Michael J. Prather & Juno Hsu, NF3, the Greenhouse Gas Missing from Kyoto, 35 Geophysical Res. Letters L12810, L12810 (2008).
\end{itemize}
did it appear on the 2007 Kyoto Protocol Bali agenda for future reforms.300

However, the omission of BC is of particular significance: regulation of BC, “particularly from fossil fuels, is very likely to be the fastest method of slowing global warming” in the immediate future.301 According to Dr. Mark Jacobson, Professor of Civil and Environmental Engineering at Stanford University, major cuts in soot emissions could slow the effects of climate change for ten to twenty years, giving policymakers more time to address CO₂ emissions.302 This is an extension of global warming tools that policymakers will require given the lack of progress on global warming during the decade immediately following the adoption of Kyoto.303 Dr. Jacobson states that BC from fossil fuel and biofuel soot “may contribute to about 16% of gross global warming . . . but its control in isolation could reduce 40% of net global warming” minus cooling from all negative radiative forcings (for example, sulfates).304 What makes this complex to factor into the GHG equation is that reducing aerosols that are not BC could actually increase global temperatures by up to 2.4°C.305

Of the BC emissions total, about 20% of BC is emitted from burning biofuels, 40% from fossil fuels, and 40% from open biomass burning.306 Ramanathan and Carmichael estimate that “[p]roviding alternative energy-efficient and smoke-free cookers and introducing transferring technology for reducing soot emissions from coal combustion in small industries could have major impacts on the radiative forcing due to soot.”307 Simultaneously, reducing BC emissions could save up to 3 million lives a year that otherwise would be lost to air pollution.308


302 Id. at 12–13; Ramanathan & Carmichael, supra note 294, at 226 (noting that controlling BC emissions “offers an opportunity to mitigate the effects of global warming trends in the short term”).

303 See supra Part II.


305 Ramanathan & Carmichael, supra note 294, at 226.

306 Id. at 221.

307 Id. at 226.

308 See Jacobson, supra note 300, at 16–19.
Today, unlike the policy focus on CO₂, the overwhelming majority of BC emissions is from developing countries and is expected to increase. The largest sources of ambient BC emissions are in Asia, Latin America, and Africa. China and India alone account for 25–35% of total global BC emissions, with emissions from China doubling from 2000 to 2006. The BC concentration hotspots include “the Indo-Gangetic plains in South Asia; eastern China; most of Southeast Asia including Indonesia; regions of Africa between sub-Saharan and South Africa; Mexico and Central America; and most of Brazil and Peru in South America.” As a whole, these regions of the world are home to 3 billion people, representing half the world’s population.

In contrast to the developing world, “developed nations have reduced their black carbon emissions from fossil fuel sources by a factor of 5 or more since the 1950s.” Attention on the power generation sector in Asia would be one of the most cost-effective ways to reduce BC emissions. But here, tools addressing BC emissions are not contained in Kyoto. Developing countries have not made this transition, and will not do so quickly without mechanisms in the international legal protocols.

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310 See Jacobson Testimony, supra note 301, at 19–20 & tbl.6.


312 Ramanathan & Carmichael, supra note 294, at 226.

313 Id.

314 Id. at 221.

315 Id.


317 See Marcel De Armas & Maria Vanko, Mitigating Black Carbon as a Mechanism to Protect the Arctic and Prevent Abrupt Climate Change, SUSTAINABLE DEV. L. & POL’Y, Spring 2008, at 41, 42.

318 Id.
IV. THE ESSENTIAL NEW INTERNATIONAL ROLE

A. The Point in Time

Since greenhouse gases (GHGs) emitted anywhere migrate and result in the warming of the entire Earth, their impacts are not limited to local environments but are global in scope. This is contrary to many conventional pollutants that are regulated because their emissions have a significant impact on the ambient air quality of the immediately surrounding environment. The critical role for developing nations as they quickly increase electrification for their populations is their potential to develop renewable resources and to shift their resource bases as they rapidly expand their electricity generation capacity and electrify over the next decade and beyond.

Unlike fossil fuels, renewable resources are widely disseminated across the globe. While many nations—particularly developing nations—do not have significant fossil fuel reserves do not have significant reserves of oil, coal, or natural gas, every nation has significant renewable energy in some form: hydropower, sunlight, wind, agricultural biomass waste, wood, ocean wave power, etc. But unless Kyoto, or similar international mechanisms, promotes these technologies, developing nations will not deploy these options, which are often more expensive to implement. They will instead opt to burn coal and other fossil fuels.

This technology choice is critical in developing nations. The world stands at a crossroad in time because in the next decade there will be a massive investment in electrification of developing nations. During the next decade, developing nations will choose whether to deploy

319 See Endangerment and Cause or Contribute Findings for Greenhouse Gases Under Section 202(a) of the Clean Air Act, 74 Fed. Reg. 66,496, 66,537 n.36 (Dec. 15, 2009) (to be codified at 7 C.F.R. ch. 1) (defining well mixed gases as “gases [that] are sufficiently long-lived in the atmosphere such that, once emitted, concentrations of each gas become well mixed throughout the entire global atmosphere”).


321 See generally STEVEN FERREY, ENVIRONMENTAL LAW: EXAMPLES AND EXPLANATIONS (5th ed. 2010) (discussing environmental law in the United States that targets local air pollution by imposing state and local ambient air quality standards).


323 See FERREY, supra note 74, § 2:11.

324 See supra Part II.D.

325 See supra Part I.B.
conventional fossil-fuel fired or sustainable renewable options to generate electricity. Once installed, those facilities will remain in place and contribute—or not so contribute—to global warming for about forty years or more. Choices in energy technology made now certainly will be the signature of our carbon footprint during the crucial period of the next half century, during which global warming may pass the point of no return.\footnote{\textsuperscript{326}}

B. The Critical International Agency Role

1. The Role of International Multilateral Agencies

The World Bank Group is a specialized agency of the United Nations and is a conglomeration of multiple entities,\footnote{\textsuperscript{327}} including:

- International Bank for Reconstruction and Development (IBRD),
- International Development Agency (IDA),
- International Finance Corporation (IFC),
- Multilateral Investment Guarantee Agency (MIGA),
- Prototype Carbon Fund (PCF).\footnote{\textsuperscript{328}}

Each World Bank agency specializes in the financing of different aspects of projects based primarily on the type of financing provided. The World Bank Group is funded primarily through borrowings on the international capital markets and is one of the largest sources of financing for energy sector projects in developing countries.\footnote{\textsuperscript{329}} The cumulative lending of the first four World Bank entities is about $500 billion, with current annual lending of about $23 billion.\footnote{\textsuperscript{330}}

As of June 2007, IBRD has provided approximately $433 billion in cumulative lending.\footnote{\textsuperscript{331}} In 2007, IBRD provided a total of $12.8 billion

\footnote{\textsuperscript{326} See McKibben, \textit{supra} note 34 (quoting NASA’s James Hansen on the necessity of a radical carbon transformation by 2015).


\textsuperscript{331} The World Bank, IBRD and IDA Cumulative Lending by Country, as of June 30, 2007 (2007), http://go.worldbank.org/0IMBYAQBZ0.}
in financing to 112 different projects.\textsuperscript{332} Of this, IBRD, in conjunction with IDA, spent more than $1.7 billion on energy infrastructure and service development.\textsuperscript{333} Moreover, the World Bank spent $2.7 billion funding legal and policy reforms.\textsuperscript{334} IBRD and IDA energy and mining sectors investments in South Asia and East Asia are shown in Table 2.

<table>
<thead>
<tr>
<th>Location</th>
<th>2002</th>
<th>2003</th>
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<th>2005</th>
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<td>314.5</td>
<td>254.3</td>
<td>67.2</td>
<td>359.1</td>
<td>425.2</td>
<td>118.5</td>
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<tr>
<td>South Asia</td>
<td>504.8</td>
<td>150.6</td>
<td>130.8</td>
<td>83.6</td>
<td>483.0</td>
<td>243.7</td>
</tr>
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IDA was created by the World Bank in 1960, and it currently has 169 member countries.\textsuperscript{335} IDA is supported by governmental contributions and provides interest-free credits and grants to countries with the lowest levels of per capita income.\textsuperscript{336} In fiscal year 2009, IDA commitments totaled $14 billion, 18\% of which was provided on grant terms.\textsuperscript{337} “Since its inception, IDA credits and grants have totaled [\$207 billion, averaging [\$12 billion a year in recent years and directing the largest share, about 50 percent, to Africa.”\textsuperscript{338}

MIGA was created in 1988 as a member of the World Bank Group to promote foreign direct investment into emerging economies to support economic growth, reduce poverty,\textsuperscript{339} and improve people’s lives.\textsuperscript{340} MIGA began operations in 1988 as an independent branch of the World Bank Group and has supported various projects in twenty-seven African countries.\textsuperscript{341} MIGA instruments provide equity financing, usu-

\textsuperscript{333} See id. at 55 tbl.3.1 (this figure represents the spending by both IBRD and IDA).
\textsuperscript{334} Id.
\textsuperscript{335} The World Bank Int’l Dev. Ass’n, What is IDA?, http://go.worldbank.org/ZRAORSIWW0 (last visited Feb. 10, 2010).
\textsuperscript{336} Id.
\textsuperscript{337} Id.
\textsuperscript{338} Id.
\textsuperscript{341} MIGA 2007 Annual Report, supra note 339, at 11.
ally in the form of political risk insurance, to insure against noncommercial risks in developing countries. MIGA instruments can provide up to twenty-year coverage for certain risks, including currency transfer restrictions, war and civil disturbance, expropriation, and breach of contract by the host government. MIGA is willing to cover a variety of investments, including shareholder loans, loan guarantees by equity holders, and commercial bank loans. In 2007, MIGA provided $1.4 billion in new guarantees.

The IFC was founded in 1956 with the purpose of financing private sector projects and providing advisory services. IFC currently is comprised of 182 member countries. The IFC is legally and financially independent of the rest of the World Bank; however, it coordinates its activities with other Bank institutions. About 30% of its budget goes to the energy sector, with oil and gas projects commanding a significant portion of these expenditures. As of 2008, the IFC is committed to scaling up its activities in renewable energy and energy efficiency investments. IFC has a unit within its infrastructure department that focuses on investments in renewable energy projects and other GHG-friendly technologies, and it is examining several pos-

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344 See MIGA Guarantees Overview, supra note 342.
346 WORLD BANK ANNUAL REPORT 2007, supra note 332, at 64.
348 IFC, About IFC: Member Countries, http://www.ifc.org/ifcext/about.nsf/Content/Member_Countries (last visited Feb. 10, 2010).
349 FRITSCHE & MATTHES, supra note 330, at 43–44, 44 tbl.5.
350 “The IFC has since revised its methodology so that it now identifies renewable energy and energy efficiency investments in commitments it has made in other sectors, such as agriculture, water supply, industry, and transport, and in corporate loans to financial intermediaries.” IFC, CATALYZING PRIVATE INVESTMENT FOR A LOW-CARBON ECONOMY: WORLD BANK GROUP PROGRESS ON RENEWABLE ENERGY AND ENERGY EFFICIENCY IN FISCAL 2007, at 49 (2007), available at http://siteresources.worldbank.org/INTENERGY/Resources/renewableenergy12407SCREEN.pdf.


The purpose of the PCF is to help finance\footnote{Id.} and monitor programs\footnote{Id.} designed to reduce GHG emissions\footnote{See Carbon Finance Unit, World Bank, Annex I, Document 6A, Prototype Carbon Fund 1, http://www.ambiente.gov.ec/WEB/Cambio%20Clim%E1tico%20en%20Ecuador/UCC/Anexo1/PCF%20(Anexo%201,%20Documento%206a).pdf (last visited Feb. 10, 2010).} and generate emissions...
reduction credits, which can be registered pursuant to article 12 of Kyoto. PCF creates a market in carbon credits that have traded at about $3–4/ton of CO₂ equivalents. Most PCF funds have gone to Latin America, with only 7% to Central Asia, 2% to East Asia, 7% to South Asia, and 18% to Africa. PCF has approximately $247 million in active pipeline projects.

The Fund provides technical assistance for countries developing

For many decades, the World Bank’s energy lending has focused on centralized, large-scale, grid-based thermal and hydropower projects and on the privatization of public power utilities. This report shows that in spite of many promises to “green” its energy lending over the past 15 years, the World Bank’s energy sector portfolio still fails to reap the double dividend of renewable energy technologies that would fight both poverty and climate change. The Bank continues to invest $2 to $3 billion a year in greenhouse gas-producing energy projects, which fuel climate change and fail to help the world’s poor. Financing for renewable energy projects makes up less than 5 percent of the Bank’s overall energy financing [as of] fiscal year 2005.

Bank Info. Ctr. et al., supra note 359, at 12.

See Press Release, World Bank, Prototype Carbon Fund Shows that Kyoto Protocol Works, (Nov. 2, 2001), available at http://go.worldbank.org/5DSI1BEWV0 (“One of the objectives of the $145 million Fund . . . is to demonstrate how [GHG] emissions reductions generated by CDM and JI projects can contribute to sustainable development and lower the cost of compliance with the Kyoto Protocol.”).

See Kyoto Protocol, supra note 77, art. 12. The Carbon Fund for Europe (CFE) “is designed to help European countries meet their commitments to the Kyoto Protocol and the European Union’s Emissions Trading Scheme.” Carbon Finance Unit, World Bank, Carbon Fund for Europe, http://go.worldbank.org/BAP5Z2LYQ0 (last visited Feb. 10, 2010). The CFE is a trust fund established by the World Bank in cooperation with the European Investment Bank (EIB). Id. “The Fund will purchase greenhouse gas emission reductions through the Kyoto Protocol’s CDM and JI from climate-friendly investment projects from either bank’s portfolio as well as from self-standing projects.” Id.

Kyoto Protocol, supra note 77, art. 12.


Fritsche & Matthes, supra note 330, at 60. It has funded wind, waste management, bagasse, biomass, energy efficiency, geothermal, small hydro, and photovoltaic technologies. Id.


As a prototype fund, the PCF has a vastly diverse portfolio in terms of technology distribution. Renewable energy projects—including wind, hydro, geothermal, bagasse and biomass—dominate the portfolio, representing 37% of the value of the PCF’s emission reduction purchases. The portfolio also includes emission reduction purchases from projects involved in HFC-23 destruction, coalmine methane, energy efficiency, waste management and land-use change and forestry . . . .
emissions trading programs pursuant to the Kyoto Protocol, trebling its amount of technical training assistance in carbon financing. The Fund will be extinguished once private sector markets develop. “As a pilot activity, the PCF does not endeavor to compete in the emission reductions market; it is restricted to "$150 million and is scheduled to terminate in 2012." For PCF, one means of reducing carbon emissions is paying for verified reductions in carbon emissions. Payments are made specifically to projects that have executed emissions reductions contracts with PCF. As with all international financing transactions, PCF engages in risk management to ensure actual reductions and constant payment streams.

The divisions of the World Bank cannot manufacture investments. All investments must be approved by and accepted by local state authorities in the host country. The World Bank is not itself a governing body over nations, but rather a financial aid conduit for projects allowed by member developing nations. Currently, the World Bank is undergoing a shift in funding priorities with the emergence of world concern about global warming. Nor is the World Bank designated as the primary or the only means of financing CDM projects. The World Bank has been responsible for about one-quarter of the approved protocols for CDM project development, so while a significant participant, these areas are not exclusively its province. The World Bank Group

Id. at 25.

See id. at 9, 25–26.

See World Bank PCF, supra note 354.

See id.

Id.

Id.


The PCF provides financial resources for projects that are intended to generate GHG emission reductions in return for the right to have transferred to PCF contributors, or so-called participants in the PCF, a pro rata share of the emission reductions, verified and certified in accordance with the Emission Reductions Purchase Agreement with the respective project sponsor.

Id.


has funded more than $6.3 billion in renewable energy projects since 1990.\footnote{Anil Cabraal, Lead Energy Specialist, Energy & Water Dep’t, The World Bank, Presentation at Deutsche Gesellschaft für Technische Zusammenarbeit, Towards a Renewable Energy Future: A World Bank Plan for Action 6 (Oct. 20, 2004).}

Nonetheless, the position of the World Bank as the primary international public sector lender is important. Its practices influence the lending of regional development banks around the world, national export banks in major developed countries, and private banks, which all underwrite and support infrastructure development.\footnote{See Daphne Wysham, \textit{Carbon Rush at World Bank}, \textit{Asia Times} (Hong Kong), Feb. 26, 2005, http://www.atimes.com/atimes/Global_Economy/GB26Dj03.html.} More than 80% of project financing in developing countries is provided by private banks which have adopted the Equator Principles\footnote{See generally \textit{The Equator Principles, The “Equator Principles,”} http://www.equator-principles.com/principles.shtml (last visited Feb. 10, 2010) (providing background on the equator principles, which are a financial industry benchmark for determining, assessing and managing social & environmental risk in project financing).} for lending, and which look for guidance to the World Bank.\footnote{Id.} What the World Bank does and supports is a critical key starting point.

2. International Agency Criticism

The efforts of international agencies regarding carbon reduction have come under recent criticism. House Financial Services Chairman, Barney Frank, voiced concern about the World Bank’s fitness to administer a clean technology fund.\footnote{Obama Funds Bush Initiative for World Bank ‘Clean’ Energy Projects, \textit{Carbon Control News}, May 11, 2009 (LEXIS).} Environmental group Friends of the Earth (FOE) criticized the World Bank as devoting only 6% of its total funds to new renewable technologies (including small hydro but excluding conventional, larger hydro) in 2006.\footnote{Oilchange Int’l & Friends of the Earth, \textit{The World Bank’s Climate Investment Funds: Still Fueling Global Warming} 1 (2008), available at http://www.foe.org/pdf/CIF_Factsheet.pdf.} FOE is concerned that these funds will be used to fund more large, centralized fossil fueled-fired power plants rather than “transform energy systems and . . . effectively provide clean energy to the 1.6 billion people in the world who lack access to energy.”\footnote{Id.} A 2008 critique by the Institute for Policy Studies (the “Institute’s 2008 Report”) criticized the World Bank carbon finance efforts as
“dangerously counter-productive.” The Institute charged the World Bank with making business-as-usual look environmentally friendly. The report alleged that by the end of 2007, less than 10% of the Bank’s carbon offset money went toward renewable energy projects of ten megawatts (MW) or less. Therefore, the critics’ concern is partly on wanting smaller projects funded, as well as including more renewable projects in the mix.

Some of this expenditure pattern reflects the very structure of the Kyoto cap-and-trade system. Kyoto does not fundamentally change capital expenditures on power generation, either in the thirty-five Annex I nations which are covered by carbon caps, nor in the other 165 nations of the world that are not covered by Kyoto’s cap. There is no specific provision for the power generation sector. Kyoto does not specifically address the need to shift to greater reliance on non-fossil-fuel sources of power generation. Rather, it attempts to set national carbon allowances for larger monitored sources in about thirty-five voluntarily participating developed countries and allows additional credits to be generated for, or sold to, these sources by offsetting carbon through various additional voluntary CDM projects in developing nations.

The Institute’s 2008 Report criticizes the CDM as resulting in enormous potential profits for investors in CDM projects, and resulting in little renewable energy investment. The report charges that the adopted CDM carbon trading mechanism was a variation on Brazil’s original proposal, as thereafter modified by the United States delegation, where the United States eventually did not adopt the Kyoto Protocol. This power generation capital stock significantly determines the long-term concentrations of atmospheric carbon.

The Institute’s 2008 Report also claims that the World Bank, acting pursuant to Kyoto, will use money supplied by donor countries in the

386 See id. at 7.
387 Id. at 24–25.
388 See Kyoto Protocol, supra note 77, art. 2 (describing objectives of the agreement).
389 See id.
390 See id. arts. 2 & 10 (referring to sustainable development but not specifically pushing for shift to renewable power generation).
391 See id. art. 12.
392 See REDMAN, supra note 385, at 14–15.
393 Id.; see Parts I–II.
394 REDMAN, supra note 385, at 3.
Northern Hemisphere to fund ecologically destructive industries in the Southern Hemisphere.\footnote{See id. at 4.} This flow of cash is from developed nations to developing nations, either through Kyoto, World Bank, private, or other mechanisms. Ultimately, only thirty-five Kyoto Annex I countries, among 200 countries in the world, are affected by, or finance, CDM projects in developing countries.\footnote{See UNFCCC, Parties & Observers, http:// unfccc.int/parties_and_ observers/items/2704.php (last visited Feb. 10, 2010).} The report claims that this mechanism has little transparency in funding carbon credits, while other international funds actually finance carbon “debits” associated with $1.5 billion in multilateral loans that the report identifies as for fossil-fuel-fired “destructive” investments between 2005 and 2007.\footnote{Redman, supra note 385, at 3–4. The report cites the Tata Group 800 MW coal-fired project in Mundra, India, approved for $450 million in financing by the IFC, an affiliate of the World Bank, in 2008. Id. at 16–17. It also cites the investment of the project in importing Indonesian coal, rather than local Indian coal, to fuel this facility. Id. The World Bank elected not to implement 2004 recommendations that by 2008, it exit support of traditional coal-fired extraction. See id.}

CDM projects to date have focused on increasing the number of CERs created for investors, rather than focusing on renewable energy projects and sustainable alternatives in developing countries.\footnote{Voigt, supra note 189, at 15.} This creates an incentive for both host CDM countries and CDM investors to inflate the number of CERs created.\footnote{Id.} Questions have been raised as to whether the Kyoto Executive Board and panels are able to correctly police the incentive to inflate CERs.\footnote{Id. at 16.} Moreover, the impact of CDM projects has not been to promote appropriate renewable investments in developing countries, but rather has only served to create additional credits for Annex I countries.\footnote{Id. at 18.}

There is no mandatory environmental or sustainability assessment in Kyoto projects or public input, which was rejected as an infringement on host country sovereignty.\footnote{Id. at 20.} The lack of massive renewable energy investments to date needed to shift the basis of power generation is documented.\footnote{See id. at 18.} The bulk of the CDM carbon credits in developing countries is emanating not from renewable projects, but from reduction of certain high-carbon chemical gases in countries like China.\footnote{See id. This includes reductions of HFC-23 and other gases that are by-products of the manufacture of other potential GHGs. Id.}
World Bank data shows that more than two-thirds of its carbon reduction achievements have involved HFC-23.\textsuperscript{405} However, when adding expenditures of the PCF and other multilateral financing mechanisms, critics still charge that only 10–15\% of total investments have been in renewable energy, and international agency renewable energy investments are designed to achieve only about 5\% of total GHG reductions, with a funding emphasis instead on nitrous oxide and HFC reduction\textsuperscript{406} from chemical plants in developing countries.\textsuperscript{407}

The multilateral international agencies point to progress in addressing global warming. According to a 2007 report from the United Nations Environment Programme, investment capital flowing into renewable energy worldwide climbed from $80 billion in 2005 to $100 billion in 2006.\textsuperscript{408} Of contrasting note, the International Bank for Reconstruction and Development, the part of the World Bank dealing directly with developing country governments, itself has principally funded direct renewable energy projects rather than HFC-23 or coal mine methane projects.\textsuperscript{409}

There are over 1000 CDM projects,\textsuperscript{410} with twice that many in the project development pipeline.\textsuperscript{411} The existing projects have generated 117 million issued CERs, with an estimated 2.6 billion CERs to be generated by 2012.\textsuperscript{412} This would represent almost 10\% of monitored emissions, which is a significant offset component relative to actual emissions. Each CER generated in a developing country increases the GHG emissions allowed in the Annex I country by the eventual owner of the CERs.\textsuperscript{413}

According to former British Prime Minister Tony Blair, “[t]he UNFCCC [the U.N. Kyoto Protocol mechanism] is charged with making the global deal” on carbon reduction and it must occur “under its

\textsuperscript{405} Redman, supra note 385, at 22–23.
\textsuperscript{406} Id. at 26 (regarding the HFC-23 factory investment). The CDM Governing Board has restricted future eligible investments in HFC-23 factories built before 2004, but has not restricted investments in newer plants. Id. at 27.
\textsuperscript{407} Id. at 24–25.
\textsuperscript{411} Voigt, supra note 189, at 15.
\textsuperscript{412} Id.
\textsuperscript{413} Id.
World Bank CER acquisition activities have grown from the original PCF, created in 1999, to now ten additional carbon funds with a capitalization exceeding $2 billion. These can provide up-front financing for CDM carbon reduction projects, and importantly, can reduce or mitigate regulatory uncertainty and risk of eventual U.N. credit certification, credit delivery, and political risk. Since Kyoto, CDM CER offsets must be created in developing countries, and there is sovereign risk and commercial risk associated with these intangible items. This is mitigated by the fact that this is overseen by U.N. designated authorities in each nation that hosts a CDM project.

3. Capital Flows and Necessary Power Infrastructure Changes

Much of this debate and criticism involves a difference in basic philosophy of how to control—and who should control—world capital flows. Ultimately, the reports criticize the Bank for wresting control of new investment mechanisms away from the countries where the CDM, or other investments will be made, and exercising certain controls with the financing. However, developing nations and their industries are not regulated by existing Kyoto carbon controls; developed nations and their businesses are. The critics’ reports charge that CDM projects financed with World Bank money have been slow. The World Bank recently suggested forming a new expanded $5–10 billion clean technology fund, as well as a $500 million climate change adaptation fund. This would dramatically elevate the scope of the financing for carbon programs. The G8 nations in mid-2008 pledged to provide $10 billion annually for a fund supporting clean energy technology deployment in developing nations.

Forest protection at the international level has also been subject to criticism. Much of the current debate on forest protection focuses on who controls the money: the developed country fund donors, intermediary international funding agencies, or the indigenous people who

414 Blair, supra note 14, at 5.
415 Christopher Carr & Flavia Rosembuj, Structuring and Financing Projects, in CLIMATE CHANGE: A GUIDE TO CARBON LAW AND PRACTICE, supra note 111, at 39, 40.
416 See id. at 42–43.
417 See Ferrey, supra note 74, § 3:10 (discussing sovereign and commercial risks in developing countries).
418 Redman, supra note 385, at 5.
419 Id. at 3, 22.
420 Id. at 3, 38.
421 Steven Cook & Toshio Aritake, Leaders of Major Economies Fail to Agree on Greenhouse Gas Emissions Targets, 39 Env’t Rep. (BNA), 1380, 1381 (July 11, 2008).
reside in the areas where either forest is desired to be protected or carbon emissions capped.\textsuperscript{422} Some criticize the World Bank’s substantial efforts to fund forest preservation as benefiting private interests that preserve forests more than they preserve locally affected communities.\textsuperscript{423} There were protests in late 2007 by developing countries and their citizens against the establishment of the World Bank-funded Forest Carbon Participation Project.\textsuperscript{424} So while this is about carbon, it is also about control over decisions about world resources and projects.

Between 1990 and 2000, world foreign direct investment in all sectors of developing countries rose from $200 billion to $1.162 trillion.\textsuperscript{425} The needs of countries outside the Organization of Economic Cooperation and Development will require an investment of some $2 trillion to install approximately 1900 gigawatts of new electric-generating capacity by 2025.\textsuperscript{426}

Since 1997, when private investment in the power sector of developing countries peaked at $50 billion, private investment in power sectors of developing countries has fallen dramatically. In 2002, private investment was only $7 billion.\textsuperscript{427} Similarly, over the last two decades, the World Bank Group’s financial commitments to developing country energy sectors have significantly declined. Between 1990 and 1994, World Bank Group energy sector financing accounted for approximately 25% of the Bank’s overall commitments. By 2001, however, the annual commitment percentage had fallen to less than 10% of overall financing.\textsuperscript{428}

The decline in international financing is attributable to several factors. A majority of electric-sector investment during the early 1990s went to countries with favorable investment profiles (particularly Chi- 


\textsuperscript{426} Fritsche & Matthes, \textit{supra} note 330, at 30.


na, Brazil, independent power programs in East Asia, and the privatizations of state-owned utilities in Latin America), where host governments had embraced market-based sector reform. However, some countries had difficulty sustaining the market reforms necessary for power sector commercial viability, making investors more cautious in financing transactions. Investors were particularly discouraged by numerous instances where host governments failed to honor power purchase agreements (PPAs) or carry out promised market reforms. For example, in Indonesia the government defaulted on sovereign guarantees on two projects, resulting in a loss of $575 million to the project sponsors. Ultimately, despite a ruling in its favor by the United Nations Commission on International Trade Law, the project sponsors recovered nothing from the Indonesian government. The sponsors ultimately recovered $290 million under its U.S. political risk insurance policy, which American taxpayers ultimately paid for.

During the 1990s, the World Bank Group decided that the private sector was the solution for energy investments. It made a structural readjustment of its lending policies, reducing the Bank’s lending support for public sector energy projects from approximately 25% to less than 10%. Other development banks followed suit.

The April 2008 Bangkok talks—following up the December 2007 Bali round of talks—concluded that a post-2012 international carbon scheme should look much like the pre-2012 Kyoto regime, including trading of allowances and the creation of additional credits or offsets through the JI and CDM mechanisms. This is not as much a statement of success of such programs to date, as a statement of hoped-for continuation of existing international carbon reduction methods.

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431 Ferrey & Cabraal, supra note 158, at 203.

432 Id.

433 Id.


435 This reduced funding and project guarantees have been traditionally available to public utilities. Moreover, the Bank’s shift forced countries seeking to attract foreign investment to engage in market-based sector reforms. See Navroz K. Dubash, The Changing Global Context for Electricity Reform, in Power Politics: Equity and Environment in Electricity Reform 11, 17 (World Res. Inst. ed., 2002).


437 See id.
The 2009 Copenhagen Conference showed more dissent than consensus on any future controls.\footnote{See Lyman, supra note 180, at 110.} Indeed, the Kyoto Protocol does not show significant signs of being a technical success within the necessary time frames given the immense tasks at hand.\footnote{See Lyman, supra note 436, at 704; supra Part I.}

Effective adaptation of forests, agriculture, and water resources will require the broad planning and regulatory capacity of a range of ministries in developing countries.\footnote{El-Ashry, supra note 60, at 4.} Enhancements of these capabilities will require aid for viable international frameworks.\footnote{See id.} Public finance is necessary to build human and institutional capacity in developing countries for carbon mitigation and adaptation.\footnote{See id. at 5.}

The key is formulating and implementing a workable and very prompt policy response in developing nations. Richard Bradley, division head at the International Energy Agency, Paris, at the Bali Kyoto conference concluded that “[f]ossil fuel will dominate the energy supply for the foreseeable future. Investors need an international cost-effective framework if energy climate change objectives are to be met.”\footnote{Richard A. Bradley, Head, Energy Efficiency & Env’t Div., Int’l Energy Agency, Time is NOT on our Side: Climate Change Mitigation as an Investment Challenge (Dec. 13, 2007), available at http://www.iea.org/textbase/speech/2007/Bradley_IPCC_Bali_Side-Event2.pdf.} “It is not yet possible to discern a human influence on the emissions pathway. Policy effort is insufficient.”\footnote{Id.} Public finance and a workable renewable program template are necessary to build human and institutional capacity in developing countries for carbon mitigation and adaptation.\footnote{See El-Ashry, supra note 60, at 5.} Fortunately, there is such a template—although not widely advertised—of how to accomplish a shift to renewable resources in developing countries.\footnote{See infra Part V; see also Power Paradox, supra note 56, at 526–38.}


Fortunately, there is an alternative course towards a win-win situation regarding global warming and renewable energy in developing nations. There is evidence of success in developing nations deploying renewable power.\footnote{See Ferrey & Cabraal, supra note 158, at 67–74.} Between 1993 and 2005, five nations in Asia were
among the first to develop small power producer (SPP) programs to promote renewable energy development in their countries. These programs create important models and lessons for the rest of the world.

They have achieved in just a few years a substantial contribution from new renewable small power projects to their growing national energy supplies: almost 4% of power supply in Sri Lanka, India and Thailand are from SPP renewable energy initiatives. These successes in Asia are the key to what can happen in developing countries. Approximately 60% of all new power generation capacity financed in developing countries is in Asia. Therefore, how and what energy resources are deployed in Asia has long-term implications for global greenhouse gas (GHG) emissions and environmental integrity. These five Asian nations each have different governmental forms, and have different predominant fuel sources in their power generation bases such as hydro, coal, gas, and oil. While some of the national electric systems have an integrated high-voltage transmission system and others have a disintegrated or island system, there are key similarities:

- All are in need of long-term increases in power generation capacity (although Thailand has had a short-term surplus)
- All have the potential to utilize small-scale renewable energy options
- Each system employs either deliberately or de facto a standardized power purchase agreement (PPA), to put the investment deal together, although it is not necessarily a neutral or consensual document in all cases.

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448 Id. at 67.
449 Id.
452 Ferrey & Cabraal, supra note 158, at 68.
Beyond these common elements, each system has important distinctions. Each of these programs is built on prior successful experiences in the United States under the Public Utility Regulatory Policies Act requirements and/or other Asian countries that preceded the Act’s effort. Table 3 displays key comparative elements of program design and implementation in five of the Asian programs surveyed. Of the columns in Table 3, the middle column is noteworthy. It shows that two of the profiled programs subsidize renewable energy SPPs. “Thailand does so by providing a project-specific subsidy through a competitive solicitation process. Andhra Pradesh, a state in India, does so by providing a tariff in excess of true avoided cost for renewable energy SPPs power sales.”

<table>
<thead>
<tr>
<th>Country Program</th>
<th>Year begun</th>
<th>Maximum size (MW)</th>
<th>Premium for renewable energy</th>
<th>Primary fuel</th>
<th>Eligible PPA solicitation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thailand</td>
<td>1992</td>
<td>&lt;60 or &lt;90</td>
<td>Yes, competitive bid</td>
<td>Gas</td>
<td>Controlled period</td>
</tr>
<tr>
<td>Indonesia</td>
<td>1993</td>
<td>&lt;30 Java</td>
<td>No</td>
<td>Renewable Energy</td>
<td>Controlled period</td>
</tr>
<tr>
<td></td>
<td></td>
<td>&lt;15 other island grids</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sri Lanka</td>
<td>1998</td>
<td>&lt;10</td>
<td>No</td>
<td>Hydro</td>
<td>Open offer</td>
</tr>
<tr>
<td>India: Andhra Pradesh</td>
<td>1995</td>
<td>&lt;20 Prior &lt;50</td>
<td>Yes, in tariff</td>
<td>Wind</td>
<td>Open offer</td>
</tr>
<tr>
<td>India: Tamil Nadu</td>
<td>1995</td>
<td>&lt; 50</td>
<td>No</td>
<td>Wind</td>
<td>Open offer</td>
</tr>
</tbody>
</table>


Table 4 displays salient comparative elements of PPA design and contractual entitlement in the renewable energy programs in these five Asian countries.

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453 Id. at 69.
454 Id. at 69; see also *Power Paradox*, supra note 56, at 526. See generally Ferrey, supra note 74, ch. 4 (detailing the PURPA experience in the United States).
455 *Power Paradox*, supra note 56, at 526.
456 Id. at 527; see Ferrey & Cabral, supra note 158, at 69.
457 *Power Paradox*, supra note 56, at 527; see Ferrey & Cabral, supra note 158, at 69.
458 *Power Paradox*, supra note 55, at 528.
Table 4: Comparative PPA Elements

<table>
<thead>
<tr>
<th>Country program</th>
<th>Standard PPA?</th>
<th>Maximum years</th>
<th>Third-party sales</th>
<th>Self-service wheeling</th>
<th>Net meter–banking</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thailand</td>
<td>Yes</td>
<td>20–25 firm</td>
<td>No, under</td>
<td>No, under</td>
<td>Yes, if &lt;1 MW</td>
</tr>
<tr>
<td></td>
<td></td>
<td>5 nonfirm</td>
<td>consideration</td>
<td>consideration</td>
<td></td>
</tr>
<tr>
<td>Indonesia</td>
<td>Yes</td>
<td>20 firm</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td></td>
<td>5 nonfirm</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sri Lanka</td>
<td>Yes</td>
<td>15</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>India: Andhra Pradesh</td>
<td>Not formally,</td>
<td>20</td>
<td>No, previously</td>
<td>Yes, but very</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>but a de facto</td>
<td></td>
<td>allowed</td>
<td>expensive</td>
<td></td>
</tr>
<tr>
<td></td>
<td>standardized</td>
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<tr>
<td>form</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>India: Tamil Nadu</td>
<td>In development</td>
<td>5–15</td>
<td>No, previously</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>allowed</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>


Several important lessons for small renewable program design and policy in developing nations are revealed by analyzing these programs in detail:459

- “A framework for structured SPP project development is necessary. SPPs do not spring fully born[e] from the existing electric sector–environments” in developing countries.460 “A system of law, regulation, and utility interface” that facilitates orderly SPP development must exist.461
- “A transparent process is required to build investor, developer, and lender confidence.”462 This is particularly true if those investors are expected to be private parties and conventionally financed.
- “The single utility buyer of power in most of the electric sectors” of developing nations can more robustly and efficiently promote renewable SPPs, either by (a) “a program for purchase of all SPP power at its full value (avoided cost) to the wholesale system,” and/or (b) “the introduction of some combination of third-party retail sales, net metering energy banking, or third-party wheeling.”463

460 Id.
461 Id.
462 Id.
463 Id. at 73.
• “In many systems, additional subsidies, . . . reflect[ing the] fuel diversity and environmental advantages, are used to assist higher-cost renewable energy and smaller SPP projects.”

• “Bidding can be strategically employed to minimize the ultimate system cost to the buyer” of power generated from renewable power resource development.

These results in Asian countries demonstrate how renewable power development can be successful in developing countries. Many of the programs were implemented prior to Kyoto impacts and are separate from the CDM Kyoto program. Adding CDM to these programs would provide even greater incentives. So there is a model for successfully beginning the shift to a renewable power base in fast-electrifying developing nations.

**CONCLUSION: FINAL THOUGHTS ON INTERNATIONAL CARBON**

If the world misses or ignores these renewable energy opportunities in developing nations, it misses the opportunity to successfully curtail global warming. The combustion of fossil fuels generates 98% of anthropogenic carbon dioxide (CO2) emissions, and CO2 comprises 83% of greenhouse gas (GHG) emissions in the United States. Between 1990 and 2008, 41% of CO2 emissions are attributable to the electric power sector. The sheer amount of CO2 emitted into the environment is enormous, and once it is released into the atmosphere, CO2 remains there for 100 years. Global CO2 emissions are rising at the rate of approximately 10% per year.

Only the shift of the power generation base to a substantial non-carbon component can offer the potential to successfully deal with world GHG emissions. Developing nations will soon dominate GHG emissions and retain this position into the indefinite future. Given this, the proposed shift in the power generation base must succeed in devel-

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464 Id.
465 Ferrey & Cabrall, supra note 158, at 73.
466 See Power Paradox, supra note 56, at 544.
469 See Purdy, supra note 43, at 22, 23 tbl.1.
470 See id. at 23 tbl.1.
oping nations for the world to have an opportunity to substantially curtail GHGs worldwide.

While a successful model exists from programs apart from international legal mechanisms and programs—funded largely by the World Bank in developing nations in Asia and elsewhere—that aim to mitigate global warming, there needs to be a sustained push to implement these successful models more broadly in developing nations. International agencies, which finance or guarantee much of the financing of power projects in developing nations, have a critical role to play in the success of such efforts. However, the Kyoto Protocol, since enacted as an international legal protocol in 1997, does not speak a language amenable to developing nations. It does not include developing nations in its coverage; it does not require any shift in power generation bases either in regulated developed countries or developing countries; and it does not deal with black carbon, the significant warming chemical emitted profusely in developing nations.

The current scientific consensus forebodes that changes in the international legal scheme must be implemented by 2015 or it may be too late. Waiting until after 2012, as international regulatory mechanisms are, to make any changes in the current Kyoto legal scheme could be too little, too late. Middlebury College’s William McKibben has illustrated, with reference to James Hansen—one of the world’s leading climate scientists, that we either implement a lasting solution within the next five to ten years, or the battle may be lost forever. Three years ago Hansen stated that “[w]e have at most ten years—not ten years to decide upon action, but ten years to alter fundamentally the trajectory of global greenhouse emissions.” This fundamental change is nowhere on the horizon of international mechanisms as they are now embodied in the Kyoto Protocol.

Power generation projects take years to develop and implement. Changes in international law effective after 2012 would not be implemented or serviceable on a widespread basis by 2015, given how little movement in the renewable generation base there has been since the

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471 See supra Part III.
473 See William McKibben, How Close to Catastrophe?, N. Y. Rev. of Books, Nov. 16, 2006, at 23, 23 (quoting climatologist James Hansen to the effect that we have only until 2015 to reverse carbon emissions or face radically changing the planet).
474 Hansen, supra note 51, at 12, 16.
carbon reduction process was started in 1992 and the Kyoto Protocol enacted in 1997.\textsuperscript{475} In fact, global carbon emissions have continued to climb every year at an increasing rate of gain.\textsuperscript{476} A more urgent international implementation schedule is required; however, that schedule will only follow after legal creation of a concerted international agency role designed to curtail current trends in increasing carbon emissions and to provide technical assistance to more than 100 developing countries.\textsuperscript{477} So the next two years are the period in which the world will cast its carbon future, and where goes carbon, goes global warming. As the poet Robert Frost wrote, “Some say the world will end in fire; some say in ice.”\textsuperscript{478} Either, he notes, “would suffice.”\textsuperscript{479}

\textsuperscript{475} See supra Parts I–II.
\textsuperscript{476} See supra Part I.
\textsuperscript{477} See supra Parts III–V.
\textsuperscript{478} Frost, supra note 1, at 220.
\textsuperscript{479} Id.
A CRANBERRY RECIPE FOR CITIZEN RULEMAKING

Tobias F. Bannon, III*

Abstract: Under the Massachusetts Clean Water Act, a loophole exists that allows fertilizer-laden waters to escape “wet crop” farms and to flow into nearby waterways, causing detrimental effects. Blackmore Pond, located near Cape Cod, Massachusetts, has seen such effects, and its residents are eager for change. Considering that past lawsuits have failed to close the wet crop loophole, the residents of Blackmore Pond may petition the Massachusetts Department of Environmental Protection to amend the Massachusetts Clean Water Act regulations. The Massachusetts Department of Environmental Protection may accept the proposed amendments, in which case the residents of Blackmore Pond will have achieved success in closing the wet crop loophole, or reject the amendments, in which case the residents will be able to challenge this decision through judicial review. Citizen petitions for rulemaking are a seldom-used, powerful means for ordinary citizens to effect change.

INTRODUCTION

At the gateway to Cape Cod, Massachusetts, lies Blackmore Pond, a forty-six acre “great pond” surrounded by approximately sixty homes.¹ This charming settlement resembles postcard New England: a million-gallon lake flanked by wooded lots, summer getaways, and year-round residences.² Completing the scene are over one-hundred acres of cran-
berry bogs that make things even more picturesque. But for some unknown reason, in the year 2000, Blackmore Pond seemed different. Formerly clear waters took on an uncharacteristically blackish-brown hue, causing citizens to worry. Homeowners who had previously wondered about the water-gulping habits of the nearby cranberry farms now suspected that the farms’ activities contributed to Blackmore Pond’s mysterious condition.

To investigate the chemistry responsible for the new “muck,” a nearby homeowners association commissioned an ecological study of the lake. The study revealed that the “ink-blobs” and “black globs” floating around in the lake were a result of eutrophication, a process in which algae grows very rapidly due to high levels of nutrients, particularly phosphorus. The ecological study also pointed out that agricultural water such as that from the nearby cranberry bogs—which borrow water from Blackmore Pond for “flooding” purposes—can have “a significant potential impact on phosphorus levels of receiving waters.”

One might expect that a law exists to prohibit potentially damaging waters from flowing out of a cranberry bog or other farm operation. For instance, one might assume that the Federal Water Pollution Control Act Amendments of 1972, commonly known as the Clean Water Act (CWA), prohibit farmers from adding pollutants to waterways like Blackmore Pond. But, as counter-intuitive as it might seem to the residents of Blackmore Pond, discharges and runoff from cranberry bogs and similar agricultural facilities generally are not regulated under the CWA. Corresponding state regulations have proven equally ineffective at prohibiting the discharge of polluted agricultural runoff because they have similar loopholes.

This Note explores why the CWA and similar state regulations frequently leave water supplies vulnerable, why past attempts at addressing these issues have failed, and proposes a possible avenue for citizens to
initiate appropriate amendments to current regulations. Part I of this Note diagrams the architecture and operation of cranberry bogs and explains why their discharges are frequently exempted from regulation.\textsuperscript{13} Part II of this Note explores judicial interpretations of this loophole as well as various methods used to fight the polluting behavior.\textsuperscript{14} Part III of this Note explains how citizen petitions for rulemaking provide a vehicle to address regulatory issues.\textsuperscript{15} Part IV applies the petition process to the situation at Blackmore Pond.\textsuperscript{16} This Note concludes that citizen-initiated petitions for rulemaking open the door to amendment as well as judicial review, both of which could close the loophole that allows pollution from cranberry bogs and other agricultural facilities to continue unabated.\textsuperscript{17}

I. THE LOOHOLE, AND WHY CRANBERRY Bogs FIT THROUGH IT

A. Finding the Loop

The Massachusetts Division of Water Pollution Control (DWPC) has authority over the discharge of ground water and surface water in Massachusetts.\textsuperscript{18} This authority covers both point and nonpoint sources of discharge.\textsuperscript{19} The DWPC and the Massachusetts Clean Waters Act (MCWA) define a point source as “any discernible, confined and discrete conveyance, including but not limited to any pipe, ditch, channel, tunnel, conduit, well, [or] discrete fissure . . . from which pollutants are or may be discharged.”\textsuperscript{20} Many such features and characteristics are common in typical cranberry bogs.\textsuperscript{21}

Cranberries grow naturally in wetland environments, and in order to imitate those conditions, farmers use a combination of techniques.\textsuperscript{22}
Farmers use water- and organic-confining layers to form the base of the bed, and they spread six to eight inches of sand on top of those layers.\(^{23}\) Once they have properly formed the beds, farmers plant cranberry vines, which take several years to reach commercial-grade fruit-bearing capacity.\(^{24}\) Once the vines mature, each harvest of cranberry fruit takes about sixteen months and can benefit from several man-made floods.\(^{25}\) Depending on the season and growth of the fruit, this flooding is done for different reasons.\(^{26}\) Floods can be used to protect against fall and spring frost; to limit exposure to cold, blustery weather in the winter; as a natural pesticide; and perhaps most importantly, floods are frequently used for harvesting ripe cranberries.\(^{27}\) The wet-harvest technique uses floodwater drawn from nearby sources to increase the number of harvestable berries.\(^{28}\) The technique is quite efficient because each cranberry has several small air bubbles within the fruit, allowing it to float to the surface of the water once it is freed from the vine.\(^{29}\) Harvesters then gather the floating berries, using special tools to scoop the berries off the surface of the water.\(^{30}\) The water is subsequently returned to its source when the harvest is complete.\(^{31}\)

\(^{23}\) See Bog Construction, supra note 22, at 6 fig.1.


\(^{26}\) Natural History, supra note 22, at 2–3; Water Use, supra note 25.

\(^{27}\) Natural History, supra note 22, at 2–3; Water Use, supra note 25.

\(^{28}\) See Water Use, supra note 25; E-mail from Dawn Gates-Allen, Communications Manager, Cape Cod Cranberry Growers’ Association, to Tobias F. Bannon, III, Law Student, Boston College Law School (Mar. 11, 2009, 09:35:50 EDT) (on file with author); see also Water Resource, supra note 21, at 1.


\(^{30}\) Id.

However, floodwaters are not necessary to harvest cranberries.32 In fact, farmers have used a dry-harvest method for decades.33 Dry-harvested berries are valuable for many reasons.34 Because fungi tend to grow in damp conditions, dry-harvested berries are more resistant to fungus growth.35 Because of this resistance, typically only dry-harvested berries can be sold as fresh produce.36 Wet-harvested berries, on the other hand, are less resistant to fungi and need to be used more quickly than their dry-harvested counterparts.37 Consequently, wet-harvested berries tend to be used in juices, sauces, and other situations where manufacturers can quickly freeze or process them.38 Dry-harvested berries fetch higher prices because of their more labor-intensive requirements as well as the condition and usability of the fruit.39 Nonetheless, the wet-harvest technique is usually used because it results in larger yields.40 According to the Cape Cod Cranberry Growers’ Association, approximately ninety percent of cranberries are harvested using the wet-harvest technique.41

To carry out the floods utilized in wet harvesting, dikes—a series of barriers designed to contain floodwaters—usually surround cranberry beds.42 Aside from regular irrigation sprinklers, the beds are also connected to a nearby large-scale source of water that is tapped for flood-

32 See id. (explaining “wet” and “dry” harvesting techniques).
33 See Cape Cod Cranberry Growers’ Ass’n, History of Cranberries, http://www.cranberries.org/cranberries/history.html (last visited Jan. 25, 2010). Cranberries are native to the United States and were first used by Native Americans for food around 1550. Flooding was used to control insects and prevent frost damage beginning in 1838, but the first successful water harvesting did not occur until sometime in the 1960s. Id.
34 See Fall Cranberries, supra note 29; see also Gates-Allen, supra note 28; E-mail from Hilary Sandler, IPM Specialist, University of Massachusetts. Cranberry Growing Station, to Tobias F. Bannon, III, Law Student, Boston College Law School (Mar. 11, 2009 10:23:01 EDT).
35 Sandler, supra note 34.
36 Id.
37 Gates-Allen, supra note 28; Sandler, supra note 34.
38 See Fall Cranberries, supra note 29; Gates-Allen, supra note 28; Sandler, supra note 34.
40 Id.
41 Id.
ing. The water travels through a system of flumes, bulkheads, dams, and ditches, all of which are designed to let the water flood the beds.

Subsequent procedures vary according to an individual bog farmer’s practice and bog configuration. “Flow-through” bogs draw water from a source, use it, and then return the used water to either the original source or another nearby waterway. Conversely, bogs that employ the more sophisticated “tailwater recovery” systems essentially pool the water in reservoirs or retention ponds after its use. In those ponds, contaminants may settle out of the water before it is returned to the source or reused for more flooding. Regardless of whether a bog is flow-through or uses tailwater recovery, the system used for output of water is similar to that for input: a network of pumps, flumes, bulkheads, dams, and ditches transports the water back to the source.

Andrew C. Hanson, Attorney Advisor at the U.S. Environmental Protection Agency’s Office of Civil Enforcement, and David C. Bender, a practicing environmental attorney, have argued that the CWA definition of “point source” should cover many portions of the bog-associated water transportation system. There is even reason to consider the gullies and sediment traps as point sources. However, the CWA, the MCWA, and most other state-implemented clean water regulations provide exceptions for agricultural uses. In fact, the Massachusetts definition of point source expressly “does not include return flows from irri-

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43 See Ecological Assessment, supra note 2, at 2 (explaining that Eagle Holt cranberry bogs withdraw and discharge water from nearby Blackmore Pond at a rate of up to 1 million gallons per day); see also Water Fact Sheet, supra note 31, at 1.
44 See Water Control Structures, supra note 42, at 1; Water Resource, supra note 21, at 1.
45 See Andrew C. Hanson & David C. Bender, Irrigation Return Flow or Discrete Discharge? Why Water Pollution from Cranberry Bogs Should Fall Within the Clean Water Act’s NPDES Program, 37 Envtl. L. 339, 362–63 (2007).
46 Id. at 362.
47 Id. at 362–63.
48 Id.
49 See id. at 349, 362–63.
50 See id. at 349–50, 361–64.
51 See Hanson & Bender, supra note 45, at 349.
gated agriculture.” Furthermore, the Massachusetts Surface Water Discharge Permit Program (SWDPP) exempts “[a]ny introduction of pollutants from nonpoint source agricultural . . . activities including runoff from orchards, [and] cultivated crops . . . .” Under this definition, the return flow exemption provides a loophole through which pumped, piped, and controlled flows of water from cranberry bogs and other agricultural operations can escape into waterways without being subject to pollution regulation.

It is worth noting that cranberry bogs were meant to be included under the discharge permitting process. In July of 1976, the EPA amended its then-current irrigation return-flow exemption to require permits for “agricultural point sources.” An official comment to the regulation expressly included water used for cranberry harvesting. However, Congress ignored this comment in 1977 when it passed the CWA Amendments, granting a sweeping exemption to all irrigation return flows.

Examining the scientific climate when CWA Amendments were written helps explain why Congress decided to allow irrigation return flows to pour runoff into local waterways. The federal government designed the CWA Amendments at a time when little was known about the deleterious impacts of nonpoint source runoff. The science pointed to the visible point sources of pollution as the primary causes

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53 314 MASS. CODE REGS. 3.02, 5.02. The Massachusetts Ground Water Discharge Permit Program and the Surface Water Discharge Permit Program use nearly identical definitions. Id. For purposes of this Note, the Surface Water Discharge Permit Program will be the main focus, because this is the regulation most applicable to cranberry bogs; however, both ground and surface water regulations provide the same loophole and could be amended using the same process. See supra Parts III–IV.

54 314 MASS. CODE REGS. 3.05(5) (emphasis added).

55 See id.; see also Hanson & Bender, supra note 45, at 349 (pointing out that in spite of the discharge from cranberry bogs seeming like point sources of pollution, little has been done to subject them to regulation).

56 Hanson & Bender, supra note 45, at 351.

57 Id.

58 Id.

59 Id.

60 See Zygmunt J.B. Plater et al., Environmental Law and Policy: Nature, Law, and Society 633–35 (3d ed. 2004). Additionally, since states that implement their own clean water acts usually model them after the federal CWA, the loopholes in those statutes are reliant upon the same reasoning that results in the loophole in the federal CWA. Compare 33 U.S.C. § 1342(l)(1) (2006) (exempting irrigation return flows from CWA permit requirements), with 314 MASS. CODE REGS. 3.05(5)–(6) (2009) (exempting agricultural runoff and irrigation return flows from permit requirements).

61 See PLATER ET AL., supra note 60, at 633–35.
of water pollution.\textsuperscript{62} This context set the stage for placing the most emphasis on point sources of pollution.\textsuperscript{63} Additionally, the irrigation return flow exemption arose from the government’s attempt to compensate for the wide-ranging climates of our nation.\textsuperscript{64} Farmers in more arid climates would obviously need to water their crops more frequently than farmers in damper climates, and the federal government did not want to discriminate against the arid-land farmers by subjecting them to the same water regulations as the farmers with wetter land.\textsuperscript{65} To address this issue, the Act left open a general exemption for irrigation waters that flowed off farmers’ property after agricultural use.\textsuperscript{66} Though water from a sprinkler that trickles off of a cornfield in Arizona has traveled quite a different pathway than water being pumped from a flooded cranberry bog in Massachusetts, hypothetically this sweeping return flow exemption applies equally to both scenarios.\textsuperscript{67}

B. Results of the Loophole

The problem with cranberry bogs using water from nearby sources remains troublesome, but a look back to Blackmore Pond gives a clearer picture. The ecological assessment of Blackmore Pond cited four possible sources of the elevated levels of phosphorus: septic systems, agricultural water, fertilizer, and precipitation.\textsuperscript{68} Evaluation of the data eliminated septic systems from the list of possible causes of the eutrophic growth.\textsuperscript{69} More studies were needed to pinpoint the source.\textsuperscript{70} A 2005 study then showed what Blackmore Pond residents had suspected for years: the water returning from the nearby cranberry bogs was laden with phosphorus.\textsuperscript{71} The 2005 study also compared several other bog operations and found “that flood discharges are the events of con-

\textsuperscript{62} Id. at 633.
\textsuperscript{63} See id.
\textsuperscript{64} Hanson & Bender, supra note 45, at 352 & n.94.
\textsuperscript{65} Id.
\textsuperscript{66} See id. at 352.
\textsuperscript{67} See id. at 348–54 (explaining that the irrigation return flow exemption is very broad and that Congress had hoped that local operations would fine-tune regulation of agricultural wastewater).
\textsuperscript{68} Ecological Assessment, supra note 2, at 13.
\textsuperscript{69} Id. at 15.
\textsuperscript{70} Id. at 16.
\textsuperscript{71} Carolyn DeMoranville & Brian Howes, Phosphorus Dynamics in Cranberry Production Systems: Developing the Information Required for the TMDL Process for 303D Water Bodies Receiving Cranberry Bog Discharge 17–53 (2005); see Lade, supra note 4.
cern for cranberry systems.”\textsuperscript{72} Even scheduling those floods to try to minimize phosphorus levels is challenging; flooding too quickly stirs up sediments that can be carried out with the water, but flooding too slowly allows more phosphorus to absorb into the water.\textsuperscript{73} Additionally, phosphorus used in previous years’ fertilizing can be picked up and washed out with future years’ flooding.\textsuperscript{74} “[F]lood discharge . . . from bog sites is substantially higher in [total phosphate] concentration compared to incoming bog waters.”\textsuperscript{75} Back at Blackmore Pond, the residents and researchers saw a strong link between the eutrophic growth in 2000 and the discharge from the local cranberry bogs.\textsuperscript{76}

II. Why the Loophole Has Gotten Stronger

A. Fighting Irrigation Return Flow

1. The Logic of the Fight

Many parties have fought to close the loophole in the CWA and/or their respective state regulations.\textsuperscript{77} They have done so because closing the loophole would force certain types of agricultural discharges, such as cranberry bog discharges, into a category governed by point source regulation.\textsuperscript{78} Point sources are regulated by the National Pollutant Discharge Elimination System (NPDES) and various state discharge regulations.\textsuperscript{79} In Massachusetts, the SWDPP and Ground Water Discharge Permit Program allow the DWPC to set and enforce limits for pollutants in surface water and groundwater point source discharges.\textsuperscript{80} If agricultural discharges were classified as point sources, then the EPA and/or state environmental agencies could regulate their pollutant lev-

\textsuperscript{72} DeMoranville & Howes, supra note 71, at 44.
\textsuperscript{73} Id. at 32–33.
\textsuperscript{74} Id. at 19–27, 52.
\textsuperscript{75} Id. at 44.
\textsuperscript{78} See generally Hanson & Bender, supra note 45 (arguing that if certain types of agricultural waters were not exempted as part of the irrigation return flow exemption, that those waters could be regulated).
\textsuperscript{79} See 33 U.S.C. § 1342(f ) (2006); see also 314 Mass. Code Regs. 3.00, 5.00 (2009).
\textsuperscript{80} 314 Mass. Code Regs. 3.03, 3.05, 5.03, 5.05 (requiring all discharges to go through the permitting process, but providing exceptions for various nonpoint sources).
els. In theory, these agencies could set standards similar to industrial wastewater, water treatment plants, or create entirely different standards for these types of agricultural discharges. Presently, however, the lack of regulations means that agricultural users do not have to seriously consider their treatment of water resources.

Commentators have pointed out that water leaving a cranberry bog is very different from a typical return flow of irrigation. One of the studies done on the Blackmore Pond system showed that the Eagle Holt cranberry bog system—the predominant user of Blackmore Pond water for bog flooding—had “no observed surface water discharge except during flood releases.” In other words, the researchers found that most of the time there was no surface water flowing from the bogs into Blackmore Pond. Even the water used for irrigation during the growing season was not detectible as surface water discharge. The water that is used for the few floods each year is the only measurable surface water return flow from the Eagle Holt system to Blackmore Pond.

With the potential of dry-harvesting in mind, citizens wonder why discharge from wet-harvested berries—water that was not used during the growing season but merely as an alternative harvesting technique—fits into the runoff from cultivated crops exclusion. If the MCWA defined cranberry bog discharge as a point source or not a return flow of irrigation, the DWPC could regulate pollutant levels in these discharges.

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81 See 314 Mass. Code Regs. 3.02–.03, 3.05. If, for example, the term “point source” did not have such a sweeping exemption including all “return flows from irrigated agriculture,” or the exemption granted under section 3.05 excluded agricultural water that was not used for irrigation, then cranberry bog flood discharge could be regulated. See id.

82 See id. at 3.06–.19 (illustrating the regulation of various other classifications of discharge water).

83 See id. at 3.05.

84 See, e.g., Hanson & Bender, supra note 45, at 356.

85 DeMoranville & Howes, supra note 71, app. at 74. “Flood releases” include floodwaters used for harvest and winter protection. See id. at 13.

86 See id. app. at 74.

87 See id.

88 See id.

89 E-mail from Barry Cosgrove, Board of Directors, Blackmore Pond Homeowners Association, to Tobias F. Bannon, III, Law Student, Boston College Law School (Apr. 16, 2009, 17:28:08 EDT) (on file with author); see also Hanson & Bender, supra note 45, at 347, 364.

2. History of the Fight

Although no case history exists with regard to closing the loophole for cranberry bog discharge, litigants have fought similar battles.\footnote{See, e.g., Fishermen Against the Destruction of the Env’t, Inc. v. Closter Farms, Inc., 300 F.3d 1294 (11th Cir. 2002); Hiebenthal v. Meduri Farms, 242 F. Supp. 2d 885 (D. Or. 2002); United States v. Frezzo Bros., Inc., 546 F. Supp. 713 (E.D. Pa. 1982), aff’d, 703 F.2d 62 (3d Cir. 1983).} The most closely related case appears to be Fishermen Against the Destruction of the Environment v. Closter Farms.\footnote{See 300 F.3d 1294.} In this Eleventh Circuit case, a sugarcane farm was actively pumping water into Lake Okeechobee, Florida.\footnote{Id. at 1296.} The water consisted of storm drainage as well as water used to flood and irrigate the sugarcane.\footnote{Id. at 1297.} The court held that the sum of the water being pumped off of the premises could be classified as either “agricultural stormwater discharge” or “return flow from irrigation agriculture” despite the active pumping mechanisms.\footnote{Id.} Discharge for water classified as either agricultural stormwater discharge or return flow from irrigation agriculture is unregulated; therefore, the water leaving Closter Farms was similarly unregulated.\footnote{Id. at 1297–98.} The court even added that “any pollutants that originated within Closter Farms can be discharged into Lake Okeechobee by Closter Farms without [a discharge] permit.”\footnote{See id.} This statement reinforced the loophole that federal and/or state environmental agencies cannot regulate agricultural floodwaters.\footnote{See 33 U.S.C. § 1342(l)(1) (2006); Closter Farms, Inc., 300 F.3d, at 1297–98.}

Hiebenthal v. Meduri Farms further illustrates the strength of the irrigation return flow loophole.\footnote{242 F. Supp. 2d 885 (D. Or. 2002).} Defendants owned two fruit dehydrating plants in Oregon and used the wastewater from dehydration as irrigation for their crops.\footnote{Id. at 886.} Before using the water for irrigation, defendants stored it, allowed it to settle, and treated it; however, even after these processes, the court recognized that the water was still polluted.\footnote{Id. at 886–87.} The plaintiffs accused the farmers of frequently over-watering their crops—possibly to dispose of the excess wastewater easily—and claimed that the excess wastewater was more similar to industrial dis-
charge than agricultural discharge. The defendants, by dumping toxic waters onto crop fields, were essentially evading regulation of what would otherwise be industrial wastewater. The court held that it did not have subject-matter jurisdiction to hear the case. While the court recognized that the defendants might frequently apply excess amounts of polluted water to their crops and that this water often left the fields as runoff, it reiterated the rule that the CWA does not provide a remedy to the plaintiffs. The court stated that in order to have jurisdiction, excess runoff must come from a point source. Because this runoff—even though it began life as industrial wastewater—was used to irrigate crops, it was not regulated under the CWA and the court had no power to hear such matters.

In contrast, the District Court for the Eastern District of Pennsylvania held that water discharged from a mushroom composting facility was not irrigation return flow. The holding in United States v. Frezzo Bros., Inc. focused on distinguishing what actually constituted “agricultural” water. Even though composting was done on site and then some of that compost was used to grow mushrooms at the same site, the court held that because the majority of the compost was sold as a manufactured commodity, the use of the water in the process of making the compost did not constitute an agricultural use. At a pretrial hearing, the defendants produced two expert witnesses who argued that making mushroom compost is an agricultural activity; nonetheless, the court held otherwise. Utilizing a previous holding regarding the Fair Labor Standards Act, the court explained that “mushroom growing is a type of farming, [but] the production of mushroom compost is a preliminary activity which manufactures a product.” This distinction meant that the court considered the water used in producing the compost to be separate from the agricultural process; consequently, it did

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102 Id. at 888.
103 See id.
104 See id.
105 Hiebenthal, 242 F. Supp. 2d at 888.
106 Id. at 887.
107 See id. at 887–88.
109 Id. at 722–24.
110 Id. at 724.
111 Id. at 722, 724.
112 Id. at 723 (citing Donovan v. Frezzo Bros., 678 F.2d 1166, 1169 (3d Cir. 1982)).
not constitute any sort of irrigation return flow. This classification made the water subject to discharge regulation.

B. Alternate Fighting Tactics

Because lawsuits attempting to close the loophole in the CWA and corresponding state regulations have proven unsuccessful to date, some parties have opted to sue under different theories. Like Blackmore Pond, Musky Bay, Wisconsin, became heavily laden with phosphorus during the early 2000s. This phosphorus was also suspected to have originated from the fertilizers applied to nearby cranberry beds. Evidence showed that defendant’s bogs were responsible for forty to fifty percent of the phosphorus entering the bay. Such high amounts of phosphorus caused drastic changes in water clarity as well as plant and algae growth. The State of Wisconsin accordingly filed a public nuisance suit, seeking an injunction to bar the defendant from releasing phosphorus into Musky Bay, requiring him to restore the bay, and to pay damages to nearby landowners. The court recognized that the defendant’s cranberry operation was a factor in the degradation occurring at Musky Bay. The stumbling block, however, was that there was no way to determine whether “the overall scope of the interference . . . [was] a public nuisance.” Counting the number of days per year that the public was interfered with might have given an indication of the condition of the lake, but due to the likelihood that other factors contribute to the usability of Musky Bay, the court was not comfortable using those calculations to find the defendant liable. With no way of calculating damages, the court did not impose a penalty on the defendant.

The difficulty of measuring responsibility for public nuisances often presents plaintiffs with a challenge. Even outside the context of a

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113 See id. at 724.
114 Frezzo Bros., 546 F. Supp. at 725.
116 Id.
117 Id.
118 Id.
119 Id.
120 Id.
121 Zawistowski, 2008 WL 302382, at *1.
122 Id. at *2.
123 Id.
124 Id. at *5.
125 See, e.g., id. (showing that even though cranberry bogs were recognized as a large contributor to the phosphorus that rendered the bay useless for part of the year, it was the
public nuisance suit, placing blame can be difficult. For example, after previous eutrophic growth incidents on Blackmore Pond, Eagle Holt growers blamed the residents of Blackmore Pond. Eagle Holt claimed septic systems might be responsible for the elevated phosphorus levels. Although this accusation was later proven false, the claim illustrates how challenging it can be to assign liability and recover damages in a public nuisance action.

III. Citizen-initiated Rulemaking

A. The Rulemaking Process

In the context of futile attempts at closing the regulatory loophole and seemingly hopeless public nuisance suits, the residents of Blackmore Pond are eager for a creative solution. A solution may exist that enables the residents to amend regulations under the Massachusetts Clean Waters Act to protect what they consider to be their, as well as the public’s, interest.

The United States allows citizens to propose adoption, amendment, or repeal of federal regulations. This powerful tool is also codified in many state administrative procedures, allowing citizens to petition for the adoption, amendment, or repeal of state and local regulations. The General Laws of Massachusetts, chapter 30A, section 4, permit “any interested person [to] petition an agency requesting the adoption, amendment or repeal of any regulation.” Although Massachusetts law is ambiguous, federal law has often held that “person,” as defined by the...
Administrative Procedure Act (APA), may include groups and organizations.\textsuperscript{135}

The Massachusetts statute also dictates that each government agency “shall prescribe by regulation the procedure for the submission, consideration and disposition of such petitions.”\textsuperscript{136} For example, the MADEP sets out its own procedure in chapter 310, section 2.00 of the Massachusetts Code of Regulations.\textsuperscript{137} MADEP’s code of regulations clearly states that petitions for rulemaking can be addressed to the department in writing at any time or delivered to the agency in person and that “[t]he petition may be accompanied by any supporting data, views or arguments.”\textsuperscript{138} Even though the right to petition for adoption, repeal, or amendment of any MADEP regulation is available to any interested party, the petition process at MADEP is very seldom used, indicating that doing so may be a novel approach to attempting to address the irrigation return flow loophole.\textsuperscript{139}

Once a party submits its petition to MADEP, the agency will then consider the petition at a meeting—at which attendees’ comments or questions may be permitted—and shall determine whether to schedule the petition or recommendation for further proceedings.\textsuperscript{140} Within ten days of the original meeting, the department will notify the petitioner of the department’s action.\textsuperscript{141}

Provided that MADEP decides to act on the petition, there are slightly different procedures for rulemakings that require hearings versus those that do not.\textsuperscript{142} Because a public hearing is required for “any regulation the violation of which is punishable by fine or imprisonment,” and because violation of the MCWA is punishable by fine or imprisonment, a public hearing would likely be required for this amend-

\textsuperscript{135} See id. § 1(4); Zygmunt Plater et al., The State of Alaska’s Power to Petition for Federal Rulemaking Under APA § 553(e), at 2 (1989).


\textsuperscript{137} 310 Mass. Code Regs. 2.00 (1994).

\textsuperscript{138} Id. at 2.02.

\textsuperscript{139} See E-mail from Lin Sasman, Massachusetts Department of Environmental Protection, to Tobias F. Bannon, III, Law Student, Boston College Law School (Jan. 28, 2009, 14:39:08 EST) (on file with author) (explaining that MADEP does not have any record of citizen petitions for rulemaking ever being used, and that when asked, three employees with between twenty-four and thirty-four years of experience at MADEP could not recall any recent petitions for rulemaking).

\textsuperscript{140} 310 Mass. Code Regs. 2.03-.04.

\textsuperscript{141} Id. at 2.03.

\textsuperscript{142} Compare id at 2.05 (dismissing public hearing requirement), with id. at 2.06 (requiring a public hearing).
ment. Preceding the public hearing, MADEP is required to give notice of the hearing at least twenty-one days prior to the scheduled date. The notice must be published “in at least two newspapers of general circulation, and where appropriate, in such trade, industry, or professional publications as the agency may select.”

When the time comes for the hearing, “the meeting shall be opened, presided over, and adjourned by the Commissioner, or another employee authorized to adopt regulations, or a designee.” Although the format of the public hearing is subject to some flexibility, it may not take the form of an adjudicatory proceeding. “Any interested person or his duly authorized representative . . . shall be given an opportunity to present orally statements and arguments”; however, the agency may use its discretion to limit the length of oral presentations. Also, written statements and arguments may be filed with the agency within ten days of the close of the public hearing. The agency is required to consider all relevant material presented to it before amending any regulation.

B. The Aftermath of the Rulemaking Process

Following the hearing, the agency may amend the regulation or reject the proposed amendment. MADEP’s regulations concerning notice of the disposition of the proposed action—the decision to accept or reject the petition—are silent when it comes to regulations where a public hearing is required; however, if the process resembles regulations where no public hearing is required, the agency must give written notice of the disposition to all persons taking part in the peti-

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143 See id. at 2.06; see also Mass. Gen. Laws ch. 21, § 42 (2008) (indicating a fine or imprisonment may be the penalty for violation of water discharge regulations).
144 310 Mass. Code Regs. 2.06(1).
145 Id. The notice shall contain more than just the location and date of the meeting. The agency is also required to publish, among other things, the text of the proposed regulation and the agency’s statutory authority to adopt the proposed regulation. Id.
146 Id. at 2.06(2).
147 Id.
148 Id. at 2.06(3).
149 Id. at 2.06(2).
150 310 Mass Code Regs. 2.06(2).
151 See id. at 2.03, 2.08 (explaining that regulations will take effect if and when they are filed). Although there is no clear procedure for the rejection of a proposal, section 2.03 states that the department will notify petitioner within ten days of the department’s action, implying that the department will either accept or reject the proposal. See id. at 2.03.
tion process.\textsuperscript{152} As such, the petitioners can expect that the agency will notify all parties of its disposition of the proposed action.\textsuperscript{153}

One possible outcome of the petition process is that MADEP decides to amend the regulation.\textsuperscript{154} In this case, the changes shall take effect upon filing, unless a later date is specified by the agency in the regulation.\textsuperscript{155} A second possibility is that the agency decides not to amend the regulation.\textsuperscript{156} Although non-adoption might seem like defeat to the petitioners, it is not the end of the road.\textsuperscript{157}

Following an agency decision not to amend the given regulation, there are still a number of possible grounds for petitioners to succeed.\textsuperscript{158} The fact receipt of a petition requires public notice means that the proposal will be in the public eye.\textsuperscript{159} Furthermore, especially when a public hearing is involved, media attention may be captured.\textsuperscript{160} One possible result of this attention is that state and local politicians may become aware of and involved with the issues raised by the petition.\textsuperscript{161} Then, regardless of whether or not the petition proceeds smoothly through the regulatory process, the politician may instigate rulemaking by exerting force in the political process.\textsuperscript{162} In 2001, for example, Massachusetts Acting Governor Jane Swift sought to reduce emissions from the commonwealth’s dirtiest power plants.\textsuperscript{163} “The filthy five,” as they were called, were six power plants responsible for ninety percent of total pollution generated by all of the commonwealth’s power plants.\textsuperscript{164} The Clean Air Now coalition had originally filed a petition with

\begin{footnotes}
\item[152] Id. at 2.05(2). Most of the processes of non-hearing procedures are analogous to hearing-required procedures. In light of this, one can presume that where the post-hearing notification process of regulations that require a hearing is silent, it would be analogous the post-submission period process of regulations that do not require hearings. See id. at 2.05–.06.
\item[153] See id. at 2.05(2), 2.06(2).
\item[154] See id. at 2.06.
\item[155] Id. at 2.08.
\item[156] 310 Mass. Code Regs. 2.06, 2.08; see also Andrew P. Morriss et al., Choosing How to Regulate, 29 Harv. Envtl. L. Rev. 179, 192–95 (2005) (discussing various outcomes of unsuccessful petitions for rulemaking).
\item[157] See Morriss et al., supra note 156, at 192–95.
\item[158] See id.
\item[159] Id. at 192.
\item[160] See id.
\item[161] Id.
\item[163] Phillips & Daley, supra note 162.
\item[164] See id.
\end{footnotes}
MADEP in 2000 seeking to amend emissions regulations.\textsuperscript{165} MADEP granted a hearing to petitioners, and received over 1200 pages of written comments and heard over twenty-five hours of oral testimony.\textsuperscript{166} In 2001, under pressure from Governor Swift, MADEP amended power plant emissions regulations, setting limits on sulfur dioxide, nitrogen oxides, carbon dioxide, and mercury.\textsuperscript{167} The entire process took years; MADEP officially issued new regulations on June 7, 2002. Despite the delay, Clean Air Now considered the campaign a success.\textsuperscript{168}

If the petition process fails, another option for pursuing amendment is judicial review.\textsuperscript{169} During the petition process, the comment period helps establish the record for judicial review.\textsuperscript{170} MADEP must address all comments received during the comment period, forcing the agency to pay attention to industry and public concerns.\textsuperscript{171} Addressing the comments also results in agencies being held accountable for considering and addressing the issues raised in the comments.\textsuperscript{172} During judicial review, a court may examine the agency response data.\textsuperscript{173}

In Massachusetts, petitioners can file for judicial review of any regulation.\textsuperscript{174} Judicial review opens up the possibility of declaratory relief, but the burdens for obtaining such relief are high.\textsuperscript{175} Historically, the courts have made it clear that they will defer to the agencies.\textsuperscript{176} If petitioners simply show facts to support their amendment, they will not

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\textsuperscript{169} See Morriss et al., supra note 156, at 193–95.

\textsuperscript{170} See id. at 192.

\textsuperscript{171} See 310 Mass. Code Regs. 2.06(2) (1994); Morriss et al., supra note 156, at 192.

\textsuperscript{172} Morriss et al., supra note 156, at 192.

\textsuperscript{173} See id. at 195.


\textsuperscript{176} Borden, 448 N.E.2d at 378; Purity Supreme, Inc. 407 N.E.2d at 306.
meet the burden of proof required to amend the regulation. Instead, petitioners will have to show “the absence of any conceivable ground upon which [the rule] may be upheld.” Here, agency responses to public comment may be useful. Because the court looks for “reasonableness, not rightness” in supporting the agency’s position, the petitioners must strive to show that the agency’s grounds are unreasonable. If the petitioners are successful in doing so, they may obtain declaratory relief.

At the national level—as seen in the Supreme Court case *Chevron U.S.A., Inc. v. Natural Resources Defense Council*—judicial review generally takes two steps: in the first, courts question whether Congress has directly spoken to the precise question at issue. If yes, then both the court and agency “must give effect to the unambiguously expressed intent of Congress.” In other words, if Congress has spoken, the agency is not free to make its own interpretation of the statute; it must follow the directives of Congress. On the other hand, if Congress has not directly addressed the precise question at issue—if the statute is silent or ambiguous with respect to the specific issue—then the question for the court is whether the agency’s answer is based on a permissible construction of the statute. In *Chevron*, for example, the Court of Appeals had held that the EPA’s “bubble” concept—a means of grouping stationary source emissions by overall emissions at a given property rather than at each specific smokestack—was “inappropriate” for achieving the Clean Air Act’s goals of improving air quality. Reversing this holding, the Supreme Court pointed out that even if a court felt that the statute should have been interpreted differently, the court

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177 See id.
179 See Morriss et al., *supra* note 156, at 192 & n.67.
180 40 Mass. Prac. 1641 (explaining that under judicial review, the reviewing court seeks to find reasonableness, not rightness, of the administrative agency’s decision).
183 Id. at 843.
184 See id.
185 Id.
186 See id. at 841–42. More specifically, the appeals court held that the bubble concept was mandatory in programs designed to maintain existing air quality, but in nonattainment areas—those areas with substandard air quality, where the primary goal is improvement of air quality—the bubble concept is “inappropriate” and contrary to law. See id. Since power plants could modify their facilities but maintain the same level of emissions within the “bubble” that covered their entire property, the appeals court found this to be contradictory to the goal of improving air quality in nonattainment areas. See id.
may not substitute its own construction for a “reasonable interpretation made by the administrator of an agency.” 187 Furthermore, the Court repeatedly stressed the importance of deference to the agency, especially when statutes are vague or leave room for interpretation. 188

Despite high levels of deference, courts will hold that an agency’s action is unreasonable if that action directly contradicts the face value of the regulation in question. 189 In United States Gypsum Co. v. Executive Office of Environmental Affairs, for example, the Massachusetts Appeals Court held that an official’s exclusion of certain properties from a specific type of zoning was “unsupported by substantial evidence” because the properties undoubtedly fit criteria clearly defined in agency regulations that would have included those properties as part of the zoning. 190 Furthermore, the court expressly stated that “courts will not hesitate to overrule agency interpretations of rules when those interpretations are arbitrary, unreasonable, or inconsistent with the plain terms of the rule itself.” 191 The court explained that in most cases, though, an agency’s reasonable interpretation will be “entitled to great weight.” 192

If petitioners do not meet success through petition, public and political attention, and judicial review at the state level, they can essentially repeat the entire process at the federal level. 193 The CWA includes similar irrigation return-flow exemptions that result in loopholes for cranberry bogs. 194 Because state-specific clean water acts must be at least as strict as the CWA, if this loophole were closed at the federal level, it would need to be closed at the state level as well. 195 As such, citizens or citizen groups could use the APA to submit a petition to amend the federal CWA. 196 This process would provide another opportunity for petitioners to propose amendment, catch public attention, and file for judicial review if necessary. 197

187 Id. at 842, 844.
188 Chevron, 467 U.S. at 842–44.
190 Id.
191 Id. at 770 (citing Manor v. Superintendent, Mass. Correctional Inst., 626 N.E.2d 614 (Mass. 1994)).
192 Id.
194 33 U.S.C. § 1342(f) (1); see supra Part I.
195 Id. § 1316(c).
197 See Morriss et al., supra note 156, at 192–95.
IV. Using Citizen Petitions for Amendment to Close the Loophole

A. Petitioning for Amendment

The CWA’s irrigation return-flow exemption results in loopholes that many consider to be illogical and a nuisance to the public. The residents of Blackmore Pond are particularly affected by the loophole, and they, as well as the water quality of the lake, would benefit from its closing. Although a lawsuit against the growers is one possible option for the residents, such suits are generally unsuccessful. As such, a citizen petition for rulemaking—in this case, amendment of a regulation—may provide an unexpected avenue of addressing the problem. This seldom-utilized procedure would allow any one citizen or group of citizens, such as a homeowners association, to petition MADEP to amend the ground and surface water discharge permit programs.

To begin the petition process, the homeowners association would need to petition MADEP by proposing an amendment to the MCWA regulations. For example, the association might seek to amend title 314 of the Code of Massachusetts Regulations, section 3.05(6). The regulation currently excludes “[r]eturn flows from irrigated agriculture” from pollution permit regulation. The association might petition to amend subsection 3.05(6) to read “return flows from irrigated agriculture, but not including non-irrigation agricultural waters.”

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198 See generally Hanson & Bender, supra note 45; Lade, supra note 4.
199 See Lade, supra note 4 (illustrating the frustration of the residents of Blackmore Pond); see also DeMoranville & Howes, supra note 71, at 6 (recommending that cranberry bogs should try to minimize the release of phosphorus into local waterways); Ecological Assessment, supra note 2, at 11–12.
201 See 310 Mass. Code Regs. 2.00 (1994) (providing the grounds to petition for amendment of a regulation); Sargent, supra note 165 (explaining that what began as a citizen petition turned into support and action by the governor).
202 See 310 Mass. Code Regs. 2.02; Sasman, supra note 139 (indicating that citizen petitions for amendment are not commonly used).
203 See 310 Mass. Code Regs. 2.02–.03.
205 Id.
206 See id. (italicized portion indicates the proposed amendment). Additionally, the definition of “point source” might have to be amended to distinguish between true irrigation return flows and non-irrigation agricultural discharge so that no conflict exists between the definitions of terms and application of regulations. See id. at 3.02.
change in regulation would mean that waters used by farmers for purposes other than irrigation would be subject to discharge regulations.\textsuperscript{207}

This modification can be seen as a modest compromise: the irrigation return-flow exemption is left intact because true return flows from irrigation can remain unregulated, but agricultural waters not used for irrigation must go through the discharge permitting process.\textsuperscript{208} As a result, water that trickles off of fields after sprinklers are used to water the crops would remain untouched by the amendment, but water that is piped and pumped onto bogs and then returned to the source after collecting the harvest would fall into a category requiring permits for discharge.\textsuperscript{209}

Upon submitting the petition for amendment, the association would want to also submit relevant information supporting their petition.\textsuperscript{210} The agency guidelines do not suggest what sort of materials should be submitted, but in order to build as strong a case as possible, the petitioners would want to submit relevant “data, views [and] arguments.”\textsuperscript{211} Submitting the scientific studies would demonstrate that phosphorus is the cause of the eutrophic growth and that the cranberry bogs, not septic tanks, are the most troublesome contributor of phosphorus.\textsuperscript{212} By explaining the water patterns, the water study could help support the notion that flood releases are the major cause of phosphorus leaving the bogs and entering the lake, thereby pinpointing the source of the problem.\textsuperscript{213} Photographic evidence could illustrate the effects of the eutrophic growth, both at different times of the year and in the past several years.\textsuperscript{214} Documentation of the fact that irrigation return-flow exemptions were meant to protect actual irrigation done by farmers in dry climates could support the argument that water leaving the cranberry bog should not fit into the “irrigation return

\textsuperscript{207}See id. at 3.03, 3.05.
\textsuperscript{208}See id.
\textsuperscript{209}Compare id. at 3.05(6) (exempting non-irrigation return flows from regulation under MCWA), with text accompanying note 206 (proposing amendments to 3.05 to subject cranberry bogs to regulation under the MCWA); see also 314 Mass. Code Regs. 3.03.
\textsuperscript{210}See 310 Mass. Code Regs. 2.02 (1994)
\textsuperscript{211}See id.; Morriss et al., supra note 156, at 192 (indicating that agencies sometimes learn new information during the rulemaking process, and that this information may lead to amendments to regulatory provisions).
\textsuperscript{212}See DeMoranville & Howes, supra note 71, at 44; Ecological Assessment, supra note 2, at 15.
\textsuperscript{213}See DeMoranville & Howes, supra note 71, at 44, 74.
\textsuperscript{214}See Ecological Assessment, supra note 2, at 1 (indicating that lake conditions have changed with time).
flow” category. Ultimately, beneficial material could include anything that the homeowners association believes will help support their case.

Following the submission of the petition to amend the MCWA regulations, MADEP would decide at a meeting whether to schedule the petition for further proceedings; it would notify the association within ten days of the decision. If the agency decides to proceed, then this procedure would likely occur by the public hearing method, because violation of the ground and surface water discharge permit programs are punishable by fine or imprisonment. The public would be notified of the hearing through at least two local newspapers, and the agency might also choose to notify local cranberry growers through industry publications. In the interim, all interested parties would be able to submit written statements and arguments, and could continue doing so until ten days after the public hearing. The greater the number of well-reasoned statements and arguments submitted to MADEP, as well as the number of parties who attend and participate at the public hearing, the greater the impact on MADEP in terms of appreciating the significance of this issue. The homeowners association would want to encourage as many submissions and attendees as possible.

Following the public hearing, the agency may or may not amend the regulation. If MADEP amends the regulation as proposed, the homeowners association would obviously be delighted, and as soon as

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215 See Hanson & Bender, supra note 45, at 352.
216 See 310 Mass. Code Regs. 2.02 (1994) (allowing supporting data, views, or arguments to accompany petitions). Because MADEP will receive these forms of support when it considers whether to proceed with the amendment process, the homeowners association would benefit by building a convincing case for amendment as early as possible. See id.; Morriss et al., supra note 156, at 192.
217 See 310 Mass. Code Regs. 2.03.
218 See id. at 2.06 (stating that petitions regarding regulations, for which violations are punishable by fine or imprisonment, will require a public hearing); see also Mass. Gen. Laws ch. 21, § 42 (2008) (instituting fines or imprisonment for violating discharge regulations).
219 See 310 Mass. Code Regs. 2.06(1). The agency is permitted to use its discretion in publishing notice of the hearing in trade and industry publications. Id. In this case, the agency might choose to publish notice in local industry newsletters such as the Cape Cod Cranberry Growers’ Association newsletter or the University of Massachusetts Cranberry Station newsletter. See id.
220 See id. at 2.06 (2).
221 See id. (requiring the agency to consider all relevant material presented to it); Morriss et al., supra note 156, at 192 (suggesting that agencies may sometimes discover new information or relevant viewpoints during the comment period).
222 See 310 Mass. Code Regs. 2.03, 2.06, 2.08; see also Morriss et al., supra note 156, at 192–95.
MADEP files the amendment (or at a date specified by the agency), cranberry bogs would need to meet specified criteria for discharges of non-irrigation agricultural waters. The cranberry bog floodwaters could then be regulated under the MCWA. The amendment proposed by the homeowners would remove non-irrigation agricultural waters from the exemption category, which would open the door to limitations on nearly all types of pollution. MADEP could enforce phosphorus limitations to minimize or avoid future eutrophic growth, and the cranberry farmers would then have a choice: either stop using the water or abide by MADEP’s permitting and regulation process. Even if Eagle Holt were to choose dry harvesting, if they were to execute floods throughout the growing season—for instance, for winter weather protection purposes—then this water would also have to meet discharge regulations upon release because it is non-irrigation agricultural water.

If MADEP does not amend the regulation, or if MADEP decides not to proceed upon receipt of the original petition, then the homeowners association might want to begin the process of judicial review. Judicial review provides an avenue to amend regulations, but the burden of proof is high. It is possible that the court would look to Chevron for guidance and would thus consider whether the intent of Congress is clear in this particular regulation, and if not, whether the agency’s construction of the regulation is permissible. Based on the fickle mid-1970s discharge regulations, as well as the struggles seen in modern case history, the homeowners association can likely show that legislative intent is not clear in terms of whether non-irrigation agricultural runoff is meant to fit through the irrigation return flow loop-

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223 See 310 Mass. Code Regs. 2.08.
225 See id. The proposed amendment would remove non-irrigation agricultural waters from the list of exempted water discharges. See id. at 3.05; supra note 206 and accompanying text. The definition of “point source” would also likely need amending to ensure consistency between the regulatory provisions. See 314 Mass. Code Regs. 3.02. With these changes in place, the DWPC could then regulate the discharge. Id. at 3.03, 3.08.
226 See id. at 3.03, 3.08.
227 See id. at 3.03, 3.05, 3.08.
229 See Mass. Gen. Laws ch. 231A, §§ 1–2 (stating that judicial review can be used to obtain declaratory relief); see also 39 Mass. Prac. 774 (describing the high burden of proof during judicial review).
hole.\textsuperscript{231} Still, the subsequent level of deference to the agency would be high, and the association would need to prove that the agency’s choice to enforce the regulation is unreasonable, not that it is “not right.”\textsuperscript{232}

On one hand, the court might analogize to \textit{Chevron}.\textsuperscript{233} Even if the court might have interpreted the statute differently, provided that the agency’s interpretation is one form of reasonable interpretation, the court will not provide a remedy.\textsuperscript{234} However, it is possible that the court could find that MADEP’s interpretation of the Act is “arbitrary, unreasonable, or inconsistent with the plain terms of the rule itself.”\textsuperscript{235} For instance, the court might look to the intent behind the 1976 permitting regulations and note that return flows from cranberry bogs were meant to be regulated before Congress passed the sweeping irrigation return flow exemption in the 1977 Clean Water Act Amendments.\textsuperscript{236} Using this history as guidance, and by considering agency responses to public concerns raised during the petition’s comment period, the court might hold that it is unreasonable to permit controlled releases of non-irrigation agricultural waters under the return flow exemption.\textsuperscript{237}

\textbf{B. The Relevance of Case History in the Petition Process}

Upon submitting the petition to MADEP, appealing to prior case history might also help the homeowners association.\textsuperscript{238} Because it is almost impossible to find consistent, established precedent with regard to irrigation return flow matters, it is obvious that clarifying the definition of “irrigation return flow” would be beneficial.\textsuperscript{239}

\begin{footnotesize}
\begin{enumerate}
\item See Hanson & Bender, \textit{supra} note 45, at 350–54; \textit{see, e.g.}, Fishermen Against the Destruction of the Env’t, Inc. v. Closter Farms, Inc., 300 F.3d 1294 (11th Cir. 2002); Hiebenthal v. Meduri Farms, 242 F. Supp. 2d 885 (D. Or. 2002); United States v. Frezzo Bros., Inc., 546 F. Supp. 713 (E.D. Pa. 1982), \textit{aff’d}, 703 F.2d 62 (3d Cir. 1983).
\item See U.S. Gypsum Co. v. Executive Office of Envtl. Affairs, 867 N.E.2d 764, 770 (Mass. App. Ct. 2007) (discussing the high level of discretion given to an agency or agency official); 40 MASS. PRAC. 1641.
\item See 467 U.S. at 842–44.
\item See \textit{id.} at 844.
\item See \textit{Gypsum}, 867 N.E.2d at 770.
\item Hanson & Bender, \textit{supra} note 45, at 350–54.
\item \textit{See Gypsum}, 867 N.E.2d at 770; Hanson & Bender, \textit{supra} note 45, at 350–54; Morriss et al., \textit{supra} note 156, at 192 & n.67.
\item See Morriss et al., \textit{supra} note 156, at 192.
\item \textit{Compare} Fishermen Against the Destruction of the Env’t, Inc. v. Closter Farms, Inc., 300 F.3d 1294 (11th Cir. 2002) (holding that water used in sugar cane farming was return flow from irrigation agriculture even though the water was actively pumped off the premises), \textit{and} Hiebenthal v. Meduri Farms, 242 F. Supp. 2d 885 (D. Or. 2002) (holding that water that was industrial waste was not subject to regulation because it was used to irrigate crops), \textit{with} United States v. Frezzo Bros., Inc., 546 F. Supp. 713 (E.D. Pa. 1982), \textit{aff’d}, 703 F.2d 62 (3d Cir. 1983).
\end{enumerate}
\end{footnotesize}
Frezzo Bros. is perhaps the only case where the court felt comfortable enough to make a distinction between various types of waters used at one agricultural operation.\textsuperscript{240} Pointing out that some water coming off of a farm is very different than what regulations seek to exempt, the court ruled that the runoff resulting from mushroom composting must be subject to discharge regulation.\textsuperscript{241} In essence, the court drew a line between traditional farming activities and other activities that may take place on a farm.\textsuperscript{242} Runoff from traditional farming activities was more likely to be classified as an exemption.\textsuperscript{243} In this case, the court held that composting water, because it was used primarily to manufacture a commodity for sale, could be subject to discharge pollution regulation; the irrigation, rain, and runoff water, however, was exempt as irrigation return flow.\textsuperscript{244} In sum, Frezzo Bros. seems to indicate that certain processes that take place on a farm—in this case, manufacturing—do not fit through a loophole in the irrigation return-flow exemption.\textsuperscript{245}

The holding in Frezzo Bros. was subsequently weakened when the court in Hiebenthal held that it had no authority over excess manufacturing wastewater disposed of on crop fields.\textsuperscript{246} The court even mentioned that the water was polluted and that such discharge is likely to continue.\textsuperscript{247} In spite of such conditions, the court held that it did not have subject-matter jurisdiction over the waters in question.\textsuperscript{248} Hiebenthal thus illustrates a mismatch between common sense and written law: polluted waters running off of a crop field should be regulated, but because there exists a general irrigation return-flow exemption, the court is powerless.\textsuperscript{249} Furthermore, Hiebenthal does not support the holding in Frezzo Bros. that manufacturing wastewater is subject to CWA regulation.\textsuperscript{250}

If non-irrigation agricultural waters were regulated under the CWA, then perhaps the Hiebenthal court would not have had to give up

\textsuperscript{240} See 546 F. Supp. at 723–25.
\textsuperscript{241} Id. at 725.
\textsuperscript{242} See id. at 723–25.
\textsuperscript{243} Id. at 724–25.
\textsuperscript{244} Id. at 725.
\textsuperscript{245} See id. at 734.
\textsuperscript{247} Hiebenthal, 242 F. Supp. 2d at 887.
\textsuperscript{248} Id.
\textsuperscript{249} See id. at 887–88.
\textsuperscript{250} See id.; Frezzo Bros., 546 F. Supp. at 724–25.
so easily and the holding would fit more squarely with *Frezzo Bros.* The *Hiebenthal* court instead could have been able to make a distinction: the water that was sufficient for irrigating the crops could fit into the “irrigation return flow” exemption and flow naturally without permit, but the excess water that was intentionally applied for disposal purposes is not irrigation and therefore must meet certain water quality standards upon discharge. A regulation that stated such a distinction might have been easier for the court to enforce and possibly could have resulted in less of a struggle.

*Frezzo Bros.* and *Hiebenthal* are proof that clarity in the CWA is needed; when the holdings from the cases are compared, it is difficult to see a consistent application of the irrigation return flow exemption. It would have been possible for the *Hiebenthal* court to follow the precedent set in *Frezzo Bros.* and demand that excess manufacturing wastewater be subject to CWA regulation, but instead, the court held otherwise. Even though the water was polluted, the court held that it did not have jurisdiction under the CWA. Closing the non-irrigation agricultural waters loophole would solve this problem and enable more consistent regulation of the various types of agricultural waters.

C. *The Aftermath of the Petition Process: Modern Solutions to Old Problems*

The courts could have decided differently or more efficiently in many of the cases mentioned if the irrigation return flow loophole did not exist. These cases also give an indicator as to how cranberry bogs might be regulated in light of a CWA amendment. For example, although the court in *Frezzo Bros.* might not have decided differently, it

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252 See *Hiebenthal*, 242 F. Supp. 2d at 887–88; see also 33 U.S.C. § 1342(l) (1).  
254 Compare id. (holding that water that was industrial waste was not subject to regulation because it was used to irrigate crops), with *Frezzo Bros.*, 546 F. Supp. at 724–25 (holding that water used in mushroom composting is subject to discharge permitting requirements).  
257 See *Hiebenthal*, 242 F. Supp. 2d at 887–88; *Frezzo Bros.*, 546 F. Supp. at 722–24; see also Hanson & Bender, supra note 45, at 364.  
258 See, e.g., Fishermen Against the Destruction of the Env’t, Inc. v. Closter Farms, Inc., 300 F.3d 1294 (11th Cir. 2002); *Hiebenthal* 242 F. Supp.2d 885; *Frezzo Bros.*, 546 F. Supp. 713. Additionally, the public nuisance suit in Zawistowski might not have even been necessary if the level of phosphorus was regulated in cranberry bog discharges. See State v. Zawistowski, No. 2006AP1539, 2008 WL 302382, at *1 (Wis. Ct. App. Feb. 5, 2008).  
259 See *Fishermen*, 300 F.3d 1294; *Hiebenthal* 242 F. Supp. 2d 885; *Frezzo Bros.*, 546 F. Supp. 713; see also Hanson & Bender, supra note 45, at 364.
probably could have made its finding much more efficiently. Rather than having to turn to prior case law to determine if manufacturing was classified as part of agricultural activity, the court could have simply placed the water into the “non-irrigation agricultural waters” category and enforced CWA regulation accordingly. By analogizing cranberry production to the farming practices in Frezzo Bros., one can distinguish between water used to help the cranberries grow and water used to collect a marketable commodity. Noting that it is possible to harvest cranberries without flooding the beds, cranberry farmers clearly use the floodwaters for the wet-harvesting method to procure a commodity for sale; therefore, like water used to manufacture compost, it is not agricultural irrigation.

The Hiebenthal scenario is also analogous to the situation at Blackmore Pond because the cranberry floodwaters are similar to the excess manufacturing wastewater coming off of the fields in Hiebenthal. In neither situation is the water that creates the controversial “return flow” used to irrigate crops; in the former the water is used to harvest, in the latter it is left-over manufacturing wastewater applied in excess of irrigational needs. It would have been possible for the farmer in Hiebenthal to use less water when irrigating his crops. Similarly, cranberry farmers can harvest their crops without using any floodwaters at all. Thus, like the court in Hiebenthal would have had jurisdiction over the excess waters if the non-irrigation agricultural waters loophole were closed, the MADEP could regulate the water from Eagle Holt cranberry bogs returning to Blackmore Pond if the loophole were closed.

Finally, Fishermen Against the Destruction of the Environment represents perhaps the broadest interpretation of the agricultural water return flow loophole, and it is important to distinguish the case from modern-

260 See 546 F. Supp. at 722–25 (dedicating nearly three full pages to clarifying what constitutes traditional farming versus other processes that take place on a farm, something the court likely would not have had to do if the CWA provided clearer guidelines).

261 See id.

262 See id.; supra Part I.A. (explaining the use of water in cranberry production).

263 See Frezzo Bros., 546 F. Supp. at 724; Fall Cranberries, supra note 29.


265 Id. at 888; see also DEMoranville & Howes, supra note 71, app. at 74 (showing that water traveled from the cranberry bogs to Blackmore Pond following floods but not at all during the growing season).

266 242 F. Supp. 2d at 888 (mentioning that the farmer used water “in excess of the crops’ actual absorption”).

267 Fall Cranberries, supra note 29.

268 See 242 F. Supp. 2d at 887; see also 314 Mass. Code Regs. 3.03, 3.05 (2009).
day cranberry operations. In *Fishermen*, the court held that discharge of the floodwaters from a sugarcane field was stormwater and irrigation return flow and thus exempted from regulation. During sugarcane growth, the fields stay flooded throughout the growing season, and much of the floodwater is actually used to water the crops as they grow. As such, closing the non-irrigation loophole might allow proportionate regulation of the volume of water that is not used to irrigate the sugarcane, but leave unregulated the volume of water used to actually irrigate the crops. This situation is very different from that seen on most cranberry bogs. Whereas the floodwater on the sugarcane fields is actually used to irrigate growing crops, the cranberry floodwaters are utilized for other purposes. As seen in the water pattern study at Blackmore Pond, the only surface water measured leaving the bogs was after a flood release, not during the regular growing season. This finding supports the argument that the water is not actually any sort of return flow from irrigation; after all, true irrigation would have been done during the growing season, but the researches did not observe any water leaving the bog at that point in time. Rather, the water that is normally discharged during flood releases is more of a tool that farmers use to harvest the berries at the end of the growing season. If the homeowners association were successful at closing the loophole via amendment to the MCWA, the designation of these waters would no longer be a guessing game; as non-irrigation agricultural waters, they would be subject to regulation.

**Conclusion**

The residents of Blackmore Pond would benefit from an amendment adding “non-irrigation agricultural waters” to the list of regulated

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269 *Fishermen Against the Destruction of the Env’t, Inc. v. Closter Farms, Inc.*, 300 F.3d 1294, 1297–98 (11th Cir. 2002).

270 *Id.* at 1297.

271 *Id.*


273 *See Fishermen*, 300 F.3d at 1297; *Water Use*, supra note 25.

274 *See Fishermen*, 300 F.3d at 1297; *Water Use*, supra note 25.

275 *DeMoranville & Howes*, supra note 71, app. at 74.

276 *See id.; see also Water Use*, supra note 25 (differentiating irrigation from flooding).

277 *Water Use*, supra note 25 (discussing further that floods may also be used for various other purposes depending on conditions, but will almost certainly be used for harvesting).

discharges under the MCWA.\textsuperscript{279} In fact, many environmental interest groups as well as the general public might also benefit from a similar amendment at the federal and/or state levels.\textsuperscript{280} Data shows that cranberry bogs are, in fact, a known source of phosphorus in surrounding waterways, and that such phosphorus can result in eutrophic growth, an undesirable condition that decreases water quality and usability.\textsuperscript{281} Furthermore, case history shows two things: attempts at dealing with these problems have been largely unsuccessful and that courts are often uncertain and inconsistent when applying CWA regulations to various types of agricultural waters.\textsuperscript{282}

It is therefore evident that clarification of the discharge regulations is needed and that upon such clarification, it would be beneficial to include an amendment closing the irrigation return-flow exemption loophole that permits farmers to discharge non-irrigation agricultural waters without regulation.\textsuperscript{283} Fortunately, Massachusetts state law allows any citizen to petition for the adoption, amendment, or repeal of any state or agency regulation.\textsuperscript{284} The Blackmore Pond Homeowners Association could use this valuable tool to propose amendment to the MCWA regulations.\textsuperscript{285} If successful, the amendment could impose water quality regulations on the discharge of cranberry bog waters and other non-irrigation agricultural waters not only into Blackmore Pond, but other state waterways as well.\textsuperscript{286}

If the state-level petition process does not yield favorable results for the association, the homeowners may utilize judicial review and attempt

\begin{itemize}
  \item See DeMoranville & Howes, \textit{supra} note 71, at 44 (indicating that flood releases from cranberry bogs are major contributors of phosphorus to nearby waterways); \textit{Ecological Assessment}, \textit{supra} note 2, at 11 (indicating that phosphorus is one of the major causes of eutrophication, such as that founds at Blackmore Pond).
  \item See DeMoranville & Howes, \textit{supra} note 71, at 6 (stating that less phosphorus leaving cranberry bogs is recommended). \textit{See generally} Hanson & Bender, \textit{supra} note 45 (arguing that regulation of cranberry bog discharges is desirable and would help address water-quality problems caused by cranberry bogs).
  \item DeMoranville & Howes, \textit{supra} note 71, at 44; \textit{Ecological Assessment}, \textit{supra} note 2, at 11.
  \item See \textit{supra} Part II.A.2 (illustrating that the loophole has resulted in inconsistent suits under the CWA); Hanson & Bender, \textit{supra} note 45, at 364.
  \item See id.; 310 Mass. Code Regs. 2.00 (1994).
  \item See 314 Mass. Code Regs. 3.03, 3.05, 3.08 (2009).
\end{itemize}
to prove that the respective regulation under the MCWA is unclear and unreasonable.\textsuperscript{287} Additionally, the homeowners may also commence a very similar petition process at the federal level seeking to amend the federal CWA.\textsuperscript{288} Finally, it is important to note that citizen petitions for rulemaking at both the federal and state levels are very valuable—though often overlooked—tools for any American seeking change.


\textsuperscript{288} 5 U.S.C. 553(e) (2006).
MAKING TAXIS GREEN: HYBRID CAB PROGRAMS AND THE DEBATE OVER PREEMPTION IN ENVIRONMENTAL REGULATION

J.D. HOLDEN*

Abstract: In the past few years, many cities have attempted to mandate the use of hybrid taxicabs. The taxi industry, arguing that the Energy Policy and Conservation Act and the Clean Air Act preempt such mandates, has successfully opposed them. Mandating hybrid cab use, however, is but one important aspect of a larger push by states and local governments to enact progressive environmental legislation and policies with greater breadth than those of the federal government. An example is California’s battle to enact greenhouse gas emissions regulations and its conflict with the Environmental Protection Agency. Though New York City and Boston lost on preemption grounds, their attempts are important in the context of the battle over environmental federalism. In the long term, the Energy Policy and Conservation Act should be amended to allow for more progressive environmental regulations at the state and local level.

Introduction

Recently, several state and local governments have taken a more progressive approach to combating climate change and other environmental problems through regulations at the state and local level.\(^1\) California’s Assembly Bill 1493 (AB-1493), which focused on the problem of vehicle emissions of greenhouse gases, was one prominent initiative of this kind.\(^2\) However, there were many smaller and more localized


2 See Kevin Gaynor & Mara Zimmerman, Federal Approaches to Climate Change: Federal Preemption of State Climate Change Laws, SN062 A.L.I-A.B.A. 813, 821–29 (2008); Parenteau, supra note 1, at 1466–72; Giovinazzo, supra note 1, at 895–904; see also Kate Galbraith, Cali-
programs of importance, such as many cities’ efforts to facilitate the transition to hybrid taxicabs.³

Multiple cities developed programs to encourage the use of hybrid taxis on their streets: most focused on incentives, but some cities used regulation and legislation to require taxi owners to transition to hybrid cabs.⁴ Examples include Boston and New York City.⁵ Resistance to these initiatives was apparent, and a suit to stop New York City’s hybrid cab regulations filed by the taxi industry was one of the more noticeable examples of such resistance.⁶ The taxi industry’s resistance to New York City’s mandate-style hybrid cab regulations was, in the end, successful, as was the resistance to Boston’s mandate.⁷

Opponents to state and local regulations have challenged them on similar preemption grounds.⁸ Opponents challenged California’s AB-1493 on the grounds that it was preempted by federal statute.⁹ AB-1493


⁶ See Metro. Taxicab Bd. of Trade I, 2008 WL 4866021, at *15 (granting an injunction preventing New York City’s hybrid cab regulations from taking effect).


⁸ See Gaynor & Zimmerman, supra note 2, at 827.

⁹ See id. See generally Cent. Valley Chrysler-Jeep, Inc. v. Goldstene, 529 F. Supp. 2d 1151 (E.D. Cal. 2007) (plaintiffs claimed preemption of AB-1493 under the EPCA and the CAA).
became part of a larger debate over the nature of environmental federalism and the future of local environmental initiatives to combat climate change and other environmental problems.¹⁰

This Note examines the conflict over New York City’s hybrid cab regulations, what New York City can do to alter them to meet its goals, and how the conflict fits into the larger debate over preemption and environmental federalism and its effects on other cities. This Note will discuss New York City’s regulations and AB-1493 as representative of the more general conflict discussed above. Part I examines the structure of hybrid cab programs and the difference between an incentive structure and mandate structure, using Boston as an example.¹¹ Part II examines New York City’s hybrid cab regulations and their defeat in litigation under the preemption doctrine.¹² Part III explores the larger debate over environmental federalism and the preemption doctrine using AB-1493 as an example, and then discusses the fate of Boston’s hybrid cab mandate after the U.S. District Court for the Southern District of New York struck down New York City’s program.¹³ Part IV analyzes New York City’s options, and then explores why initiatives such as New York City’s are important and why they should prompt a change in thinking about federal preemption.¹⁴

I. HYBRID CAB PROGRAMS AND THE LEAD UP TO NEW YORK

A. Boston’s Hybrid Cab Program

1. The Incentive Approach

The City of Boston created the CleanAir Cabs program to promote the adoption of hybrid cabs.¹⁵ The CleanAir Cabs program defined itself as a “partnership of government agencies, private businesses, and community members dedicated to reducing fuel costs and air pollution through the introduction of hybrid and alternative fuel vehicles to Bos-

¹⁰ See Adelman & Engel, supra note 1, at 1796–1801, 1846–49; Gaynor & Zimmerman, supra note 2, at 815, 821–31; Parenteau, supra note 1, at 1455–56.
¹¹ See infra Part I.
¹² See infra Part II.
¹³ See infra Part III.
¹⁴ See infra Part IV.
¹⁵ See CLEANAIR CABS BROCHURE, supra note 3; Massport Press Release, supra note 3.
ton’s taxi industry.”\textsuperscript{16} The goal was to promote hybrid cabs as more efficient vehicles with lower fuel costs.\textsuperscript{17}

The CleanAir Cabs Program contained several incentives to encourage hybrid cab use.\textsuperscript{18} As part of the program, hybrid taxis received special privileges when lining up at Logan International Airport, which were designed to shorten the waiting time for cab drivers.\textsuperscript{19} Less time spent in the taxi queue meant that drivers could make “an additional two airport trips per twelve hour shift with an average fare of $25.”\textsuperscript{20} In addition, on April 23, 2007, Boston Mayor Thomas Menino announced a $25,000 grant “awarded to . . . increase participation in the CleanAir Cab program by offsetting extra costs associated with purchasing a new hybrid or alternative fuel vehicle.”\textsuperscript{21}

Despite the incentives, Boston did not obtain the results it desired and drivers raised objections based on the cost of transitioning to the more efficient vehicles.\textsuperscript{22} After eighteen months, only thirty-two of Boston’s 1825 cabs were hybrids; the city had hoped for at least 100.\textsuperscript{23} The main problem limiting adoption of hybrid cabs seems to have been the price of the vehicles themselves.\textsuperscript{24} The hybrids “cost nearly $30,000 after [they were] customized to meet taxi regulations.”\textsuperscript{25} Most drivers used “Ford Crown Victorias from police department surpluses that usually cost less than $10,000.”\textsuperscript{26}

The preference system at Logan Airport and tax credits were not enough to encourage widespread hybrid cab adoption,\textsuperscript{27} though both were a large part of Boston’s attempts to encourage hybrid cab use by convincing drivers that they would save on fuel costs and receive federal tax credits.\textsuperscript{28} The Director of the Licensing Division of the Boston Police Department, Marc Cohen, called the lack of adoption a “momentum issue,” and said that the conversion to hybrid cabs “seemed to be

\textsuperscript{16} CleanAir CABS Brochure, supra note 3.
\textsuperscript{17} See id.
\textsuperscript{18} See Noah Bierman & Matthew P. Collette, City Hopes Hybrid Taxis Gain Steam, Boston Globe, Mar. 9, 2008, at B2.
\textsuperscript{19} See id.
\textsuperscript{20} Massport Press Release, supra note 3.
\textsuperscript{21} Id.
\textsuperscript{22} See Bierman & Collette, supra note 18.
\textsuperscript{23} Id.
\textsuperscript{24} See id.
\textsuperscript{25} Id.
\textsuperscript{26} Id.
\textsuperscript{27} See id.
\textsuperscript{28} See CleanAir CABS Brochure, supra note 3.
picking up steam.”  Cohen’s key point, however, was that Boston wanted to go with a perks and incentives approach to get companies and drivers to use hybrid cabs rather than simply mandate their use. At the same time, Boston still expected results—more hybrid cabs on the streets.

2. The Mandate Approach

The CleanAir Cabs program was not as effective as city officials hoped. As a result, Boston changed its approach from offering incentives for switching to simply mandating a switch to hybrid cabs. The mayor’s office announced the change on August 29, 2008. In addition to a fare hike and other rule changes, the new rules required the entire cab fleet to convert to hybrid vehicles by 2015, with the owners responsible for the costs. The press release stated that the hybrid vehicles would be “phased in as the current vehicles reached their mandatory retirement age of six years.” Boston anticipated that 50% of the fleet would become hybrid within two years.

Reactions to Boston’s decision were not all positive, especially amongst cab drivers. The negative reaction to the new mandate—similar to the negative reaction to the CleanAir Cabs program—was primarily due to the high costs of converting to hybrids. Owners, both companies and independent drivers, also complained about the cost of maintaining hybrid cabs, as the batteries allegedly wear out every few years.

Bierman & Collette, supra note 18.

Id.

See id.

Compare CLEANAIR CABS BROCHURE, supra note 3 (illustrating Boston’s original approach), with Menino Press Release, supra note 4 (illustrating Boston’s switch to a mandate because of the original approach’s ineffectiveness).

See Menino Press Release, supra note 4.

Id.

See id.; Meghna Chakrabarti, WBUR, Hybrid Mandate for Hub Cabbies, (2008) http://www.wbur.org/2008/09/17/hybrid-mandate-for-hub-cabbies. Police Commissioner Ed Davis said that the “announcement underscores our commitment to ensuring that Boston residents, members of the business community and our many tourists are provided with safe, clean and efficient taxi service. The implementation and strict enforcement of these improvements will significantly enhance our local taxi service and provide a more customer-friendly experience.” Menino Press Release, supra note 4.


Id.


See id.
years, costing owners an estimated $5000 per replacement battery. As Dave Demerjian pointed out in his piece for ABC News, “[r]equiring the Boston cab fleet to go all-hybrid is a great idea, but not if [it is] going to financially wipe out the people who drive th[e] fleet.”

II. New York City’s Hybrid Cab Regulations—Metropolitan Taxicab Board of Trade v. City of New York

New York City’s hybrid cab initiative took a different approach than Boston’s, by starting with a mandate instead of incentives. Whereas Boston began with an incentive-based approach in the form of the CleanAir Cabs program, New York City’s Taxi and Limousine Commission (the “TLC”) promulgated rules creating a de facto mandate for the adoption of hybrid cabs within a specified period of time. The taxi industry subsequently challenged the regulations in Metropolitan Taxicab Board of Trade v. City of New York.

A. The Regulations: Genesis and Challenge

1. The TLC’s Regulations

The TLC has the authority to “regulate[] essentially all aspects of taxi operations and licensing.” As a result, Judge Crotty noted that “the TLC may set ‘[r]equirements of standards of safety, and design, comfort, convenience, noise and air pollution control and efficiency in the operation of vehicles and auxiliary equipment.’”

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41 Demerjian, supra note 38. This negative reaction led to the taxi industry successfully challenging Boston’s mandate in court. See infra Part III.D.


44 See id.

45 Id. The TLC was created in 1971 and is “governed by §§ 2300 et seq. of the New York City Charter, as well as by local laws passed by the New York City Council.” Id.

46 Id.
Using their broad authority to regulate the taxicab industry in New York City, the TLC enacted new rules that affected the minimum mileage-per-gallon requirements of new taxicabs in New York City.\textsuperscript{47} The new rules did not mandate hybrid cab adoption per se; however, Judge Crotty’s opinion in \textit{Metropolitan Taxicab Board of Trade I} noted that this was its true effect: “While the . . . Rules [did] not state that the new taxis must have hybrid engines, the effect of the minimum mpg standard is that only cars with hybrid engines or clean diesel engines can meet the mileage standard requirement.”\textsuperscript{48} “Taxis have a mandatory retirement of three to five years, so, as a result of the new rule, essentially all taxis in the city would be hybrids by 2012.”\textsuperscript{49} Additionally, “[m]ore than 90\% of all taxis were Crown Victoria non-hybrid vehicles, which do not meet the mpg requirements under the . . . Rules.”\textsuperscript{50} The effect of the TLC’s regulations as a de facto mandate indicates they would force owners to upgrade the vast majority of the taxi fleet to more expensive vehicles.\textsuperscript{51}

2. The Parties and the Challenge

The conflict over mandating hybrid cab use was the central issue in \textit{Metropolitan Taxicab Board of Trade I} and a large group of interested parties were plaintiffs in the case.\textsuperscript{52} “[A] full spectrum of the taxicab

\textsuperscript{47} Id.; see Taxi & Limousine Comm’n, Taxicab Specifications, New York, N.Y., R.C.N.Y. tit. 35, ch. 3, § 3-03(c)(10)–(11) (2009). The regulations state that:

beginning October 1, 2008, no taxicab shall be hacked up unless the taxicab meets either the requirements of an accessible taxicab pursuant to section 3-03.2 of this chapter or both of the following: (i) a minimum city rating of twenty-five (25) miles per gallon as labeled pursuant to title 49, section 32908 of the United States Code and regulations promulgated pursuant thereto, and (ii) the vehicle specifications provided in section 3-03.1(c) of this chapter, whether or not the taxicab is a hybrid electric vehicle.

Taxi & Limousine Comm’n, Taxicab Specifications, New York, N.Y., R.C.N.Y. tit. 35, ch. 3, § 3-03(c)(10) (2009). The miles-per-gallon requirement is then increased for new vehicles after October 1, 2009, from twenty five miles-per-gallon to thirty miles-per-gallon. Id., § 3-03(c)(11).

\textsuperscript{48} Metro. Taxicab Bd. of Trade I, 2008 WL 4866021, at *2.

\textsuperscript{49} Id.

\textsuperscript{50} Id.

\textsuperscript{51} See id.

\textsuperscript{52} See id. at *1.
industry, from owner, to driver, to end user” came together to challenge New York City’s hybrid cab regulations.\(^{53}\)

As a result of their worries over the cost and scale of the conversion, plaintiffs filed their complaint seeking an injunction against the regulations on September 8, 2008, alleging that the new rules were expressly and impliedly preempted by clauses in two federal laws: the Energy Policy and Conservation Act of 1975 (EPCA)\(^{54}\) and the Federal Clean Air Act (CAA).\(^{55}\) To obtain their preliminary injunction, plaintiffs had to show that they were likely to suffer irreparable harm without the requested relief as well as likelihood of success in proving the regulations were preempted.\(^{56}\) In other words, plaintiffs had to show that the TLC’s rules were likely preempted under either the EPCA or the CAA in order to be granted an injunction preventing the TLC’s rules from taking effect.\(^{57}\)

B. The Preemption Question in Metropolitan Taxicab Board of Trade I

1. The Preemption Doctrine

The preemption doctrine was the true problem for the new rules promulgated by the TLC.\(^{58}\) The bulk of the court’s opinion focused on “the words of the TLC’s regulation and analyze[d] whether the regulation, as written, [was] preempted by federal law.”\(^{59}\) As the court noted, questions of federal preemption begin with the Supremacy Clause of the United States Constitution which “invalidates state laws that interfere with, or are contrary to, federal law.”\(^{60}\)

The preemption doctrine arises out of the Supremacy Clause of the Constitution, which concerns conflicts between state and federal laws.\(^{61}\) “In applying this doctrine, courts must determine Congressional intent in enacting the federal law and whether a state law actually con-

\(^{53}\) Id. Among the plaintiffs were the Metropolitan Taxicab Board of Trade, an association made up of several New York fleets, as well as Midtown Operating Corp., a private cab garage, an independent contractor, and a frequent cab passenger. Id.


\(^{56}\) Metro. Taxicab Bd. of Trade I, 2008 WL 4866021, at *3.

\(^{57}\) See id. at *7.

\(^{58}\) See id. at *15.

\(^{59}\) Id. at *7.

\(^{60}\) Id. (quoting Hillsborough County, Fla. v. Automated Med. Labs., Inc., 471 U.S. 707, 712 (1985)).

\(^{61}\) Gaynor & Zimmerman, supra note 2, at 816; Giovinazzo, supra note 1, at 911.
flicts with a federal law, and if so, to what extent is there a conflict.”

There are three general situations that give rise to federal preemption: (1) express preemption, (2) implied preemption, and (3) conflict preemption.

At issue in Metropolitan Taxicab Board of Trade I was express preemption, which applies where “Congress expressly states, in the legislation itself, that federal law trumps state laws.” Both the CAA and the EPCA contain express preemption clauses.” Christopher Giovinazzo notes, however, that “as with any statutory language, preemption clauses are not always clear in their purpose or scope.”

One of Giovinazzo’s relevant points is that “the [Supreme] Court’s move away from the presumption against preemption supports a broader reading of the EPCA’s preemption clause.” Without the presumption against preemption, the preemption clauses of the EPCA and CAA can be interpreted to cover more than a strict textual reading might suggest. Though Giovinazzo discussed extending the EPCA’s preemption clause to California’s greenhouse gas emissions regulations, the same analysis is relevant to the plaintiff’s claim in Metropolitan Taxicab Board of Trade I: the CAA’s preemption clause can be extended to the TLC’s fuel economy regulations because they are related to emissions. Because of the similarities, Giovinazzo’s analysis is valuable when examining the court’s findings in Metropolitan Taxicab Board of Trade I regarding preemption of the TLC’s rules under the EPCA and CAA.

2. Preemption Under the EPCA

After a detailed analysis of the EPCA and a comparison to the TLC’s rules, the court in Metropolitan Taxicab Board of Trade I found the

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62 Gaynor & Zimmerman, supra note 2, at 816.
63 Giovinazzo, supra note 1, at 911.
64 Gaynor & Zimmerman, supra note 2, at 816.
65 Giovinazzo, supra note 1, at 911.
66 Christopher Giovinazzo is an associate with the law firm of Bondurant, Mixon & Elmore L.L.P. BMELaw.com, Christopher Giovinazzo, http://www.bmelaw.com/attorneys/Giovinazzo_Christopher.pdf (last visited Jan. 25, 2010). He graduated cum laude from Harvard Law School in 2004 and was Editor-in-Chief of the Harvard Environmental Affairs Law Review. Id.
67 Giovinazzo, supra note 1, at 915.
68 Id. at 918.
69 See id. at 918, 920.
70 See id. at 936–37; see also Metro. Taxicab Bd. of Trade I, No. 08 Civ. 7837(PAC), 2008 WL 4866021 (S.D.N.Y. Oct. 31, 2008) (holding EPCA preempts the TLC regulations).
rules to be “most likely expressly preempted by the EPCA.” The court found the purpose of the EPCA to be “to improve motor vehicle efficiency and to ‘decrease dependence on foreign [oil] imports, enhance national security, achieve the efficient utilization of scarce resources, and guarantee the availability of domestic energy supplies at prices consumers can afford.’” The court then went on to refute New York City’s arguments against preemption under the EPCA, and then discussed the likely lack of preemption by the CAA.

a. *Green Mountain Chrysler Plymouth Dodge Jeep v. Crombie* and the Purpose Behind the EPCA

In its preemption analysis, the court relied heavily on *Green Mountain Chrysler Plymouth Dodge Jeep v. Crombie* in interpreting the EPCA. The EPCA has an express preemption clause:

> When an average fuel economy standard prescribed under this chapter . . . is in effect, a State or political subdivision of a State may not adopt or enforce a law or regulation related to fuel economy standards or average fuel economy standards for automobiles covered by an average fuel economy standard under this chapter.

The court in *Green Mountain Chrysler* noted that the term “related to” was problematic. “Related to” could encompass any regulation or law passed by a state that even touches upon fuel economy; therefore, in examining the meaning of the clause, the court must look at the objectives of the statute.

The court examined the intent behind the EPCA and made two precedential holdings about it. First, the court noted that “EPCA’s objectives [were] to conserve energy.” The court stated that “Title V was enacted to improve automotive efficiency by setting fuel economy

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72 Metro. Taxicab Bd. of Trade I, 2008 WL 4866021, at *12.
73 Id. at *8 (quoting Ctr. for Biological Diversity v. Nat’l Highway Traffic Safety Admin., 538 F.3d 1172, 1182 (9th Cir. 2008)).
74 See id. at *10–12; infra Part II.B.2.b.
75 See Metro. Taxicab Bd. of Trade I, 2008 WL 4866021, at *12–14; infra Part II.B.3.
78 See 508 F. Supp. 2d at 353.
79 See id. at 353–54.
80 See id.
81 Id.
That said, “[a] state law that controlled or superseded a core EPCA function—to set fuel economy standards for automobiles—would appear to be preempted.” Second, the court noted that “Congress’s undoubted intent was to make the setting of fuel economy standards exclusively a federal concern.”

Both of these observations were relevant to the decision in Metropolitan Taxicab Board of Trade I. The court in Green Mountain Chrysler held that the EPCA clearly preempts state regulations that set miles-per-gallon requirements on the grounds that they are fuel economy standards and covered by the language of the preemption clause. This analysis from Green Mountain Chrysler was the main reason the court in Metropolitan Taxicab Board of Trade I found the TLC’s new fuel economy rules to be likely preempted under the EPCA. The court noted that “[a] fair reading of the . . . Rules lead[] to but one conclusion: the rules set standards that relate to an average number of miles that New York City taxicabs must travel per gallon of gasoline.”

b. New York City’s Arguments Against Preemption

New York City asserted two primary reasons why the EPCA might not preempt the TLC’s rules. First, New York City argued that the rules do not “relate to” fuel economy standards because they “do not interfere with the objectives of the EPCA.” Second, the city argued that the rules are exempted by an “own use” savings clause and the fact that New York was a market participant under the “market participant doctrine” as opposed to a market regulator. The court did not accept either argument.

The court relied on the Supreme Court’s decision in Engine Manufacturers Ass’n v. Coast Air Quality Management District in refuting the de-

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82 Id.
83 Id.
84 Green Mountain Chrysler, 508 F. Supp. 2d at 354.
86 See 508 F. Supp. 2d at 354.
88 Id. at *9.
89 See id. at *10.
90 Id.
fendants’ first argument. In that case, the Supreme Court rejected an argument that under the CAA the term “standard” must be defined narrowly to prevent preemption from being overbroad. Instead, the Supreme Court held that “if one State or political subdivision may enact such rules, then so may any other; and the end result would undo Congress’s carefully calibrated regulatory scheme.” The court in Metropolitan Taxicab Board of Trade I noted the reasoning from Engine Manufacturers Ass’n before refuting the city’s claim that “federal jurisprudence [was] moving toward an interpretation of the term ‘related to’ in preemption cases as meaning ‘actually interfering with’ the relevant federal regulation.” That conclusion, in turn, led the court to conclude that “the [d]efendants’ argument that ‘related to’ means actually ‘affecting’ or ‘interfering’” was erroneous.

The court in Metropolitan Taxicab Board of Trade I also refuted New York City’s second argument against preemption: that the new fuel economy rules were exempted under an “own use” savings clause in the EPCA and that New York City was a market participant. New York City claimed both that taxis were an integral part of the public transit system, and also that through regulation, New York City was a market participant. The court rejected these arguments as “tortur[ing] both language and logic.”

The court referred to Building & Construction Trades Council v. Associated Builders & Contractors, Inc. for an analysis of the market participant doctrine and why it was not applicable to New York City in Metropolitan Taxicab Board of Trade I. In addition, the court in Metropolitan Taxicab Board of Trade I noted that, likewise, in Engine Manufacturers Ass’n, “the Ninth Circuit held that the market participant doctrine allowed

94 See Engine Mfrs. Ass’n, 541 U.S. at 254.
95 Id. at 255; Metro. Taxicab Bd. of Trade I, 2008 WL 4866021, at *10.
98 See id. The savings clause is found in § 32919(c) and states that “[a] State or a political subdivision of a State may prescribe requirements for fuel economy for automobiles obtained for its own use.” Energy Policy and Conservation Act of 1975, 49 U.S.C. § 32919(c) (2006).
100 Id.
state and local government entities ‘to use their own money to acquire or use vehicles that exceed the federal standards.’”  

The court in *Metropolitan Taxicab Board of Trade I* decided that the market participant doctrine did not apply to New York City because of the nature of the city’s involvement in the taxi industry. The market participant doctrine applies to a state or agency acting directly in the market, which includes setting regulations for its own vehicles. However, a state is not a market participant where it is acting as a market regulator of an industry. The court noted that “[t]he TLC’s rules appl[ied] to all privately owned, licensed yellow taxicabs in New York City, while the fleet restrictions that the Ninth Circuit allowed in *Engine Manufacturers Ass’n* applied only to vehicles procured by state and local government entities for their own use.” Because the city Charter itself created the TLC as a market regulator, the court in *Metropolitan Taxicab Board of Trade I* also did not accept the argument that the city’s “role as gatekeeper into the taxicab business somehow [made] the TLC a market participant.” The court referred to the New York City Charter, which established the TLC, to show that the charter literally makes the TLC a regulator and not a participant.  

Finally, the court in *Metropolitan Taxicab Board of Trade I* rejected New York City’s “own use” argument for similar reasons, noting that “[t]he rules regulating private taxicab acquisition and use [were] materially and substantially different than the city’s conduct when it [bought] the tens of thousands of police cars or other vehicles for the wide variety of fleets that the city owns, operates, and maintains.” When the city buys vehicles for its own use, it takes title to them and pays for them. In contrast, while the court notes that taxis are part of

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102 Metro. Taxicab Bd. of Trade I, 2008 WL 4866021, at *10 (quoting Engine Mfrs. Ass’n v. Coast Air Quality Mgmt. Dist., 498 F.3d 1031, 1043 (9th Cir. 2007)).

103 See id. at *10–11.


108 See Metro. Taxicab Bd. of Trade I, 2008 WL 4866021, at *11. Section 2303(a) of the Charter states: “[t]he jurisdiction, powers and duties of the commission shall include the regulation and supervision of the business and industry of transportation of persons by licensed vehicles for hire in the city, pursuant to the provisions of this chapter.” N.Y.C. CHARTER, § 2303(a) (2004).


110 Id.
the public transit system, it makes clear that they are intended for private ownership and are not the city’s property.\textsuperscript{111}

The court found that the new TLC rules effectively mandating hybrid cab use in NYC were likely to be expressly preempted under Section 32919(a) of the EPCA, declaring that the “Defendants’ counterarguments . . . [were] unconvincing. . . . [And] plaintiffs [had] shown a likelihood of success on the merits.”\textsuperscript{112}

3. Preemption Under the CAA

The plaintiffs in \textit{Metropolitan Taxicab Board of Trade I} also made the argument that the CAA preempted TLC’s new miles-per-gallon rules for New York City taxicabs.\textsuperscript{113} The preemption provision itself reads as follows:

\begin{quote}
No State or any political subdivision thereof shall adopt or attempt to enforce any standard relating to the control of emissions from new motor vehicles or new motor vehicle engines . . . . No State shall require certification, inspection, or any other approval relating to the control of emissions from any new motor vehicle or new motor vehicle engine as condition precedent to the initial retail sale, titling . . . or registration of such motor vehicle, motor vehicle engine, or equipment.\textsuperscript{114}
\end{quote}

The preemption clause would not seem to apply to the TLC regulations because they only regulated fuel economy and not emissions.\textsuperscript{115} However, the court noted that the plaintiffs argued the “Rules—which govern fuel economy—[were] a de facto regulation of emissions and that the purpose [was] to regulate emissions.”\textsuperscript{116} Phrasing the argument that way made the issue one of “whether plaintiffs ha[d] a likelihood of success in demonstrating that TLC regulations imposing fuel economy standards [were] preempted by the CAA when the regulations at issue do not mention or target emissions.”\textsuperscript{117} The court ruled that the plaintiffs did not have a likelihood of success and that there was likely no

\textsuperscript{111} \textit{Id.}
\textsuperscript{112} \textit{See id.} at *12.
\textsuperscript{113} \textit{See id.} at *12–14.
\textsuperscript{114} \textit{Id.} at *12 (quoting 42 U.S.C. § 7543(a) (2006)).
\textsuperscript{115} \textit{Id. at} *12 (quoting 42 U.S.C. § 7543(a) (2006)).
\textsuperscript{116} \textit{Id.} at *12 (quoting 42 U.S.C. § 7543(a) (2006)).
\textsuperscript{117} \textit{Id.} at *12 (quoting 42 U.S.C. § 7543(a) (2006)).
\textsuperscript{118} \textit{See Metro. Taxicab Bd. of Trade I}, 2008 WL 4866021, at *13.
\textsuperscript{119} \textit{Id.} at *13.
\textsuperscript{120} \textit{Id.} at *13.
chance of preemption under the CAA.\footnote{See \textit{id.} at *14.} The court quickly acknowledged that “[a] state or municipal law that clearly targets emissions in new vehicles is generally preempted under the CAA.”\footnote{Id. at *13.} The court noted two cases that dealt with an issue very similar to the plaintiffs’ assertion of preemption under the CAA: \textit{Green Mountain Chrysler} and \textit{Central Valley Chrysler-Jeep, Inc. v. Goldstene.}\footnote{Id.; see \textit{Cent. Valley Chrysler-Jeep, Inc. v. Goldstene}, 529 F. Supp. 2d 1151, 1175 (E.D. Cal. 2007); \textit{Green Mountain Chrysler Plymouth Dodge Jeep v. Crombie}, 508 F. Supp. 2d 295, 344, 352-55 (D. Vt. 2007).}

\textit{Green Mountain Chrysler} dealt with the possibility that regulation of greenhouse gas emissions from vehicles under a state’s regulation based on the CAA would be preempted by the EPCA.\footnote{See \textit{Green Mountain Chrysler}, 508 F. Supp. 2d at 343–56; \textit{Metro. Taxicab Bd. of Trade I}, 2008 WL 4866021, at *13.} In other words, there might be an actual conflict between the EPCA and the CAA where preemption is concerned, due to overlap.\footnote{See \textit{Metro. Taxicab Bd. of Trade I}, 2008 WL 4866021, at *13.} In that case, the court stated that “[t]he legislative history of EPCA and the CAA, and the agencies’ practices, demonstrate[d] that there [was] no inherent conflict between the mandate of the CAA to regulate air pollution and the mandate of EPCA to regulate fuel economy.”\footnote{\textit{Green Mountain Chrysler}, 508 F. Supp. 2d at 356.}

The court in \textit{Metropolitan Taxicab Board of Trade I} noted the finding in \textit{Green Mountain Chrysler} of no inherent conflict due to the fact there was no evidence that the “emissions rule was a \textit{de facto} fuel economy standard because the evidence in that case showed that ‘compliance with the regulation [was] not achieved solely by improving a fleet’s fuel economy.’”\footnote{\textit{Metro. Taxicab Bd. of Trade I}, 2008 WL 4866021, at *13 (quoting \textit{Green Mountain Chrysler}, 508 F. Supp. 2d at 352–53).} The court also noted that in \textit{Central Valley Chrysler-Jeep, Inc.}, the EPCA preempted “only those state regulations that [were] explicitly aimed at the establishment of fuel economy standards, or that [were] the de facto equivalent of mileage regulation . . . .”\footnote{Id. (quoting \textit{Cent. Valley Chrysler-Jeep, Inc.}, 529 F. Supp. 2d at 1175).}

Both \textit{Green Mountain Chrysler} and \textit{Central Valley Chrysler-Jeep, Inc.} dealt with the possibility of EPCA preempting emissions regulations because they related to fuel economy,\footnote{See \textit{Cent. Valley Chrysler-Jeep, Inc.}, 529 F. Supp. 2d at 1165–79; \textit{Green Mountain Chrysler Plymouth Dodge}, 508 F. Supp. 2d at 343–58.} but the court in \textit{Metropolitan Taxicab Board of Trade I} applied these two cases to a different set of
facts. Plaintiff’s argument here stated that the TLC’s regulations governing fuel-economy standards were preempted under the CAA because they related to emissions. “Both Green Mountain and Central Valley make clear that the preemption provisions of the EPCA and the CAA relate specifically to their defined categories—fuel economy and emission regulation, respectively—and while they may overlap, they do not conflict.” Given this lack of inherent conflict between the EPCA and CAA, the court found it unlikely that the TLC’s rules were preempted under the CAA because they did not relate to the control of emissions. The court relied on New York City’s stated purpose for the regulations in reaching this conclusion.

Even without finding a likelihood of preemption under the CAA, the court’s finding of a likelihood of preemption under the EPCA satisfied the likelihood of success on the merits standard, and the court awarded plaintiffs the preliminary injunction to prevent the TLC’s regulations from going into effect. The end result derailed New York City’s attempt to force the city’s taxicab industry to transition to hybrid cabs.

C. New York City’s Response: A Switch to Incentives and a Push Against the EPCA

1. New York City Chooses Incentives

Instead, Mayor Bloomberg “announced a series of initiatives to increase the use of fuel efficient and environmentally friendly taxicabs, through new financial incentives and legislative incentives.”

New York City thinks

[t]he incentive program will allow fleet owners to increase the lease cap fee charged to drivers in fuel efficient vehicles by $3 per shift, which will offset the increased cost of purchasing a fuel efficient vehicle. The driver, while paying the increased lease cap fee, will still see significant savings due to the reduced fuel costs, which he or she pays. Taxicab drivers in fuel efficient vehicles achieve an average fuel savings of at least $15 per shift, which adds up to about $5,000 a year.

In addition, to “further incentivize the use of fuel efficient taxicabs, the TLC [would] propose to decrease the lease cap fee an owner can charge a driver by $12 per shift if the vehicle is a Crown Victoria or another non-fuel efficient vehicle, costing fleet owners approximately $8,500 per year, per vehicle.”

2. The Push to Alter the EPCA

Several politicians expressed frustration with the decision and status of the law, and suggested other solutions besides a change in the regulations. Mayor Bloomberg called the law “archaic,” claiming that “we hit a speed bump in our efforts to turn New York City’s yellow cabs green[,] ... preventing us from reducing greenhouse gases and improving air quality.” Meanwhile, Congressman Jerrold Nadler stated that

[t]he recent federal court decision to block the greening of New York City’s taxis [was] not in keeping with the original spirit of federal environmental legislation.... Fuel efficient taxis don’t simply represent a pie-in-the-sky futuristic luxury

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136 Hybrid Cab Press Release, supra note 134.
137 Id.
139 Hybrid Cab Press Release, supra note 134.
140 See id.
141 Id.
for New Yorkers but a present-day necessity which will produce a meaningful reduction in our city’s carbon emissions.\textsuperscript{142}

In addition, Richard Kassel of the Natural Resources Defense Council argued that “[i]t was] time for Washington to update its rules so that the [c]ity’s hybrid taxi program [could] move forward.”\textsuperscript{143} Because of the frustration, the city will also pursue a campaign to amend the EPCA, spearheaded by Congressman Nadler.\textsuperscript{144}

III. NEW YORK CITY’S PROGRAM IN THE LARGER CONTEXT OF THE DEBATE OVER ENVIRONMENTAL FEDERALISM AND REPERCUSSIONS FOR BOSTON

A. State and Local Leadership in Innovative Environmental Policy

The decision in \textit{Metropolitan Taxicab Board of Trade I} and New York City’s response are part of a larger debate over who should take the initiative in regulation of environmental concerns such as fuel economy and greenhouse gas (GHG) emissions: the federal government or state and local governments.\textsuperscript{145} The need for preemption and federal regulation of environmental concerns is often expressed as an argument that “absent national standards, states will engage in a ‘race to the bottom.’”\textsuperscript{146} However, Giovinazzo argues that since the 1990s, “state and local governments, not Congress and the President, have led the nation in innovative environmental policy.”\textsuperscript{147} Giovinazzo and others think that the increasing numbers of state and local government initiatives are the result of “glaring inaction at the federal level.”\textsuperscript{148} Giovinazzo notes that “[s]ince vehicular . . . emissions are directly related to fuel economy, mobile GHGs are particularly intractable so long as fuel economy remains on the decline.”\textsuperscript{149} Giovinazzo examines several state and local government initiatives in the area of GHG regulation, and argues that willingness to deal with the issues of fuel economy and

\textsuperscript{142} Id.
\textsuperscript{143} Id.
\textsuperscript{144} Id.
\textsuperscript{145} See generally Adelman & Engel, \textit{supra} note 1 (proposing a system of adaptive federalism to facilitate state and local regulation); Gaynor & Zimmerman, \textit{supra} note 2 (discussing federal preemption of state climate change laws); Parenteau, \textit{supra} note 1 (discussing state vs. federal climate change initiatives).
\textsuperscript{146} Giovinazzo, \textit{supra} note 1, at 907.
\textsuperscript{147} Id.
\textsuperscript{148} \textit{Id.}; see Parenteau, \textit{supra} note 1, at 1455.
\textsuperscript{149} Giovinazzo, \textit{supra} note 1, at 908–09.
GHG emissions in the face of inaction by the federal government results in preemption issues such as those in Metropolitan Taxicab Board of Trade I.\textsuperscript{150}

B. California’s Attempt to Control Vehicle GHG Emissions: AB-1493

The conflict over New York City’s hybrid cab regulations was one of the more recent and one of the more high profile examples of preemption arising in the context of state and local regulation of fuel economy and emissions issues, but there are several others.\textsuperscript{151} Another example was California’s attempt to regulate GHG emissions through Assembly Bill 1493 (AB-1493).\textsuperscript{152}

Whereas Metropolitan Taxicab Board of Trade I dealt with federal pre-emption of local miles-per-gallon rules, California’s AB-1493 attempted to control tailpipe GHG emissions through motor vehicle regulations, leading to some of the same preemption issues argued in Metropolitan Taxicab Board of Trade I.\textsuperscript{153} In fact, the court in Metropolitan Taxicab Board of Trade I discussed in detail the two major cases relating to AB-1493: Green Mountain Chrysler Plymouth Dodge Jeep v. Crombie and Central Valley Chrysler-Jeep, Inc. v. Goldstene.\textsuperscript{154}

AB-1493, passed in 2002, “aim[ed] to reduce GHG emissions from the tailpipes of passenger cars and light-duty trucks by 30% by 2016, beginning in the model year car 2009.”\textsuperscript{155} The California Air Resources Board (CARB) adopted the regulations in September of 2004.\textsuperscript{156} By 2007, sixteen other states had either taken steps to implement California’s regulations or “indicated an attempt to do the same.”\textsuperscript{157} California is the only state allowed to set stricter emissions standards than the federal government under the CAA, but other states are allowed to adopt California’s standards once the EPA has approved them.\textsuperscript{158}


\textsuperscript{151} See Adelman & Engel, supra note 1, at 1844–49; Giovinazzo, supra note 1, at 907–09.

\textsuperscript{152} See Adelman & Engel, supra note 1, at 1847–48; Gaynor & Zimmerman, supra note 2, at 821–29; Parenteau, supra note 1, at 1466–72; Giovinazzo, supra note 1, at 895–904.

\textsuperscript{153} See Gaynor & Zimmerman, supra note 2, at 821–22; supra Part II.B.

\textsuperscript{154} See Gaynor & Zimmerman, supra note 2, at 822–27; supra Part II.B.2–3.

\textsuperscript{155} Gaynor & Zimmerman, supra note 2, at 822.

\textsuperscript{156} Id.

\textsuperscript{157} Id.

1. Challenges to AB-1493 in Vermont and California

_Green Mountain Chrysler_ and _Central Valley Chrysler-Jeep, Inc._ were both the result of CAA and EPCA preemption challenges to implementations of California’s regulations.⁵⁵⁹ _Green Mountain Chrysler_ arose when automakers and dealers challenged the implementation of California’s regulations in Vermont.⁶⁰ In challenging the regulations, opponents asserted that the regulations were preempted not only by the CAA, but by the EPCA even though the laws regulated emissions and not fuel economy directly.⁶¹ The same issues arose again when opponents brought similar challenges in California.⁶² The decision in _Central Valley Chrysler-Jeep, Inc._ was “handed down . . . two months after the decision in Vermont.”⁶³

Both _Green Mountain Chrysler_ and _Central Valley Chrysler-Jeep, Inc._, resulted in favorable decisions for states following California’s lead in non-federal regulation of vehicle economy and emissions.⁶⁴ However, the issue was originally unresolved because California—and the states attempting to adopt its standards—had to wait on approval from the EPA.⁶⁵ This need for EPA approval was due to the fact that “[u]nder the Clean Air Act, which generally preempts an individual state’s regulation of motor vehicle emissions, California [was] required to seek a waiver from the EPA to set standards stricter than national emissions levels.”⁶⁶ EPA’s denial of California’s waiver request on December 19, 2007 originally stalled both California’s plan and its adoption by other states.⁶⁷ However, President Obama directed the EPA to reconsider the waiver, which was rejected at the end of the previous administration.⁶⁸ On July 30, 2009, after reconsideration of California’s request, EPA announced it was granting California’s waiver, allowing the state to move forward.⁶⁹

⁵⁵⁹ See Parenteau, _supra_ note 1, at 1468.
⁶⁰ See Gaynor & Zimmerman, _supra_ note 2, at 823–27.
⁶¹ See id.
⁶² See _id._ at 827.
⁶³ See _id._
⁶⁴ See _id._ at 828.
⁶⁵ See _id._
⁶⁶ Gaynor & Zimmerman, _supra_ note 2, at 828.
⁶⁷ See _id._
C. Context: The Future of Environmental Preemption Issues

California’s AB-1493 and the resulting litigation are relevant to the decision in Metropolitan Taxicab Board of Trade I for two reasons. First, they provide much of the precedent used in the decision’s preemption analysis. Second, they help put Metropolitan Taxicab Board of Trade I and hybrid cab programs in the context of the greater debate over who should take the lead in environmental regulation—the states and local governments or the federal government.

Several authors have analyzed AB-1493 in light of its relevance to environmental federalism. Gaynor and Zimmerman believe that existing preemption issues are likely to become more noticeable in the future. They argue that “[w]ith so many state climate change programs already in existence, any future federal climate change legislation will most likely cause preemption issues.” While they are primarily concerned about programs like AB-1493, the court made clear in Metropolitan Taxicab Board of Trade I that the same preemption issues that apply to attempts to control GHG emissions also apply to attempts to set fuel-economy standards.

Parenteau lauds attempts by states and local governments to be more progressive than the federal government, but thinks that the federal government will have to take final responsibility. In his analysis, plans such as California’s and New York City’s are good ideas, but they are not enough.

Giovinazzo argues that the preemption doctrine should be clarified and adapted in such a way that makes cases like California’s possible. Giovinazzo argues for a very loose interpretation of the EPCA regarding AB-1493 because congressional intent with regard to the scope of preemption is unclear. Giovinazzo feels that preemption

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171 See Adelman & Engel, supra note 1, at 1846–49; Parenteau, supra note 1, at 1466–69; Giovinazzo, supra note 1, at 907–09.
172 See Adelman & Engel, supra note 1, at 1846–49; Parenteau, supra note 1, at 1466–69; Giovinazzo, supra note 1, at 907–09.
174 Id. at 830.
176 See Parenteau, supra note 1, at 1455, 1474.
177 See generally id. (discussing the importance of local initiatives but noting the need for strong federal action).
178 See Giovinazzo, supra note 1, at 952–54.
179 See id. at 953.
should be constrained when “the purpose behind preemption would be poorly served, and where the history of state innovation is both successful and important.”\textsuperscript{180} Thus, he sympathizes with state and local attempts to handle pressing environmental issues progressively.\textsuperscript{181}

David E. Adelman and Kirsten H. Engel decry what they see as the rising tide of preemptive federal environmental legislation.\textsuperscript{182} They support the idea of a dynamic, interwoven system of federal and state environmental jurisdiction.\textsuperscript{183} Specifically, they favor an “adaptive model . . . premised on the parallel development of environmental policies at multiple levels of government.”\textsuperscript{184} Such a model would allow for diversity in regulation based on the interests of individual states, such as California, and individual local governments, such as New York City.\textsuperscript{185} The goal of such a model is to limit the ability of federal dominance to crush local diversity in policy and innovation.\textsuperscript{186} Adelman and Engel make the point that “[t]he single most important means of fostering adaptive federalism is restricting federal regulatory preemption.”\textsuperscript{187}

D. The Failure of Boston’s Mandate Approach and Further Problems for New York City

New York City was not the only metropolitan area to have its hybrid cab mandate struck down based on preemption under the EPCA; Boston faced a similar fate.\textsuperscript{188} As discussed previously, Boston adopted a mandate approach to transition cabs over to hybrids after the city’s incentive-based approach failed to meet expectations.\textsuperscript{189} Boston’s new mandate required vehicles put into service as a taxi after August 29, 2008 to be a new Clean Taxi vehicle.\textsuperscript{190} The mandate defined Clean Taxi as coming from a list of approved vehicles, which contained only current model year hybrid vehicles.\textsuperscript{191}

\textsuperscript{180} See id.

\textsuperscript{181} See id. at 952–54.

\textsuperscript{182} See Adelman & Engel, supra note 1, at 1849–50.

\textsuperscript{183} See id. at 1796–98.

\textsuperscript{184} Id. at 1849.

\textsuperscript{185} See id. at 1822–23.

\textsuperscript{186} Id. at 1832.

\textsuperscript{187} Id. at 1833.

\textsuperscript{188} See Saltzman, supra note 7.

\textsuperscript{189} See supra Part I.A.2.


\textsuperscript{191} Id.
Subsequently, cab owners and the Boston Taxi Owners Association filed suit to prevent the enforcement of the hybrid cab mandate. U.S. District Judge William G. Young granted a request for a temporary injunction to halt implementation of the plan after Boston declined to do so voluntarily.\(^1\)\(^9\)\(^2\)

On August 14, 2009, Judge Young ruled that Boston’s hybrid cab mandate, contained in Boston Police Department Rule 403, was expressly preempted by the EPCA, and he permanently enjoined Boston from enforcing it.\(^1\)\(^9\)\(^3\) In deciding the case, Judge Young relied heavily on a discussion of Metropolitan Taxicab Board of Trade I.\(^1\)\(^9\)\(^4\) He discussed that decision’s reliance on Engine Manufacturer’s Ass’n and noted the problem of many cities following New York’s example, including the creation of an unwanted aggregate effect.\(^1\)\(^9\)\(^5\) Judge Young clearly indicated that he found Metropolitan Taxicab Board of Trade I “persuasive and well-reasoned.”\(^1\)\(^9\)\(^6\)

Judge Young also relied on a second New York case challenging the city of New York’s regulatory response to Metropolitan Taxicab Board of Trade I.\(^1\)\(^9\)\(^7\) In the wake of its loss, New York City “pursued an alternate strategy: it promulgated a second set of regulations promoting the purchase of hybrid taxis by reducing the rates at which taxicab owners could lease non-hybrid vehicles to drivers.”\(^1\)\(^9\)\(^8\) Essentially, under New York City’s new incentives approach,

> if an owner purchase[d] a taxicab with a hybrid or clean-diesel engine . . . the rate at which the vehicle [could] be leased to a driver for a 12-hour shift [was] increased by $3. By contrast, if an owner lease[d] out a non-hybrid, non-wheelchair accessible vehicle (i.e., a Crown Victoria), the maximum lease rate an owner may charge a driver [was] reduced by $4 immediately . . . .\(^1\)\(^9\)\(^9\)

Metropolitan Taxicab Board of Trade II concerned the plaintiffs’ claims that these new regulations were in fact a de facto mandate on the plain-


\(^{194}\) See id.

\(^{195}\) See id. at *3.

\(^{196}\) See id. at *4.

\(^{197}\) See id.

\(^{198}\) Id.

tiffs to purchase hybrid cabs, just like the previous regulations based on fuel economy. The court agreed.

The court also held that the plaintiffs showed a likelihood of success in demonstrating that the EPCA preempted the new incentives. The court noted that “[i]n this case, while it is true that the Lease Cap Rules do not require a specific mpg rating, the effect of the rules is to force taxicab owners to meet an mpg threshold determined by the mileage rating of the TLC’s approved hybrid or clean diesel vehicles.” Because of this, the court held that the rules related to fuel economy even though they were not mpg specific like the previous mandate: “The 25/30 Rules specifically referred to mpg standards, but creative drafting and the absence of specific reference to mileage [did] not make the effect—or the purpose—of the Lease Cab Rules any different than the prior preempted regulations.” Therefore, the court held that the rules were “related to” fuel economy standards within the meaning of the EPCA and were likely preempted.

Metropolitan Taxicab Board of Trade I and Metropolitan Taxicab Board of Trade II were not the only authorities that Judge Young relied on in his decision regarding Boston’s hybrid cab mandate. He also considered an article in the Harvard Law Review on Metropolitan Taxicab Board of Trade I, that agreed with Judge Crotty’s opinion that “related to” does not require “actual interference with” to be correct.

Because of this, Boston’s hybrid cab mandate ended in the same manner as did New York’s, and Judge Young’s decision built upon Judge Crotty’s two decisions from both New York cases. However, it is worth noting that Judge Young actually cited Adelman and Engel’s critique of the sweeping expanse of federal preemption; however, despite

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200 See id. at *21.
201 See id.
202 See id.
203 See id. at *18.
204 Id.
this statement of sympathy, he felt that “in this case, it is a local government that has overstepped its bounds.”

IV. MOVING FORWARD: NEW YORK CITY’S HYBRID CAB PROGRAM AND PROGRESSIVE LOCAL ENVIRONMENTAL REGULATION IN THE WAKE OF THE METROPOLITAN TAXICAB BOARD OF TRADE CASES

Hybrid cab programs appear to be very important to the metropolitan areas that have attempted to implement them. The frustration of New York City’s officials with the decision in Metropolitan Taxicab Board of Trade I is both palpable and understandable because there are benefits tied to New York and other cities’ attempts to mandate hybrid cabs. These benefits include reduced fuel costs and more efficient vehicles. In addition to the environmental benefits, regulations like New York City’s serve a similar purpose to those concerning GHG emissions in California, and are an example of state and local governments reacting to what they consider to be inadequate federal law.

As a result of the decision, New York City focused on an incentive-based plan instead, as well as a campaign to amend the EPCA, but perhaps a stronger statement is needed. This is especially true given that the district court rejected the disincentives in New York City’s new regulations enacted after Metropolitan Taxicab Board of Trade I. New York City should (1) take into account problems with other incentive plans and examine other options in structuring its hybrid cab program in order to identify the most effective method that will not run afoul of the EPCA in its current form; and (2) push harder to have the EPCA amended because changing it is an important element in the context of environmental federalism.

A. New York’s Response to the Decision: Why Incentives Are Not Enough

New York City decided to adopt an incentives approach to encourage hybrid cab use in the wake of Metropolitan Taxicab Board of Trade I,

208 See Ophir, 2009 WL 2606341, at *1; Adelman & Engel, supra note 1, at 1796.
209 See supra Part II.C.2.
210 See supra Part II.C.2.
211 See supra Part I.A.
212 See supra Parts I.A–II.A.1, III.A–B.
213 See infra Part II.C.
214 See Metro. Taxicab Bd. of Trade II, No. 08 Civ. 7837 (PAC), 2008 WL 4866021, at *21 (S.D.N.Y. Oct. 31, 2008); supra Part III.D.
215 See infra Part IV.A–B.
216 See infra Part IV.B.3.
but there are problems with this approach and it is not likely to encourage the widespread adoption of hybrid cabs, especially given the failure of the first incentive/disincentive structure adopted after the mandate was struck down. For one, Boston encountered problems with a similar approach. Boston tried the incentives approach with its CleanAir Cabs program and the program was unsuccessful. Boston’s series of grants to offset costs and special privileges at Logan Airport were designed to induce owners to replace Crown Victorias with hybrid vehicles by reducing the costs of the transition to the cleaner vehicles. After not seeing the results they wanted, Boston decided to simply force the change.

It is possible that New York City is not going to succeed in its goals by using an incentive-based approach, given Boston’s disappointing experience with an incentive-based program. New York City’s program of incentives to get owners to switch voluntarily is slightly different from Boston’s, in that it focuses more on the owners of cabs and less on the drivers.

The rhetoric of the Metropolitan Taxicab Board of Trade suggests that New York City’s incentives approach will not be effective. The Metropolitan Taxicab Board of Trade does not like New York City’s new incentives and disincentives plan. In addition to claiming that hybrid vehicles have not been sufficiently time-tested to show that they are viable for use as cabs, the board “dismissed the new financial incentives as an ‘end run’” around the ruling in Metropolitan Taxicab Board of Trade I. Ron Sherman, the Metropolitan Taxicab Board of Trade’s president, claimed that the “attempt to buy off taxi operators and to use backdoor methods to force safe, proven commercial vehicles off the road [was] wrong and highly challengeable.”

217 See supra Parts II.C, III.D.
218 See supra Part I.A.
219 See supra Part I.A.1.
220 See supra Part I.A.1.
221 See supra Part I.A.
222 See supra Parts I.A, II.C.1.
223 See supra Parts I.A, II.C.1.
225 Id.
226 Id. This dislike resulted in the legal challenge to the new incentives structure, as the Metropolitan Taxicab Board of Trade again used the EPIC to strike down what it considered a still-unacceptable mandate. See Metro. Taxicab Bd. of Trade II, No. 08 Civ. 7837 (PAC), 2008 WL 4866021, at *1 (S.D.N.Y. Oct. 31, 2008); supra Part III.D.
If New York City is serious about an incentive-based approach to getting hybrid cabs on the streets, then it should consider more comprehensive options in order to overcome the taxi industry’s reluctance.\textsuperscript{228} Rather than crafting a program so strict it is a de facto mandate, New York City could cover more of the cost of the switch by providing grants, which is an idea Boston tried.\textsuperscript{229} New York City could direct those grants towards reducing the cost associated with outfitting new hybrids for use as cabs.\textsuperscript{230} More comprehensive incentives would help overcome the resistance of cab owners who are the parties that must ultimately be convinced if New York City’s plan is to be successful.\textsuperscript{231} The point is that since Boston’s approach was not a success,\textsuperscript{232} and neither was New York City’s first attempt after \textit{Metropolitan Taxicab Board of Trade I},\textsuperscript{233} New York City must go farther to convince owners to switch by using incentives, which may not be the best option.\textsuperscript{234}

\textbf{B. Away from Incentives: Looking at Other Options}

1. The Possibility of Appeal

New York City has other options that may be better than an incentive-based approach. Appealing the case was a possibility, but New York City decided against this course of action.\textsuperscript{235} The reason for this is sound: the court’s reasoning in \textit{Metropolitan Taxicab Board of Trade I} regarding preemption under the EPCA came from the Supreme Court’s decision in \textit{Green Mountain Chrysler Plymouth Dodge Jeep v. Crombie}.\textsuperscript{236} In \textit{Green Mountain Chrysler}, the Supreme Court clearly stated that a state law or regulation superseding a core EPCA function—setting fuel economy standards—is most likely preempted.\textsuperscript{237} The Court also held that regulations that set miles-per-gallon requirements would be preempted under the EPCA because they are fuel economy standards and covered by the language of the preemption clause.\textsuperscript{238} Given the clarity

\begin{itemize}
\item \textsuperscript{228} See infra Part IV.B.
\item \textsuperscript{229} See supra Part I.A.1.
\item \textsuperscript{230} See supra Part I.A.1.
\item \textsuperscript{231} See supra Parts II.C, IV.A.
\item \textsuperscript{232} See supra Part I.A.
\item \textsuperscript{233} See supra Part III.D.
\item \textsuperscript{234} See infra Part IV.B–C.
\item \textsuperscript{235} See supra Part II.C.1.
\item \textsuperscript{236} See supra Part II.B.2.
\item \textsuperscript{237} See supra Part II.B.2.a.
\item \textsuperscript{238} See supra Part II.B.2.a.
\end{itemize}
of the Supreme Court’s analysis, an appeal would not survive unless the Supreme Court changes its stance on preemption under the EPCA.\(^{239}\)

The failure of Boston’s hybrid cab mandate and the failure of New York City’s subsequent regulations also indicate that appeal would not have been the best option, as Judge Young adopted the reasoning of Metropolitan Taxicab Board of Trade I in Ophir, reinforcing its reasoning.\(^ {240}\) Both Ophir and Metropolitan Taxicab Board of Trade II seem to indicate that any attempt to mandate hybrid cab use will be unsuccessful, and an appeal on New York’s part would probably have failed.\(^ {241}\)

2. Restructuring the TLC Regulations

New York City could also try to restructure its regulations to mandate hybrid cab use without running afoul of the preemption clauses of the CAA and the EPCA.\(^ {242}\) The decisions in Ophir and Metropolitan Taxicab Board of Trade II, however, indicate that this might be impossible.\(^ {243}\) Boston’s mandate did not mention miles-per-gallon requirements at all, and yet was found likely to be preempted.\(^ {244}\) Even New York City’s new incentive approach, which they chose instead of appealing, was struck down as likely preempted and a de facto mandate in Metropolitan Taxicab Board of Trade II.\(^ {245}\) Given the decision in Metropolitan Taxicab Board of Trade I, and the subsequent cases, Boston and New York City cannot word their regulations by directly setting miles-per-gallon requirements.\(^ {246}\) Any regulations that set miles-per-gallon requirements are clearly preempted by the EPCA, because they are fuel economy standards and covered by the language of its preemption clause.\(^ {247}\) New York City and Boston have already attempted this and failed.\(^ {248}\)

New York City could also reword a mandate to control vehicle emissions for cabs rather than fuel economy standards, but this is likely to result in a preemption challenge under the CAA of the kind raised against AB-1493.\(^ {249}\) As opposed to the form of the regulation in TLC

\(^{239}\) See supra Part II.B.2–3.

\(^{240}\) See supra Part III.D.

\(^{241}\) See supra Part III.D.


\(^{243}\) See supra Part III.D.

\(^{244}\) See supra Part III.D.

\(^{245}\) See supra Part III.D.

\(^{246}\) See supra Part II.B.2.

\(^{247}\) See supra Part II.B.2.

\(^{248}\) See supra Parts II, III.D.

\(^{249}\) See supra Part III.B.1.
Rule § 3-03(c)(10)–(11),\textsuperscript{250} the regulation could require a lower level of GHG emissions or other gas emissions in such a way as to mandate a switch to hybrid cabs. However, such an approach would likely raise a preemption challenge under the CAA’s preemption clause because it would directly affect emissions.\textsuperscript{251} Both Metropolitan Taxicab Board of Trade I and Green Mountain Chrysler indicate that just as a regulation directly affecting fuel economy is preempted by the EPCA, a regulation directly affecting emissions is preempted by the CAA.\textsuperscript{252} As the preemption challenge would likely be successful, New York City might want to choose a different approach, such as simply ordering the use of certain approved vehicles.\textsuperscript{253}

The failure of New York City’s mandate—as well as its subsequent mandate-like incentives approach—and the failure of Boston’s mandate, together indicate that any attempt to mandate hybrid cab use without changing the EPCA is most likely impossible.\textsuperscript{254} Furthermore, the loose incentive approach Boston tried originally did not achieve the desired results.\textsuperscript{255} This makes New York City’s push to amend the EPCA in the wake of Metropolitan Taxicab Board of Trade I all the more important.\textsuperscript{256}

3. The Importance of New York City’s Push to Alter the EPCA in the Context of the Debate over Environmental Federalism

New York City is also pushing to have the EPCA amended to allow cities to set fuel economy for their taxi fleets.\textsuperscript{257} This is one of the city’s most important responses to Metropolitan Taxicab Board of Trade I because it establishes it as a leader in the push towards progressive environmental policy at the local level.\textsuperscript{258} One can argue that cities such as New York and Boston are “[leading] the nation in innovative environmental policy.”\textsuperscript{259} The TLC regulations found unworkable in Metropolitan Taxicab Board of Trade I appear to be part of a trend toward local progressiveness in environmental regulation.\textsuperscript{260}

\textsuperscript{251} See supra Part II.B.3.
\textsuperscript{252} See supra Part II.B.3.
\textsuperscript{253} See supra Part II.B.3.
\textsuperscript{254} See supra Part IV.B.2.
\textsuperscript{255} See supra Part I.A.1–2.
\textsuperscript{256} See supra Part I.C.2.
\textsuperscript{257} See supra Part II.C.2.
\textsuperscript{258} See supra Part III.A.
\textsuperscript{259} See Giovinnazzo, supra note 1, at 907.
\textsuperscript{260} See supra Part III.A.
a. Similarities Between AB-1493 and New York City’s Hybrid Cab Mandate

AB-1493 and New York City’s TLC regulations are in some ways similar and the challenges against both are the results of preemption clauses of federal statutes\(^{261}\) that block state and local governments from enacting regulations that are stronger than those enacted by the federal government.\(^{262}\) Granted, there are differences: AB-1493 was challenged for its setting of emissions requirements, not fuel-economy standards.\(^{263}\) In contrast, New York City’s TLC regulations were challenged for setting miles-per-gallon requirements, which were found likely preempted under the EPCA.\(^{264}\) The preemption challenges to AB-1493 failed, whereas the challenge to the TLC regulations succeeded.\(^{265}\) Both efforts—California’s and New York City’s—are illustrative of some of the problems with preemption that Giovinazzo and others have discussed.\(^{266}\)

The views of several commentators discussed previously support New York City’s push to have the EPCA amended.\(^{267}\) Most of the commentators have focused on AB-1493 when analyzing the problems posed by federal preemption.\(^{268}\) New York City’s TLC regulations and Metropolitan Taxicab Board of Trade I may also illustrate the trend towards progressive state and local regulation, providing yet another context for the intensifying debate over federal preemption of such state and local policies.\(^{269}\)

b. Away from the Race to the Bottom

Both AB-1493 in California and New York City’s TLC regulations represent a trend opposite of what Christopher Giovinazzo referred to as the race to the bottom, which is the supposed phenomenon that absent federal standards the states will lower environmental regulations instead of tighten them.\(^{270}\) AB-1493 was the strongest example he of-


\(^{262}\) See supra Part III.B.

\(^{263}\) See supra Part III.B.

\(^{264}\) See supra Part II.B.2.

\(^{265}\) See supra Parts II.B.2, III.B.

\(^{266}\) See supra Part III.A–C.

\(^{267}\) See supra Part III.A, C.

\(^{268}\) See supra Part III.A, C.

\(^{269}\) See supra Part III.A, C.

\(^{270}\) See supra Part III.A.
ferred to dispute the race to the bottom argument.\textsuperscript{271} However, New York City’s TLC regulations are an example that one can put forward to dispute the existence of a race to the bottom. The TLC designed the regulations to mandate hybrid cabs to institute more stringent standards than federal law.\textsuperscript{272} The two sets of regulations indicate a trend that is the opposite of the race to the bottom in that state and local governments are implementing more stringent, rather than less stringent, regulations.\textsuperscript{273} New York City’s desire to amend the EPCA in the wake of Metropolitan Taxicab Board of Trade I also represents a trend opposite of the race to the bottom.\textsuperscript{274} New York City makes an argument similar to Giovinazzo’s in support of its push to amend the EPCA: that the purpose behind preemption is poorly served in this case, and that they are pushing for local innovation that would be both successful and important.\textsuperscript{275}


Gaynor and Zimmerman argue that preemption issues are likely to get worse as time goes on, but the conflict in Metropolitan Taxicab Board of Trade I is a slightly different phenomenon.\textsuperscript{276} Gaynor and Zimmerman discuss programs like AB-1493 in the context of the passage of new federal environmental laws, and they are worried that those laws may conflict with existing state laws and local ordinances.\textsuperscript{277} In Metropolitan Taxicab Board of Trade I, the problem did not arise because of new federal law but because of new, innovative local laws. Local laws raised preemption issues because they attempted to supersede federal law by enacting more stringent regulations.\textsuperscript{278}

Patrick Parenteau lauds state and local initiatives that are progressive in ways federal law is not, but argues that there is a need for a strong federal policy to take their place eventually.\textsuperscript{279} Strong federal initiative might work best in the context of countrywide GHG emis-

\textsuperscript{271} See Giovinazzo, supra note 1, at 895–98.
\textsuperscript{272} See supra Part III.A–B.
\textsuperscript{273} See supra Part III.A–B.
\textsuperscript{274} See supra Part II.C.
\textsuperscript{275} See supra Parts II.C.2, III.C.
\textsuperscript{276} See supra Part III.C.
\textsuperscript{277} See supra Part III.C.
\textsuperscript{278} See Gaynor & Zimmerman, supra note 2, at 830–32; supra Parts II.C, III.A–C.
\textsuperscript{279} See supra Part III.C.
sions, and might be more effective than states like California setting their own, especially if the federal program is sufficiently strict. However, such a strategy seems to leave out situations like New York City’s. Certainly New York City is interested in reducing GHG emissions,\textsuperscript{280} but its attempt is highly localized and is not on the same scale as California’s efforts.\textsuperscript{281}

Looking at all the commentators, one might conclude that the EPCA should either be changed or reinterpreted so it no longer pre-empts small scale programs such as New York City’s.\textsuperscript{282} Giovinazzo would likely condone such an option. He argues that preemption should be constrained in situations where “the purpose behind pre-emption would be poorly served, and where the history of state innovation is both successful and important.”\textsuperscript{283} While New York City’s hybrid taxi program is not a state program on the scale of California’s, it is important to the city’s residents.\textsuperscript{284} The express language of the EPCA’s preemption clause barred New York City’s regulations because they set miles-per-gallon requirements.\textsuperscript{285} Congress intended the EPCA to apply on a large scale to prevent states from setting different miles-per-gallon requirements for all vehicles, thereby forcing manufacturers to meet different standards in each state.\textsuperscript{286} Because New York City’s hybrid cab requirements involved existing vehicles and did not require manufacturers to satisfy a wide array of miles-per-gallon requirements, it may not fall within the scope of congressional intent.\textsuperscript{287}

David E. Adelman and Kristen H. Engel provide a model for amending the EPCA that would allow local initiatives such as New York City’s.\textsuperscript{288} Adelman and Engel’s model of adaptive federalism—the goal of which is to limit the ability of federal dominance to crush local diversity in policy and innovation—may be applicable in this scenario.\textsuperscript{289} Through this model, the EPCA would fulfill its primary purpose of setting miles-per-gallon requirements for new vehicles nationwide.\textsuperscript{290} At

\textsuperscript{280} See Hybrid Cab Press Release, supra note 134.
\textsuperscript{281} See supra Part III.B.
\textsuperscript{282} See supra Part III.A–B.
\textsuperscript{283} Giovinazzo, supra note 1, at 953; see supra Part III.C.
\textsuperscript{284} See supra Part II.C.
\textsuperscript{285} See supra Part II.B.2.
\textsuperscript{286} See supra Part II.B.2.a.
\textsuperscript{288} See supra Part III.C.
\textsuperscript{289} See Adelman & Engel, supra note 1 at 1832.
\textsuperscript{290} See Green Mountain Chrysler, 508 F. Supp. 2d at 354; supra Part II.B.2.a.
the same time, programs such as New York City’s that do not frustrate that purpose can go forward and continue to be innovative. This is precisely situation that Adelman and Engel’s model seeks to foster.291

New York City’s and California’s regulations and programs have similarities and differences, but both appear to be examples of the kinds of environmental progressivism that these commentators laud.292 It seems unwise to allow the ever-growing reach of the preemption doctrine293 and the breadth of the EPCA’s preemption clause to challenge these progressive environmental initiatives.294 The best option for New York City appears to be a combination of creating new regulations to implement its hybrid cab program in a manner that will be successful, as well as continuing its efforts to amend the EPCA to allow for more creative environmental policies as discussed in the scholarship.

Conclusion

There are efforts in many cities to mandate the use of hybrid vehicles as taxicabs as part of a push for a healthier environment. These attempts are part of a larger trend of states and local governments enacting progressive environmental legislation, such as California’s large scale attempt to regulate greenhouse gas emissions. Several of these attempts, such as New York City’s attempt to mandate hybrid cabs, have faced preemption challenges under existing federal laws such as the EPCA and CAA.

New York City, Boston, and other cities should, in the short term, alter their regulations to make hybrid cab goals possible and serve as an example to other cities attempting similar cab programs. In the long term, they should lobby Congress to amend the EPCA and join the push by states, local governments, and commentators to alter the debate on federal preemption and make way for progressive environmental policies on the state and local level.

291 See supra Part III.C.
292 See supra Part III.A, C.
293 See supra Part II.C.1.
294 See supra Part III.C.
THE SAME NEPA PROPOSAL OR CONNECTED NEPA ACTIONS?: WHY THE BUREAU OF LAND MANAGEMENT’S NEW OIL SHALE RULES AND REGULATIONS SHOULD BE SET ASIDE

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Abstract: In November 2008, the Bureau of Land Management (BLM) finalized a rule opening public land in Colorado, Utah, and Wyoming for oil shale leasing and finalized regulations creating policies and procedures for that leasing. The rule and regulations are the BLM’s attempt to fulfill their mandate under the Energy Policy Act of 2005 to create a commercial oil shale leasing program in the western United States. As federal actions significantly affecting the environment, both the rule and regulations, are subject to the procedural requirements of the National Environmental Policy Act (NEPA). The purpose of this Note is to point to two possible errors by the BLM in fulfilling NEPA’s procedural requirements. These procedural errors are fodder for citizen-plaintiffs hoping to have the Bush-era rule and regulations judicially set aside and subsequently abandoned by the Obama Administration.

INTRODUCTION

On November 17, 2008 the Bureau of Land Management (BLM) finalized a rule making public land in Colorado, Utah, and Wyoming available for commercial oil shale leasing through the amendment of twelve resource management plans. The next day, the BLM finalized regulations creating policies and procedures for leasing that land for


commercial oil shale development. According to the BLM, these two acts fulfilled its obligation under the Energy Policy Act of 2005 to create an oil shale leasing program on public lands (the rule) and to implement that program (the regulations). The late November finalization dates meant that both the rule and regulations became effective just days before Barack Obama took office as president of the United States. This made both actions part of the flurry of “midnight” rules and regulations finalized at the end of the Bush Administration.

With one presidential administration creating a midnight rule or regulation and another administration left to enforce it, midnight rules and regulations are especially vulnerable to judicial attack. Having rules or regulations set aside in the middle of a presidential administration is little more than a delay tactic: with time, the administration can correct the procedural deficiency and reinstate the rule or regulation. However, absent an outside judicial challenge, an incoming administration is forced to justify rescinding or revising a previous administration’s midnight rule or regulations through the time-consuming administrative process. Faced with the prospect of the administrative process, incoming administrations will often leave midnight rules or regulations intact or become hopelessly bogged down in the process of rescinding them. However, if an incoming administration disagrees with a midnight rule or regulation, it will likely not reinstate it if it is judicially attacked by a third party and set aside. Thus, unlike a rule or regulation

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7 Beermann, supra note 5, at 361. The Bush Administration’s experience with the Clinton administration’s midnight “roadless rule” would be an example of the difficulty an incoming administration could have rescinding a midnight regulation; first choosing not to defend the rule and then unsuccessfully trying to amend the rule in 2005, the Bush Administration spent considerable time over its two terms attempting to rescind or erode the midnight rule. See Martin Nie, The Governance of Western Public Lands 96–103 (2008).
8 See Beermann, supra note 5, at 361 (discussing desire, but inability, to rescind a rule promulgated by the Carter Administration); see also Nie, supra note 7, at 97 (noting that in
promulgated in the middle of a presidential term, finding a procedural deficiency can lead to midnight rules and regulations being permanently set aside.

The identification of a procedural deficiency in the midnight oil shale rule and regulations presents just such an opportunity. If a procedural deficiency can be found, the rule, regulations, or both could be set aside. Further, the Obama Administration’s dislike for the rule and regulations makes it appear likely that the rule and regulations would not be reinstated if judicially set aside. The Administration has been explicit in its distaste for the rule and regulations; Ken Salazar, the current Interior Secretary who oversees the BLM, described the Bush Administration’s oil shale rule and regulations as “a frenzied attempt to move a failed agenda.”9 Moreover, Secretary Salazar believes that the Bush Administration “put the cart before the horse” by moving forward with commercial oil shale leasing without fully understanding the environmental impacts or whether oil shale is economically viable.10

The purpose of this Note is to point out a procedural deficiency that could set aside both the oil shale rule amending the twelve resource management plans to allow for commercial oil shale leasing and the regulations creating a procedure for that leasing. The procedural deficiency discussed is the BLM’s failure to include both the rule and the regulations in the same National Environmental Policy Act (NEPA) statement.11 NEPA requires the preparation of a statement for all “major Federal actions significantly affecting” the environment.12 In specific circumstances, NEPA requires a combined statement for multiple federal actions.13 The BLM prepared a separate statement for both the rule and the regulations, but it did not prepare a combined statement.14

some instances the Bush Administration would simply not defend judicial challenges to Clinton’s midnight rules in order to hasten the judicial process).

10 See id.
12 See id. § 4332(C); Kleppe v. Sierra Club, 427 U.S. 390, 409 (1976).
13 See 42 U.S.C. § 4332(C); Kleppe 427 U.S. at 409.
This Note will argue that the BLM should have prepared a combined statement; therefore, the rule and the regulations should be set aside for failing NEPA’s requirements.\(^\text{15}\) The argument will proceed in six parts. Part I contains a discussion of what oil shale is and the potential impacts of a commercial oil shale leasing program.\(^\text{16}\) Part II of this Note discusses the Energy Policy Act of 2005’s requirements for the BLM’s creation of a commercial oil shale leasing program.\(^\text{17}\) Parts III and IV discuss NEPA generally and the specific provisions of NEPA that could require a combined NEPA statement for the oil shale rule and regulations.\(^\text{18}\) Part V examines how the BLM fulfilled its requirements under the Energy Policy Act of 2005.\(^\text{19}\) Part VI argues that the combination of the Energy Policy Act of 2005 and NEPA require a combined NEPA statement.\(^\text{20}\)

I. OIL SHALE AND ITS IMPACTS

The current Interior Secretary, Ken Salazar, is opposed to the oil shale rule and regulations because of the economic uncertainties surrounding the technology for turning oil shale into liquid oil and the potential environmental and socioeconomic impacts of a commercial oil shale program.\(^\text{21}\) At first blush, oil shale development seems tempting because of the potential for creating a vast domestic oil source. Experts estimate that the Green River Basin—the largest known oil shale deposit in the world, located where the borders of Colorado, Utah, and Wyoming meet—contains 500–1100 billion barrels of potentially recoverable oil.\(^\text{22}\) To put these numbers in perspective, the midpoint of that estimation—800 billion barrels—is more than triple the known oil reserves of Saudi Arabia.\(^\text{23}\) At current demand for oil, this would be enough to satisfy the oil demand of the United States for 100 years.\(^\text{24}\) Moreover, the political excitement over oil shale also stems from the government’s role in developing the resource; more than 80% of the

\(^{15}\) See infra Part VI.
\(^{16}\) See infra Part I.
\(^{17}\) See infra Part II.
\(^{18}\) See infra Parts III–IV.
\(^{19}\) See infra Part V.
\(^{20}\) See infra Part VI.
\(^{21}\) See Salazar, supra note 9.
\(^{22}\) James T. Bartis et al., OIL SHALE DEVELOPMENT IN THE UNITED STATES: PROSPECTS AND POLICY ISSUES, at ix (2005).
\(^{23}\) Id.
\(^{24}\) Id.
Green River Basin oil shale is located on United States’ public land administered by the Bureau of Land Management (BLM).\textsuperscript{25} However, the excitement surrounding these numbers should be tempered by a simple fact: oil shale is not oil. Rather, it is a solid compound which contains an organic substance known as kerogen that can be extracted and further refined into oil.\textsuperscript{26} The cost of this energy-intensive process, coupled with a potential oil shale leasing program’s effects on the Green River Basin’s environment, water resources, and socioeconomics, should create reservations about pursuing the development of this extensive resource.\textsuperscript{27}

A. The Economics: Oil Shale Makes Expensive Oil

Converting solid oil shale into liquid oil is much more expensive than recovering conventional liquid oil.\textsuperscript{28} The economics of recovering oil from oil shale depend on what method is used to extract the kerogen from the shale.\textsuperscript{29} There are two general methods for extracting kerogen: conventional mining combined with surface retorting and \textit{in situ}—or in-ground—mining.\textsuperscript{30} Conventional mining combined with surface retorting is the more expensive, but proven, method for extracting kerogen.\textsuperscript{31} This method involves the removal of solid shale from the ground and then the heating of the solid shale in a furnace-like retort to over 900 degrees Fahrenheit, turning the kerogen to gas and separating it from the solid shale.\textsuperscript{32} This method has proven effective at producing oil from shale at the commercial levels of production in the past, but its high cost hinders

\textsuperscript{26} Teh Fu Yen & George V. Chilingarian, \textit{Introduction to Oil Shales, in Oil Shale: Developments in Petroleum Science} 5, at 1, 6–7 (Teh Fu Yen & George V. Chilingarian eds., 1976).
\textsuperscript{30} Id.
\textsuperscript{31} Id.
its wide-scale implementation.\textsuperscript{33} Currently, the cost of producing one barrel of oil from shale using conventional mining combined with retorting is between $70 and $95 per barrel.\textsuperscript{34} However, these prices could drop to between $35 and $48 per barrel after twelve years of experience with the production process.\textsuperscript{35} In comparison, the cost of producing one barrel of oil from conventional liquid oil resources is $19.50.\textsuperscript{36}

\textit{In situ} mining is a potentially less expensive, unproven method for extracting kerogen from oil shale.\textsuperscript{37} This method heats the oil shale in-ground by turning the kerogen into a liquid or gas form and then pumping the kerogen to the surface.\textsuperscript{38} Avoiding expensive conventional mining makes the \textit{in situ} method potentially more competitive with the $19.50 per barrel production cost of conventional liquid oil resources.\textsuperscript{39} Experts estimate that successful implementation of \textit{in situ} mining could result in production costs ranging from $23 to $27 per barrel.\textsuperscript{40} However, these same predictions contain the caveat that the technology is at least twenty years away from large-scale, commercial implementation.\textsuperscript{41}

B. \textit{Oil Shale’s Impacts: Effects on the Environment, Water Resources, and Regional Socioeconomics}

A large commercial oil shale leasing program on public lands could affect the environment generally, create a sharp increase in demand on limited regional water resources, and cause socioeconomic upheaval.\textsuperscript{42}

1. Environmental Effects

Some environmental impacts of a commercial oil shale industry will be largely the same regardless of what oil shale extraction method is used. Common to both methods are impacts on air quality.\textsuperscript{43} The heating of shale—whether in-ground or above-ground—not only re-
leases the kerogen; it also releases sulfur oxide, nitrogen oxide, carbon dioxide, and particulate matter, which are all emissions regulated under the Clean Air Act. Further, extensive energy will be necessary to heat the oil shale to the 900 degrees Fahrenheit necessary to release the kerogen from the shale. In the short term, this energy will have to come from sources that burn fossil fuels and will release significant quantities of greenhouse gases.

The physical extraction of solid shale would have environmental impacts unique to that extraction method. First, the physical extraction of shale through conventional mining—resembling coal mining—could significantly disturb the surface geography. Commercially viable oil shale operations will extract approximately 25 million tons of shale every year, leaving a byproduct of 1.2 to 1.5 tons of spent shale for every barrel of oil produced. If the solid shale is removed through strip mining, the result would be some of the largest open-pit mines in the world. If developers pursued room-and-pillar mining—a method which leaves the surface undisturbed by hollowing out below-ground caverns—instead of strip mining, less surface disturbance would result. However, experts believe that room-and-pillar mining is suboptimal because it results in exceptionally low levels of resource recovery.

Though it creates much less surface disturbance, in situ mining endangers ground water. Ground water coming in contact with the intensely heated oil shale could be contaminated with kerogen, other gases, and/or sediments. Further, though surface disturbance would be less significant than with conventional mining, in situ mining would still require surface operations that would result in a decade-long displacement at each site of other land uses as well as flora and fauna.

44 See id. at 2.
45 See id.
46 BARTIS ET AL., supra note 22, at 40.
47 See id. at 11–14.
48 See id. at 12.
49 Id. at 12, 36.
50 Id. at 12.
51 See id.
52 See BARTIS ET AL., supra note 22, at 12.
54 BARTIS ET AL., supra note 22, at 36–37.
2. Water Resources

Other than polluting water, there is also concern that commercial oil shale operations would place an excessive burden on the region’s scarce water resources.\(^{55}\) Much of the region proposed for commercial oil shale leasing lies within the Colorado River Basin, which supplies the water needs for much of the southwest United States and is currently strained in doing so.\(^{56}\) Oil shale mining and processing will add to this strain by requiring between 2.1 and 5.3 barrels of water per barrel of oil produced.\(^{57}\) This water will be used for extraction, crushing, transport, dust control and cooling.\(^{58}\) Additionally, if coal is used to create the significant electricity necessary for heating the oil shale, these coal-powered electric plants will also require significant water resources, thus exacerbating the problem.\(^{59}\)

3. Socioeconomic Impacts

The sparsely populated region would also experience socioeconomic upheaval from the influx of investment that a commercial oil shale program would bring to the region.\(^{60}\) Oil shale production is labor-intensive and therefore even a small commercial oil shale program could mean an influx of 40,000 to 80,000 people into the region.\(^{61}\) This influx would be absorbed by an area with a sparse population,\(^{62}\) and it will likely resemble the effects of the last oil shale boom in the region in the early 1980s.\(^{63}\) Then, the prospect of a commercial oil shale program introduced $85 million of payroll into the region, drastically increased property values, caused schools to overflow, rents to double, liquor stores to have empty shelves, and an increase in crime and traffic.\(^{64}\) That boom ended quicker than it began when, within a week in 1982, Exxon mothballed its oil shale operation and left unemployment and

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55 See id. at 50–51.
56 PEIS, supra note 14, at 3–62 to -63.
57 Bartis et al., supra note 22, at 50.
58 Id.
60 See Bunger et al., supra note 25, at 20.
61 Bartis et al., supra note 22, at 43.
62 Id. (noting that in 2000, Garfield County, Colorado had a population of 43,791; nonetheless, it is one of the most heavily populated counties in the region).
64 Id. at 113, 119, 157.
economic havoc in its wake.\textsuperscript{65} The date of Exxon’s decision to close its oil shale operation is known by locals as “Black Sunday.”\textsuperscript{66}

II. THE ENERGY POLICY ACT OF 2005: PROCEDURAL AND SUBSTANTIVE REQUIREMENTS FOR THE CREATION OF A COMMERCIAL OIL SHALE LEASING PROGRAM

The Energy Policy Act of 2005, a piece of comprehensive energy legislation, included a mandate for the Bureau of Land Management (BLM) to create a national commercial oil shale leasing program on public lands.\textsuperscript{67} This mandate included substantive requirements for the BLM’s administration of the program as well as procedural requirements for the BLM’s creation of the program.\textsuperscript{68}

A. The Energy Policy Act of 2005 Generally

The Energy Policy Act of 2005 (EPAct) is meant to reduce the United States’ dependence on oil from politically and economically unstable foreign sources in an environmentally sound manner.\textsuperscript{69} The EPAct is the statutory implementation of 2001 recommendations from the National Energy Policy Development Group—a group formed by President George W. Bush—and led by Vice President Dick Cheney—to study ways to “promote dependable, affordable and environmentally sound energy for the future.”\textsuperscript{70} The Act includes provisions for increasing energy efficiency, developing renewable energy sources, increasing production of domestic energy sources, increasing vehicle efficiency, and researching and developing new energy sources and efficiency-saving technology.\textsuperscript{71} Included in the EPAct’s provisions for increasing domestic energy production are substantive and procedural mandates for the Department of the Interior to create a commercial oil shale leasing program.\textsuperscript{72}

\textsuperscript{65} Id. at 151–52.
\textsuperscript{66} Bartis et al., supra note 22, at 43.
\textsuperscript{68} See id.
\textsuperscript{72} See id. § 15927.
B. The Energy Policy Act’s Substantive Requirements for a Commercial Oil Shale Leasing Program

The EPAct contains substantive requirements for the Interior Secretary’s issuance of oil shale leases, restricting the near complete discretion the Interior Secretary previously enjoyed under the Mineral Leasing Act of 1920 (MLA). The only real limitations on the Secretary’s authority to grant a lease under the MLA were that a lessee must be an American citizen and that each lease be limited to one tract of 5120 acres. The MLA included provisions for rental and royalty rates, but these had little binding effect because the Secretary was also given discretion to waive the fees to allow an oil shale operation to “successfully operate” or for the purpose of encouraging oil shale production.

The EPAct took away some of the Interior Secretary’s discretion by adding three new substantive requirements for the issuance of oil shale leases. First, rather than setting royalty rates and rental fees at a level meant to encourage the growth of the oil shale industry, the EPAct requires the Interior Secretary to ensure a “fair” rate of return to the United States for every lease. Second, regulations implemented for the issuance of oil shale leases now must contain work requirements and milestones “to ensure the diligent development of the lease.” Finally, the EPAct includes a consultation requirement: before a commercial oil shale lease can be issued in a state, the BLM must consult the governor, representatives of the affected local government, “interested Indian tribes,” and “other interested persons” in that state. If the BLM finds that there is a “sufficient” level of support from these parties, it “may” issue commercial leases. This final provision could create a substantial roadblock for the BLM, as the governors of Colorado and Wyoming do not currently support moving forward with a commercial oil shale leasing program.

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74 See 30 U.S.C. § 181; Randall, supra note 73, at 3.
75 See Randall, supra note 73, at 3.
76 Id. at 6–7.
77 42 U.S.C. § 15927(o).
78 Id. § 15927(f).
79 Id. § 15927(e).
80 Id.
81 See Letter from Dave Freudenthal, Governor of Wyo., to Jim Caswell, Dir., Dep’t of Interior, Bureau of Land Mgmt. (Sept. 17, 2008), available at http://governor.wy.gov/press-
C. The Energy Policy Act’s Procedural Requirements for the Creation of a Commercial Oil Shale Leasing Program

The EPAct set out a three-step process for the creation of a commercial leasing program for oil shale. The three steps are the issuance of research, development, and demonstration (RDD) leases; the creation of a programmatic environmental impact statement (PEIS) for a commercial oil shale leasing program; and the publication of regulations implementing a commercial oil shale leasing program.\(^{82}\)

The first requirement, the issuance of RDD leases, is meant to allow private lessees to test known technologies and research new technologies for recovering and converting oil shale into oil.\(^{83}\) This goal would be accomplished through leasing small tracts to private entities whose testing results the BLM could utilize in developing the larger commercial leasing program.\(^{84}\)

EPAct’s second requirement for the BLM is the completion of a PEIS.\(^{85}\) This requirement is meant to ensure that the BLM considers the environmental impacts of the leasing program it decides to create.\(^{86}\) By specifically requiring the preparation of a PEIS, Congress is mandating how the BLM will comply with the National Environmental Policy Act (NEPA). Generally, NEPA only requires the preparation of a PEIS if the program is a “major Federal action[] significantly affecting the . . . human environment.”\(^{87}\) Here, the EPAct takes that determination away from the BLM by mandating the creation of a PEIS regardless of the agency’s determination of environmental impacts.\(^{88}\) Thus, in creating a commercial oil shale leasing program, the BLM must create a PEIS and that PEIS must be adequate according to NEPA.\(^{89}\)

The EPAct’s final requirement for the BLM in creating a commercial oil shale leasing program is the promulgation of oil shale leasing regulations within six months of the completion of the PEIS.\(^{90}\) Prior to the EPAct, the BLM had the authority through the MLA to issue oil

\(^{82}\) 42 U.S.C. § 15927(c) –(d).
\(^{83}\) Id. § 15927(c).
\(^{84}\) See id.
\(^{85}\) Id. § 15927(d) (1).
\(^{86}\) See NEPA, 42 U.S.C. § 4332(c) (2006); EPAct, 42 U.S.C. § 15927(d) (1).
\(^{87}\) See NEPA. 42 U.S.C. § 4332(c).
\(^{88}\) See EPAct, 42 U.S.C. § 15927(d) (1).
\(^{89}\) See NEPA 42 U.S.C. § 4332(c), EPAct 42 U.S.C. § 15927(d) (1).
\(^{90}\) See EPAct § 15927(d) (2).
shale leases, but it had never promulgated regulations outlining the procedure for the leasing process.\textsuperscript{91} The purpose of the regulation requirement is to create such uniform procedures for the BLM’s issuance of oil shale leases, and its management of oil shale exploration, development, and production activities.\textsuperscript{92}

III. THE NATIONAL ENVIRONMENTAL POLICY ACT GENERALLY

The Energy Policy Act of 2005’s (EPAct’s) procedural requirements for the creation of a commercial oil shale leasing program incorporates the National Environmental Policy Act (NEPA).\textsuperscript{93} They do so specifically by requiring the preparation of a programmatic environmental impact statement (PEIS), and generally by mandating agency action that may trigger NEPA by “significantly affecting” the environment.\textsuperscript{94} Understanding the implications of incorporating NEPA into EPAct’s mandated procedure for the creation of a commercial oil shale leasing program requires an understanding of NEPA generally, and NEPA’s requirement that the analysis of related actions be combined.

A. The National Environmental Policy Act Generally

The purpose of NEPA is twofold: to ensure agencies consider the environmental impacts of their proposed actions early in the decision-making process and to alert the public to the environmental impacts of proposed agency action.\textsuperscript{95} By requiring the consideration of environmental impacts early in the agency decision-making process, NEPA ensures that agencies are aware of the environmental impacts of an action before they have committed to that action.\textsuperscript{96} Further, by announcing the environmental impacts of a proposed action early in the agency

\textsuperscript{91} See Mineral Leasing Act, 30 U.S.C. § 241 (2006); EA, supra note 14, at 1.3.
\textsuperscript{92} See EA, supra note 14, at 1.2.
\textsuperscript{93} See EPAct 42 U.S.C. § 15927(d)(1).
\textsuperscript{94} See NEPA, 42 U.S.C. § 4332(c); EPAct, 42 U.S.C. § 15927(d)(1).
\textsuperscript{95} The Supreme Court recently noted in Winter v. Natural Resources Defense Council that the purpose of NEPA’s environmental impact statement requirement is to ensure that “important [environmental] effects will not be overlooked or underestimated only to be discovered after resources have been committed or the die otherwise cast,” and that “an agency has indeed considered environmental concerns . . . provides a springboard for public comment . . . [and] affords other affected governmental bodies notice of the expected consequences and the opportunity to plan and implement corrective measures in a timely manner.” 129 S. Ct. 365, 389–90 (2008) (internal quotation marks and citations omitted).
\textsuperscript{96} See id. at 389.
decision-making process, the public is able to act on that information through the administrative process before a decision is made.  

NEPA’s purpose is achieved through its Environmental Impact Statement (EIS) requirement. NEPA requires the preparation of an EIS for any proposed major federal action that will “significantly affect[] the quality of the human environment.” An EIS is a public document that undertakes a detailed analysis of the following:

(i) the environmental impact of the proposed action,
(ii) any adverse environmental effects which cannot be avoided should the proposal be implemented,
(iii) alternatives to the proposed action,
(iv) the relationship between local short-term uses of man’s environment and the maintenance and enhancement of long-term productivity, and
(v) any irreversible and irretrievable commitments of resources which would be involved in the proposed action should it be implemented.

An agency must follow the Council on Environmental Quality’s (CEQ) regulations to determine if an action they are proposing will trigger NEPA’s EIS requirement by having a significant effect on the environment. The CEQ regulations require the preparation of an Environmental Assessment (EA) to make this determination unless the agency voluntarily decides to prepare an EIS or Congress has explicitly excluded the agency action from the EIS requirement. An EA is a “concise public document” that “[b]riefly provide[s] sufficient evidence and analysis for determining whether to prepare an environmental impact statement.” If an agency determines through an EA that an EIS is not required, it must make a finding of no significant impact (FONSI) to accompany the agency’s final record of decision for the action.

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97 See id. at 389–90.
100 Id. § 4332(C)(i)–(v).
101 See 40 C.F.R. §§ 1500–18 (2009). Title II of NEPA established the CEQ, an agency responsible for the administration of NEPA. Daniel R. Mandelker et al., NEPA Law and Litigation § 2:8 (Paulette Simonetta & Nicole D’Alessandro eds., 2008). By executive order, the CEQ is specifically responsible for regulating the preparation of EISs. Id.
102 See 40 C.F.R §§ 1508.4, .9; Mandelker et al. supra note 101, § 7:10.1.
103 40 C.F.R § 1508.9(a).
104 Id. § 1508.13.
FONSI “briefly present[s] the reasons why an action . . . will not have a significant effect on the human environment and for which an environmental impact statement therefore will not be prepared.” 105

Proposed agency actions requiring an EIS can be discrete individual actions or broad federal actions. 106 An EIS for a broad federal action is called a PEIS. 107 The purpose of a PEIS is to analyze the “cumulative or synergistic environmental impact[s]” of a proposed agency action on a region. 108 The PEIS analyzes the broad environmental impacts of the implementation of a program in general, while more detailed site-specific EISs analyze the implementation of a program in specific locations. 109 The CEQ regulations specifically point to agency programs and regulations as broad federal actions that may require a PEIS. 110

Finally, to be useful in making a decision about whether or not an EIS should be prepared, EAs are required to have the same “scope” as the potential EIS. 111 Scope is simply the range of actions and alternatives considered in either the EIS or the EA. 112 The remainder of this Note will deal mostly with inadequacies in the scope of EAs and EISs. Because the scope of EAs and EISs are the same, for the remainder of the Note, they will be referred to under a common name: “NEPA statements.”

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105 Id.
106 Id. § 1502.4(b).
107 Mandelker et al. supra note 101, § 9:9 (citing Nat’l Wildlife Fed’n v. Appalachian Reg’l Comm’n, 677 F.2d 883, 888 (D.C. Cir. 1981) (citations and footnotes omitted)). One court described a PEIS as follows:

A programmatic EIS reflects the broad environmental consequences attendant upon a wide-ranging federal program. The thesis underlying programmatic EISs is that a systematic program is likely to generate disparate yet related impacts. This relationship is expressed in terms of “cumulation” of impacts or “synergy” among impacts that are caused by or associated with various aspects of one big Federal action. Whereas the programmatic EIS looks ahead and assimilates “broad issues” relevant to one program design, the site-specific EIS addresses more particularized considerations arising once the overall program reaches the “second tier,” or implementation stage of its development.

See Nat’l Wildlife Fed’n, 677 F.2d at 888.
110 40 C.F.R § 1502.4(b).
111 See id. § 1508.9(b).
112 Id. § 1508.25.
B. The Administrative Procedure Act: NEPA’s Teeth

Due to the lack of a citizen-suit provision in NEPA, the Administrative Procedure Act (APA) is the sole method of citizen-enforcement of NEPA.\textsuperscript{113} In implementing NEPA, Congress assumed that the President would actively enforce its provisions.\textsuperscript{114} As a practical matter, however, the sole enforcement of NEPA comes from citizen plaintiffs acting through the APA’s citizen-suit provision.\textsuperscript{115} Under the APA, any final agency action can be set aside if it is “arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with the law.”\textsuperscript{116} This standard requires a court to “consider whether [an agency’s] decision [is] based on a consideration of the relevant factors and whether there has been a clear error of judgment.”\textsuperscript{117}

An agency is arbitrary and capricious in fulfilling its NEPA procedural obligation if that agency fails to take a “hard look” at the environmental consequences of the action it is proposing.\textsuperscript{118} The hard look must occur in fulfilling NEPA’s requirements which are procedural rather than substantive; NEPA mandates how an agency should make a decision rather than what decision an agency should make.\textsuperscript{119} As such, an agency can move forward with actions that may be environmentally imprudent, as long as they consider the environmental impacts of the action in an adequate NEPA statement.\textsuperscript{120} An agency takes a hard look when it identifies information that allows both the agency and the public to evaluate the environmental impacts of the proposed action.\textsuperscript{121} An agency that fails to take a hard look at a proposed agency action is arbitrary and capricious in fulfilling its NEPA procedural requirement, and any action relying on that procedure must be set aside.\textsuperscript{122}

\textsuperscript{115} See id. at 478.
\textsuperscript{118} See Or. Natural Desert Ass’n v. Bureau of Land Mgmt., 531 F.3d 1114, 1140 (9th Cir. 2008); Mandelker et al., supra note 101, § 3:7.
\textsuperscript{120} See O’Brien, supra note 119, at 250.
\textsuperscript{122} See Or. Natural Desert Ass’n, 531 F.3d at 1140.
IV. NEPA Requires a Combined Analysis for Multiple Actions: The Segmentation Problem and the CEQ Regulation’s Solution

Segmenting a proposed action into many smaller actions for NEPA review can defeat NEPA’s purpose by minimizing the perceived environmental impacts of the action.\textsuperscript{123} The Council on Environmental Quality (CEQ) regulations prevent segmentation through mandating the combined analysis of smaller actions that are part of a larger proposed action, and proposed actions that are “connected,” “similar,” and/or have “cumulative impacts.”\textsuperscript{124}

A. Segmentation Generally

Segmentation is a means of circumventing NEPA’s purpose by dividing larger agency actions into several smaller proposed actions for NEPA review.\textsuperscript{125} Segmentation minimizes the environmental consequences of a larger proposed action by dividing it into several proposals for analysis in separate NEPA statements.\textsuperscript{126} Thus, segmentation defeats NEPA’s dual purpose of requiring agencies to consider environmental impacts and disseminating information about environmental impacts to the public. This division of the analysis allows agencies to avoid confronting the totality of the environmental impacts of their actions, and the piecemealed presentation of the information prevents the public from having a complete understanding of the action’s environmental impacts.\textsuperscript{127}

B. The CEQ’s Regulatory Solution to the Segmentation Problem

To prevent segmentation, the CEQ regulations define the required “scope” of analysis for NEPA statements.\textsuperscript{128} The regulations require that a NEPA statement analyze the entirety, rather than a segment, of proposed single actions.\textsuperscript{129} Further, the regulations require a single combined analysis for proposed actions that are “similar,” “cumulative,”

\textsuperscript{123} See Citizens’ Comm. to Save Our Canyons v. U.S. Forest Serv., 297 F.3d 1012, 1028 (10th Cir. 2002); Mandelker et al., supra note 101, § 9:11.

\textsuperscript{124} See Hirt v. Richardson, 127 F. Supp. 2d 833, 842 (W.D. Mich. 1999) (describing section 1508.25 of the CEQ Regulations as the regulatory incorporation of a judicially created prohibition on segmentation); 40 C.F.R. § 1508.25 (2009).

\textsuperscript{125} See Save Our Canyons, 297 F.3d at 1028; Mandelker et al., supra note 101, § 9:11.

\textsuperscript{126} See Save Our Canyons, 297 F.3d at 1028; Mandelker et al., supra note 101, § 9:11.

\textsuperscript{127} See Save Our Canyons, 297 F.3d at 1028.

\textsuperscript{128} See 40 C.F.R. § 1508.25.

\textsuperscript{129} See Native Ecosystems Council v. Dombeck, 304 F.3d 886, 893–94 (9th Cir. 2002); 40 C.F.R. § 1502.4(a).
and/or “connected.” Thus, the analysis of whether multiple proposed actions should be included in the same NEPA statement proceeds in two parts: are the actions components of the same proposal and, if not and are the proposed actions similar, cumulative, or connected.

1. A NEPA Statement Must Analyze the Entirety of a Proposed Action

If an agency proposes a larger action that consists of many smaller agency actions, then all of the smaller actions must be analyzed in the same NEPA statement. However, for an action to require a NEPA statement an agency must propose it. A proposal for an action can either be made explicitly by an agency or a court can make a finding of fact that a proposed action exists.

In Kleppe v. Sierra Club, the Supreme Court required an explicit proposal. The question in Kleppe was whether a series of coal leases issued in the Northern Great Plains constituted a single proposed action for a regional leasing program, thus requiring a single NEPA statement. The Court found that because the Department of the Interior had never explicitly made a “report or recommendation” for a regional leasing program, no proposal for such a program existed, and thus no combined NEPA statement was required.

However, the explicit proposal requirement announced in Kleppe has been tempered by the subsequent CEQ regulations. These regulations state that a proposal for an action can exist “in fact,” even if the agency has not made an explicit proposal. For a proposed action to exist under this standard, an agency must have a “goal” and be “actively preparing to make a decision on one or more alternative means of ac-

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130 See Dombeck, 304 F.3d at 893–94; Hirt v. Richardson, 127 F. Supp. 2d 833, 842 (W.D. Mich. 1999) (describing 40 C.F.R. § 1508.25 as defining the “scope” of impact statements as the regulatory incorporation of a judicially created prohibition on segmentation); 40 C.F.R. §§ 1502.4(a), .25.
132 40 C.F.R. § 1502.4(a) (“Proposals or parts of proposals which are related to each other closely enough to be, in effect, a single course of action shall be evaluated in a single impact statement.”).
133 Dombeck, 304 F.3d at 893 (citing Kleppe, 427 U.S. at 399).
134 See Kleppe, 427 U.S. at 405–06; 40 C.F.R. § 1508.23.
135 Kleppe, 427 U.S. at 399.
136 See id. at 395–96.
137 Id. at 399.
138 See 40 C.F.R. § 1508.23.
139 See id.
complishing that goal.”

140 Thus, in *Blue Ocean Preservation Society v. Watkins*, the court looked to facts to determine whether the four stages of a geothermal energy project were a “single, integrated, action with a solitary purpose[,] the construction of a 500 megawatt [power] plant,” or a series of discrete federal actions. 141 Though each stage had been individually proposed as a separate action for NEPA purposes, the court was willing to examine evidence to determine whether the separate actions were in fact a single action with a single goal. 142

2. Actions in Separate Proposals Requiring a Single NEPA Statement

The CEQ regulations require actions that are part of separate, concurrently pending proposals to be considered in the same NEPA statement if they are similar, cumulative, or connected. 143

a. *Similar Actions*

Multiple proposed actions that are similar must be analyzed in a combined NEPA statement. 144 Similar proposed actions “have similarities that provide a basis for evaluating their environmental consequences [sic] together, such as common timing or geography.” 145 However, this requirement is eviscerated by the considerable deference given agencies in determining if proposed actions are similar. 146 The CEQ regulations state that an agency “may wish” to analyze “similar actions” in the same NEPA statement when a combined analysis is “the best way” to analyze the actions’ combined effects. 147 Thus, in *Klamath-Siskiyou Wildlands Center v. Bureau of Land Management*, the court deferred to the agency’s decision that seemingly similar timber sales were

140 Id.
142 See id.
144 See 40 C.F.R. § 1508.25(a)(3); BLM NEPA Handbook, supra note 143, § 6.5.2.3.
145 40 C.F.R. § 1508.25(a)(3).
147 40 C.F.R. § 1508.25(a)(3).
not similar. The timber sales were to be adjacent, located in the same watershed, harvested with identical methods, and supervised by the same personnel. Despite seemingly fitting the similar actions definition, the court found that it could not overturn the agency’s decision to analyze the sales in separate NEPA statements because it was up to the agency to determine the “best way” to evaluate the sales.

b. Cumulative Actions—Not Cumulative Impacts

Concurrently pending proposed actions that together have cumulative environmental impacts must be evaluated in the same NEPA statement. A cumulative environmental impact is “the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions.” In *North Cascades Conservation Council v. U.S. Forest Service*, several concurrent proposals for off-road vehicle trails were cumulative actions. This finding was based on each individual trail providing access to a larger regional trail system and all of the proposals thus incrementally having combined environmental impacts on the region.

c. Connected Actions

The CEQ regulations give three definitions of connected actions that require combined NEPA statements: an action that “[a]utomatically trigger[s] other actions which may require environmental impact statements”; an action that “[c]annot or will not proceed unless other actions are taken previously or simultaneously”; and actions that “[a]re

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148 *See Klamath-Siskiyou*, 387 F.3d at 1000–01.
149 *Id.* at 1001.
150 *See id.*
151 *See* 40 C.F.R. § 1508.25(a)(1)(ii); BLM NEPA Handbook, *supra* note 143, § 6.5.2.2. Though decided before the promulgation of the superseding CEQ regulations, in *Kleppe v. Sierra Club*, the Supreme Court similarly expressed the need for cumulative actions to be considered in the same NEPA statement: “when several proposals for . . . actions that will have cumulative or synergistic environmental impact upon a region are pending concurrently before an agency, their environmental consequences must be considered together. Only through comprehensive consideration of pending proposals can the agency evaluate different courses of action.” 427 U.S. 390, 410 (1976) (footnotes omitted).
152 40 C.F.R. § 1508.7, .25(c) (3).
154 *See id.* at 1199.
interdependent parts of a larger action and depend on the larger action for their justification.”

The first definition of connected action requires a combined NEPA analysis for concurrently pending proposed actions when one action “automatically trigger[s]” the other. For one action to automatically trigger a second action, an agency must have no choice but to complete the second action after undertaking the first. Courts rarely find that a proposed action will automatically trigger a second action because agencies usually have some choice about undertaking the second action, regardless of how limited or irrational that choice may seem. For example, in *Piedmont Environmental Council v. Federal Energy Regulatory Commission*, regulations allowing an agency to issue permits to build electric transmission lines did not automatically trigger the issuance of the permits themselves. The permits were not connected to the regulations because despite having the power to issue permits, the agency still could choose to reject each permit application.

The second definition of connected action is less stringent, requiring that proposed actions be considered in the same NEPA statement if one action “cannot or will not proceed” without the second action. In a sense, the relationship between these actions is the reversal of the first definition: rather than one action having no choice but to proceed after the other, here one action cannot proceed without the other. A series of timber sale cases illustrate this requirement. In these cases, building a road to access timber and the actual timber sales were connected actions requiring a single NEPA statement. The timber could not be removed without the roads, and the roads would not exist without the need to access the timber.

However, if one action can exist without the other, courts will not find that one action cannot or will not proceed without the other. In

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155 40 C.F.R. § 1508.25(a)(1)(i)–(iii).
156 See id. § 1508.25(a)(1)(i).
158 See id.
159 See id.
160 Citizens’ Comm. to Save Our Canyons v. U.S. Forest Serv., 297 F.3d 1012, 1029 (10th Cir. 2002); 40 C.F.R. § 1508.25(a)(1)(ii).
161 See Save Our Canyons, 297 F.3d at 1029.
162 See Save the Yaak Comm. v. Block, 840 F.2d 714, 719–29 (9th Cir. 1988); Thomas v. Peterson, 753 F.2d 754, 758 (9th Cir. 1985); Big Hole Ranchers Ass’n v. U.S. Forest Serv., 686 F. Supp. 256, 261–63 (D. Mont. 1988).
163 See Save the Yaak, 840 F.2d at 719–20; Thomas, 753 F.2d at 758–59; Big Hole Ranchers, 686 F. Supp. at 261–63.
Western Radio Services Co., Inc. v. Glickman, a radio antenna could exist without its access road. Despite facts seemingly similar to the timber cases, because the antenna could, and had for two years, existed without the road, the antenna project could proceed without the road; therefore, it was not a connected action requiring a combined NEPA statement. Similarly, in Wilderness Workshop v. Bureau of Land Management, a gas pipeline and proposed gas wells at the feeding end of the pipeline were not “connected actions.” Critical to the court’s decision was the fact that though the pipeline had far more capacity than the existing wells required, it could proceed without the construction of the proposed wells by servicing the existing wells.

The third definition of connected action is the least restrictive. It requires multiple actions to be considered in the same NEPA statement if they are interdependent and justified by the same larger action. For a larger action to justify a smaller action, the latter must simply be meant to facilitate the former: for example, a larger action may justify a stage in or segment of development. More frequently at controversy is the question of whether multiple actions are interdependent. Unlike the second definition of a connected action, actions that are interdependent could exist without each other, but it would not be reasonable or rational for an agency to undertake one action without the other. In Blue Ocean Preservation Society v. Watkins the assessment and testing stages that preceded the construction of a geothermal energy project met this third definition of connected action. Each stage laid the groundwork for the next, making all of the stages interdependent, while all of the stages relied on the construction of the final geothermal plant for their justification.

This third definition of a connected action does not include multiple proposed actions that are justified by the same larger project, but

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164 123 F.3d 1189, 1195 (9th Cir. 1997).
165 Id.
166 531 F.3d 1220, 1229–30 (10th Cir. 2008).
167 See id.
168 See 40 C.F.R. § 1508.25(a)(1)(iii) (2009); BLM NEPA Handbook, supra note 143, § 6.5.2.1.
170 See 40 C.F.R. § 1508.25(a)(1)(iii).
172 See id. at 1452–53, 1458–59.
173 Id. at 1458–59.
are not interdependent. In _Utahns for Better Transportation v. U. S. Department of Transportation_, the court refused to find that three components of a plan to relieve urban traffic congestion were connected because they were not interdependent.\(^{174}\) The three smaller projects—the expansion of a highway, the construction of a new highway, and the improvement of mass transit—were all justified by the larger traffic improvement project, but they were not interdependent because each smaller project did not rely on the others for its existence and each smaller project could relieve some traffic congestion on its own.\(^{175}\)

V. THE BLM’S APPROACH TO ITS NEPA PROCEDURAL REQUIREMENT IN CREATING A COMMERCIAL OIL SHALE LEASING PROGRAM

The Bureau of Land Management (BLM) attempted to fulfill its mandate to create a commercial oil shale leasing program in three stages. First, it issued research, development, and demonstration (RDD) leases.\(^{176}\) Second, it amended twelve resource management plans (RMPs) for public land in Colorado, Utah, and Wyoming to allow for oil shale leasing, and completed the programmatic environmental impact statement (PEIS) required by the Energy Policy Act of 2005 (EPAct) for analyzing that decision.\(^{177}\) Third, the BLM promulgated regulations for leasing public land for commercial oil shale development.\(^{178}\)

A. The Research Development and Demonstrations Leases

The BLM started issuing RDD leases before EPAct’s passage. No new authority was necessary to commence RDD leasing because the MLA provided the BLM the power to issue these leases, and certain tracts of public land were already available for the leasing.\(^ {179}\) Thus, in anticipation of the August passage of the EPAct, the BLM began issuing RDD leases in June 2005.\(^ {180}\) These leases are 160 acres each and give the lessees the option to reserve additional acreage surrounding their leases.

\(^{174}\) 305 F.3d 1152, 1161, 1183–84 (10th Cir. 2002).
\(^{175}\) Id. at 1183–84.
\(^{176}\) PEIS, supra note 14, at 2-14.
\(^{177}\) See id. at 1-3.
\(^{180}\) Potential for Oil Shale Development; Call for Nominations—Oil Shale Research, Development and Demonstration (R, D & D) Program, 70 Fed. Reg. 33,753, 33,753 (June 9, 2005).
for later transformation into a commercial lease. 181 Ultimately, the BLM issued six RDD leases. 182

Environmental Assessments (EAs) were prepared for each of the leases, and in each case, the EA resulted in a record of decision including a finding of no significant impact (FONSI). 183 Because the proposals for RDD leases were not concurrently pending with the proposals for the Resource Management Plan amendments and regulations, the BLM proceeded with separate NEPA statements for the RDD leasing actions. 184

B. The Resource Management Plan Amendments

Soon after the passage of the EPAct, the BLM published a notice announcing its intention to prepare a PEIS for a commercial leasing program on public lands. 185 The notice was explicit that the PEIS would analyze both the amendment of RMPs necessary to open public land for commercial leasing and the creation of regulations for the new program. 186 However, the draft PEIS that was issued two years later only addressed the amendment of RMPs in Colorado, Utah, and Wyoming. 187

The sole purpose of the PEIS was to analyze the amendment of RMPs to allow commercial oil shale leasing. 188 RMPs are regional comprehensive planning documents for public land administered by the Department of the Interior. 189 They incorporate all plans and proce-

181 Id. at 33,754.
182 PEIS, supra note 14, at 2-14.
186 See id. at 73,791.
188 Id.
dures for public land in a particular region into one planning document.\textsuperscript{190} In order for the BLM to undertake a particular action or program on a piece of public land, authorization for that action or program must first be included in the RMP.\textsuperscript{191} For example, the White River RMP, addressing public land located in Rio Blanco County, Colorado, governs the management of water resources, mineral resources, oil and gas, hazardous waste, vegetation, forestry, livestock, wild horses, cultural resources, wild fires, and more.\textsuperscript{192} Because amending an RMP is often considered a proposed federal action that could significantly affect the environment, a NEPA statement will usually be included in the amendment process.\textsuperscript{193} To facilitate this, the RMP amendment process parallels the timeline for preparing a NEPA statement.\textsuperscript{194} To open public land for commercial leasing, the RMP covering that public land has to be amended.\textsuperscript{195}

The final version of the oil shale PEIS amended twelve RMPs.\textsuperscript{196} Though encompassing over 1000 pages, the PEIS limits its scope to analyzing the decision to amend the RMPs.\textsuperscript{197} The PEIS also states that it does not analyze the oil shale regulations that are also required by the EPAct because the regulations involve different issues, are on a different schedule, and would be better analyzed through a separate NEPA statement.\textsuperscript{198} The BLM published a record of decision for the twelve RMP amendments on November 17, 2008.\textsuperscript{199}

\begin{thebibliography}{9}

\bibitem{190} See id.
\bibitem{191} \textsc{Bureau of Land Mgmt., U.S. Dep’t of the Interior, BLM Land Use Planning Handbook 1} (2005), available at http://www.blm.gov/pgdata/etc/medialib/\underline{b}lm/\underline{w}o/\underline{i}nformation\underline{r}esources\underline{m}anagement/policy/blm_handbook.Par.38665.File.dat/h1601-1.pdf [hereinafter BLM Land Use Planning Handbook].
\bibitem{192} See \textsc{Bureau of Land Mgmt., U.S. Dep’t of the Interior, White River, Record of Decision and Approved Resource Management Plan}, at a–c, 2-1 to -58 (1997), available at http://\underline{w}ww.blm.gov/pgdata/etc/medialib/\underline{b}lm/co/\underline{p}rograms/\underline{land}\_\underline{use}\_\underline{planning/\underline{rmp/archives/white_river/rmp_rod.Par.61250.File.dat/Wrrt.pdf}}.
\bibitem{193} See \textsc{BLM Land Use Planning Handbook}, supra note 191, at 16–17.
\bibitem{194} See id. at 17.
\bibitem{195} See id.
\bibitem{197} See PEIS, supra note 14, at 1-2 to -3.
\bibitem{198} Id. at 1-3.
\bibitem{199} Notice of Availability of Approved Resource Management Plan Amendments/Record of Decision (ROD) for Oil Shale and Tar Sands Resources, 73 Fed. Reg. 72,519, 72,520 (Nov. 28, 2008).
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were executed sixty days later on January 16, 2009, just four days before Barack Obama took office.200

C. The Oil Shale Regulations

No action was taken by the BLM to promulgate the oil shale regulations required by EPAct until July 2008, when it published proposed oil shale regulations in the Federal Register.201 The notice proposing the regulations did not mention the EA that the BLM had prepared to analyze whether the regulations triggered NEPA’s EIS requirement.202 This EA is limited in scope to only the regulations; it does not include an analysis of RMP amendments.203 The narrow scope of the EA led to a finding that no EIS was required.204 The BLM justified its finding on its claim that the creation of regulations that mandate leasing procedures does not force the BLM to actually issue leases.205 From the BLM’s point of view, the choice to issue leases was retained.206 Thus, according to the BLM, though issuing a lease could have a significant environmental impact, the regulations themselves had no significant impact on the environment.207

The process for creating the EA was not as transparent as the preparation of the other NEPA statements implementing EPAct’s Commercial Oil Shale Program. Unlike the other NEPA statements, the EA is not available on the internet. To obtain the EA, it must be specifically requested from the BLM’s Washington, DC office.208 The BLM’s first mention of the EA is in passing in the November 18, 2008 record of decision that contained the final regulations; one day before the publication of the RMP amendment’s record of decision.209 The regu-
lations became final—also similar to the RMP amendments—just three days before Barack Obama took office.210

VI. A SINGLE NEPA STATEMENT IS REQUIRED

A court would likely find that the BLM’s failure to prepare a single NEPA statement for the resource management plan (RMP) amendments and the oil shale regulations is arbitrary and capricious; therefore, both decisions should be set aside. The BLM failed to take a hard look at the environmental consequences of either action by too narrowly defining the scope of each action to not include the other.211 The failure to take a hard look should be sufficient to find that both actions were arbitrary and capricious; therefore, a reviewing court should set aside the NEPA statements for the RMP amendments and the oil shale regulations.212

A single NEPA statement could be required for two reasons: First, the RMP amendments and the regulations should have been considered as parts of a single proposed federal action—the creation of a commercial oil shale leasing program.213 Second, if the RMP amendments and the regulations are separate proposed actions, they could still be similar, cumulative, or connected actions.214

A. A Single Proposed Action

The RMP amendments and regulations could be considered part of a single proposal for a major federal action. A single proposal could occur in two ways: if the BLM explicitly proposed a larger action that included both the RMP amendments and the regulations; or if a fact determination can be made that the BLM, though not explicitly, has a goal for completing an action that includes the RMP amendments and regulations and the BLM is actively pursuing that goal.215

The BLM has not explicitly proposed an action that includes both the RMP amendments and the regulations.216 Under Kleppe’s strict formulation, the BLM would have to explicitly propose a single program

210 See id. at 69,414. The record of decision for the regulations states that the regulations become effective January 17, 2009, three days before President Obama was to take office on January 20, 2009. See id.; Hulse, supra note 4.
211 See supra Part III.B.
212 See supra Part III.B.
213 See supra Part IV.B.1.
214 See supra Part IV.B.2.
216 See Kleppe, 427 U.S. at 405–06.
of which both smaller actions are a part. To the contrary, in both the EA for the regulations and the PEIS for the RMP amendments, the BLM is explicit that it is recommending only a single action; neither document claims to be implementing a program that includes both actions. For example, in the EA, the BLM states:

"[T]he BLM concurrently proposed regulations for public review and comment while the requisite PEIS [for the RMP amendments] was being prepared. However, the BLM rule-making process is separate and apart from the preparation of the PEIS with its own environmental documentation. The PEIS analyzes the environmental consequences of an allocation decision, while this EA analyzes the regulatory framework for the administration of an oil shale program."

However, a court could consider the RMP amendments and the regulations to be part of the same proposed action under the Council on Environmental Quality (CEQ) regulations’ less restrictive definition. This definition requires that the BLM has a goal including both actions and is actively pursuing that goal. As in Blue Ocean Preservation Society v. Watkins, a fact determination could show the existence of a proposed action, despite the absence of an explicit proposal for that action by the BLM. There, the court was willing to look to evidence to determine whether the stages of a power plant project were in fact all part of a single project, the planning and construction of the power plant.

Similarly, here the BLM has the goal of creating a commercial oil shale leasing program. The most obvious evidence of this is the EPAct’s statutory mandate. The EPAct requires the creation of a commercial leasing program occur through the creation of a PEIS and the promulgation of regulations. The BLM created the PEIS and promulgated the regulations, and in both instances was explicit that it was adhering to the EPAct’s statutory mandate: In the EA, the BLM states that “it prepared regulations to implement Section 369 of the [EPAct].” In the

217 See id.
218 See PEIS, supra note 14, at 1-2 to -3; EA supra note 14, at 1.
219 See EA, supra note 14, at 1.
220 See 40 C.F.R. § 1508.23 (2009).
221 See id.
223 See id.
225 See id.
226 EA, supra note 14, at 1.
PEIS, the BLM states that its purpose is to fulfill the EPAct’s mandate to “complete a programmatic environmental impact statement for commercial leasing on public lands.”

Furthermore, the BLM is explicit that the RMP amendments and the regulations are integral parts of achieving the goal of creating a commercial oil shale leasing program stating, “[I]n order for a commercial leasing program to occur on public lands, the [RMPs] for the areas where the leasing could occur must be amended.” Similarly, the BLM states that the regulations “will implement the [EPAct’s] statutory requirement for establishing a program to support oil shale production.”

B. Similar, Cumulative, or Connected Actions

If the RMP amendments and the regulations are not part of the same proposed action, they would not be similar or cumulative actions, but should be considered connected actions under the CEQ regulations, thus requiring analysis in the same NEPA statement.

1. Similar Actions

The RMP amendments and regulations are not similar actions. Similar actions “have similarities that provide a basis for evaluating their environmental consequences [sic] together, such as common timing or geography.” The RMP amendments and regulations accomplish two very different objectives. The RMP amendments open public land for commercial oil shale leasing, and the regulations establish the procedures for commercial oil shale leasing. Alternatively, in defining similar actions, the CEQ regulations contemplate actions that accomplish similar goals through similar actions.

Even if there were a finding that the RMP amendments and the regulations are similar actions, that would not be enough to require a combined statement. The CEQ regulations give the BLM discretion to analyze similar actions in separate NEPA statements if that is the “best

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227 PEIS, supra note 14, at 1-2.
228 Id. at 1-1.
229 EA, supra note 14, at 1.2.
231 EA, supra note 14, at 1., 4.1.
232 See 40 C.F.R. § 1508.25(a)(3).
way” to undertake the analysis. Because of this discretion, as with the seemingly similar actions in Klamath-Siskiyou, a court would likely defer to the agency in its decision of whether to prepare a combined NEPA analysis. The lack of similarity in fact, and the discretion afforded the BLM, make it unlikely that the RMP amendments and the regulations would be required to be analyzed in the same NEPA statement as similar actions.

2. Cumulative Actions

The RMP amendments and the regulations are also likely not cumulative actions requiring a single NEPA statement. In order to be cumulative actions, the RMP amendments and the regulations would have to have cumulative impacts. To have cumulative impacts, separate actions must have a minimal incremental effect, but when combined have a significant impact on the environment. For example, in Northern Cascades Conservation Council v. U.S. Forest Service, off-road vehicle trails had a much smaller impact when analyzed in isolation then when analyzed with the other proposed trails that were all connected to the same regional network. Unlike off-road vehicle trails, here the RMP amendments and the regulations do not share cumulative impacts. The regulations will be applied to the land opened for leasing by the RMP amendments, but the environmental impacts of each do not incrementally add to the other action’s impacts. This lack of shared cumulative impacts will prevent the two actions from being considered cumulative actions requiring a combined NEPA statement.

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233 See Klamath-Siskiyou Wildlands Ctr. v. Bureau of Land Mgmt., 387 F.3d 989, 1000–01 (9th Cir. 2004); 40 C.F.R. § 1508.25(a)(3).
234 See Klamath-Siskiyou, 387 F.3d at 1000–01.
235 See id.
237 See 40 C.F.R. §§ 1508.7, .25(a)(2).
238 See id. § 1508.7.
240 See id.; 40 C.F.R. § 1508.25(a)(1)(ii).
241 See N. Cascades, F. Supp. 2d at 1197, 1199. Not only do the regulations not share cumulative impacts with the RMP amendments, the EA claims the regulations do not even have any cumulative impacts. See EA, supra note 14, at 4.2, 6.0.
242 See 40 C.F.R. § 1508.7, .25(a)(2).
3. Connected Actions

The RMP amendments and the regulations are likely connected actions requiring the preparation of a single NEPA statement. The two actions could fit all three of the CEQ’s definitions for a connected action: (1) an action that “[a]utomatically trigger[s] other actions which may require environmental impact statements”; (2) an action that “[c]annot or will not proceed unless other actions are taken previously or simultaneously”; and (3) actions that “[a]re interdependent parts of a larger action and depend on the larger action for their justification.”

At first blush, the two actions do not appear to meet the first definition of a connected action, but an action-forcing mandate in the EPAct changes this. To fit the first definition, the decision to amend the RMPs would have to “automatically trigger” the decision to promulgate the regulations or vice versa. Generally speaking, the RMP amendment decision to open public land for lease applications could not be considered as “automatically triggering” the decision to create regulations for leasing. The situation is analogous to Piedmont Environmental Council v. Federal Energy Regulatory Commission, where the decision to create permitting procedures did not automatically trigger the issuance of the permits because the Federal Energy Regulatory Commission retained the choice to grant or deny any permit applications. Similarly here, the BLM generally does not have to create leasing regulations just because it opens public lands for potential leasing.

However, the added statutory obligation of the EPAct creates a unique set of circumstances where the RMP amendments automatically trigger the leasing regulations. The EPAct requires that the BLM issue the oil shale regulations six months after the completion of the PEIS. According to the BLM, the purpose of the PEIS is to analyze the decision to amend the RMP amendments. Once the BLM decided to amend the twelve RMPs, Congress required the BLM to promulgate the leasing regulations within six months. The BLM’s decision to amend

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243 See id. § 1508.25(a)(1)(i)—(iii).
244 Id.
246 40 C.F.R. § 1508.25(a)(1)(i).
247 See 558 F.3d 304, 316–17 (4th Cir. 2009).
248 See EA, supra note 14, at 4.6.
249 40 C.F.R. § 1508(a)(1)(i); see 42 U.S.C. § 15927(d)(2).
251 PEIS, supra note 14, at 1-2.
the RMPs required it to subsequently promulgate regulations; therefore, the two actions should be considered connected, requiring a single NEPA statement.\footnote{253 See id.; 40 C.F.R. § 1508.25(a)(1)(i).}

The RMP amendments and the regulations also likely fit the second definition of a connected action.\footnote{254 See 40 C.F.R. § 1508.25(a)(1)(ii).} This definition requires that if one proposed action cannot or will not proceed without another action, the two actions must be considered together in the same NEPA statement.\footnote{255 See id.} Here, if the completion of one action requires the completion of the other, then the two actions are connected and must be examined in the same NEPA statement.\footnote{256 See id.} For example, in \textit{Thomas v. Peterson}, timber sales were awaiting approval to build a logging road to access the sales.\footnote{257 See 753 F.2d 754, 759 (9th Cir. 1985).} The timber sales could not occur without the approval of the logging road and therefore the two actions were connected.\footnote{258 See id.}

Similar to the previous definition of connected, the EPAct provides context that fulfills this definition, thus requiring a combined NEPA statement for the RMP amendments and the regulations.\footnote{259 EPAct, 42 U.S.C. § 15927(d)(2) (2006).} Absent the EPAct, the BLM could proceed with either action without the other. Promulgating regulations for leasing does not require that land be available for leasing and making land available for leasing does not require regulations to undertake the leasing. However, the structure of the EPAct appears to create this relationship.\footnote{260 See id. § 15927(d).} The EPAct requires that the BLM examine a commercial leasing program in the PEIS and then implement the program with the regulations.\footnote{261 See id.} If the regulations are implementing what is analyzed in the PEIS—the RMP amendments—then the regulations could not proceed before the completion of the PEIS. The reliance of one action on the other for its existence makes the two actions connected, requiring the preparation of a single NEPA statement.\footnote{262 See Thomas 753 F.2d at 759.}

Finally, the RMP amendments likely fit the third definition of a connected action.\footnote{263 See 40 C.F.R. § 1508.25(a)(1)(iii) (2009).} For two actions to be connected under this definition, they must be both justified by the same larger action and be inter-
dependent parts of that larger action. To be interdependent, it must not be reasonable to consider undertaking one action without the other. In *Blue Ocean Society v. Watkins*, the assessment and testing stages that preceded the construction of a geothermal energy project satisfied both regulatory conditions. Each stage laid the groundwork for the next, making them interdependent, while all of the stages relied on the construction of the final geothermal plant for their justification.

The RMP amendments and the regulations are both justified by the creation of a commercial oil shale leasing program. Like the stages in creating the geothermal energy project in *Blue Ocean Society*, the EPAct is explicit that the RMP amendments and the regulations are steps toward creating a commercial oil shale leasing program; the RMP amendments open land for leasing and the regulations create the procedure for that leasing. The BLM frames the actions similarly: It frames the RMP amendments as the allocation decision for what land can be used in an oil shale program. It frames the regulations as the “framework for the administration of an oil shale program.”

The two actions are also interdependent. The requirements of the EPAct make it irrational and unreasonable to pursue the regulations without the RMP amendments. The EPAct requires the BLM to analyze the commercial leasing program in the PEIS and then implement that program through regulations. The regulations are thus meant to implement what the BLM analyzed in the PEIS: the RMP amendments. It would be unreasonable or irrational for the BLM to violate the EPAct

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264 See id.
265 See *Thomas*, 753 F.2d at 759 (citing *Trout Unlimited v. Morton*, 509 F.2d 1276 (9th Cir. 1974)) (holding that timber sales and timber road construction were connected actions); *Fla. Wildlife Fed’n v. U.S. Army Corps of Eng’rs* 401 F. Supp. 2d 1298, 1313–17 (S.D. Fla. 2005) (holding that the construction of one building was not reasonable or rational absent the construction of a planned research park); *Shoshone-Paiute Tribe v. United States*, 889 F. Supp. 1297, 1298 (D. Idaho 1994) (holding that a U.S. Air Force training range and a beddown for a composite wing aircraft were cumulative actions that must be considered together in a single EIS).
267 Id. at 1458–59.
269 754 F. Supp. at 1450–51.
270 See 42 U.S.C. § 15927(d).
271 EA, supra note 14, at 1.
272 Id. at 1., 4.1.
273 See 42 U.S.C. § 15927(d); *Fla. Wildlife Fed’n v. U.S. Army Corps of Eng’rs* 401 F. Supp. 2d 1298, 1313–17 (S.D. Fla. 2005) (holding that the construction of one building was not reasonable or rational absent the construction of a planned research park).
274 See 42 U.S.C. § 15927(d).
by creating regulations for a commercial oil shale program before it analyzed the program in the PEIS.\textsuperscript{275} Because the RMP amendments are interdependent parts of, and justified by, the larger commercial leasing program, the two actions are connected and must be analyzed in the same NEPA statement.\textsuperscript{276}

**Conclusion**

A commercial oil shale leasing program on public lands may or may not be a good idea. However, the BLM should not rush forward with a commercial oil shale leasing program without a better understanding of its potential environmental impacts. The current Interior Secretary and the governors of Colorado and Wyoming have been explicit to that effect.\textsuperscript{277} In order to ensure that a responsible leasing program is put in place, the program rushed into effect by the Bush Administration must first be repealed.

A finding by a court that the RMP amendments and the regulations governing the lease program should have been considered in the same NEPA statement would have this effect. Such a finding would mean that the BLM failed in its NEPA procedural obligation and that the two actions taken must be set aside until that obligation is met. This would remove the rule and regulations without counting on the unlikely prospect of Secretary Salazar undertaking the time and resource-consuming administrative repeal process. Once the rule and regulations are set aside, the Secretary can focus on moving forward cautiously in examining the merits of a potential commercial oil shale leasing program.


\textsuperscript{277} See Salazar; supra note 9; Letter from Dave Freudenthal, supra note 81; Letter from Bill Ritter, supra note 81.
GLOBAL WARMING AND ORIGINALISM:
THE ROLE OF THE EPA IN THE
OBAMA ADMINISTRATION

JOSHUA K. WESTMORELAND*

Abstract: Anthropogenic warming will devastate the world if it is not abated. Abating such warming will require a long-term strategy that starts with immediate and drastic action in the form of new laws designed to restrict greenhouse gas emissions. In the wake of Massachusetts v. EPA, President Obama is likely to issue an executive order requiring the EPA Administrator to issue strict regulations addressing greenhouse gas emissions from mobile sources under the Clean Air Act. However, such executive action will surely spark a flood of lawsuits challenging the scope of executive power. This Note addresses the merits of such lawsuits and uses unitary executive theory to argue that the President’s executive power includes the power to control the EPA rule-making process.

INTRODUCTION

Barack Obama has assumed the presidency at a time when the consequences of global warming demand immediate action. ¹ Unfortunately, immediate action is not likely to come in the form of legislation,² as any congressional climate change proposal will likely be thwarted because it is too costly to society, or it will be so diluted by legislative compromise that it will be ineffective.³ A recent Gallup Poll highlighted that there is a growing number of Americans who are skep-

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¹ See infra Part I.


tical of the science underlying global warming. Such polling is spur- ring some members of Congress to oppose climate legislation.

However, the Obama Administration is aware of the threats posed by global warming. The Administration is poised to act following on endangerment finding from the Environmental Protection Agency (EPA) declaring greenhouse gas (GHG) emissions from mobile sources to be a type of pollutant that is dangerous to public health and welfare. In the wake of the endangerment finding, President Obama will most likely build on the Supreme Court’s decision in Massachusetts v. EPA by initiating the regulatory process to control GHG emissions in the United States under the authority of the Clean Air Act (CAA).

President Obama’s global warming agenda cannot be divorced from his larger progressive agenda. Professor Michael Waldman, Executive Director of the Brennan Center for Justice at New York University School of Law, notes that even though Obama’s election was a referendum for progressive change, his ability to achieve his policy agenda—including steps to address global warming—will depend on defeating constitutional challenges from conservatives. In particular,

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9 See Kreutzer & Campbell, supra note 7, at 1 & n.2; Samuelsohn, supra note 6.

10 See Wiener, supra note 5.

11 Michael Waldman, A Brewing Court Battle: Obama’s Ambitious Agenda Will be Scrutinized and Second-guessed by Conservative Federal Judges, Newsweek, Mar. 23, 2009, at 35, 35; Newt
conservatives will likely contest Obama’s constitutional authority to initiate a regulatory response to global warming.\textsuperscript{12} Responding to attacks regarding presidential authority will be a formidable task because a majority of the judges in the federal judiciary are ideologically conservative.\textsuperscript{13} Moreover, Professor Waldman notes that conservative federal judges tend to rely on the theoretical framework of originalism.\textsuperscript{14} If the Obama Administration attempts to regulate GHG emissions, it will need to defend the constitutionality of the action on the basis of originalism or it will need to articulate an argument against originalism.\textsuperscript{15}

Given that such an action, if taken, will inevitably receive political and legal criticism, this Note anticipates and answers such critiques in two ways. First, this Note presents a policy argument that President Obama should take immediate action to regulate GHGs from mobile sources by issuing an executive order instructing the EPA Administrator to initiate the rulemaking process.\textsuperscript{16} Given the severity of the threats posed by global warming and its consequences if action is not taken now, Part I of this Note argues for immediate presidential action.\textsuperscript{17} Parts II through VI of this Note defend the constitutionality of this policy proposal. Part II details unitary executive theory, as justified by originalism, as a framework for evaluating presidential action.\textsuperscript{18} Section B of Part II extrapolates the limits of a unitary executive via Justice


\textsuperscript{14} See Waldman, supra note 11, at 35.

\textsuperscript{15} See id.

\textsuperscript{16} See \textit{infra} Parts I, III.

\textsuperscript{17} See \textit{infra} Part I.

\textsuperscript{18} See \textit{infra} Part II.
Jackson’s opinion in Youngstown Sheet & Tube Co. v. Sawyer.\textsuperscript{19} Part III discusses how the Supreme Court’s decision in Massachusetts v. EPA\textsuperscript{20} provides the groundwork for the CAA to become a vehicle for addressing global warming.\textsuperscript{21} Part IV provides background on administrative agencies, the Administrative Procedure Act, the EPA, and the CAA.\textsuperscript{22} Part V uses unitary executive theory to define the proper roles of agencies, the EPA, and Administrator Lisa Jackson.\textsuperscript{23} Part VI argues that President Obama would be constitutionally justified in using his executive power to address GHG emissions by ordering the EPA Administrator to issue GHG-reducing regulations under the authority of the CAA.\textsuperscript{24}

I. The Dangers of Global Warming

Global climate change has the potential to be truly catastrophic.\textsuperscript{25} The driving force behind climate change is global warming, which is caused by the greenhouse effect.\textsuperscript{26} The greenhouse effect refers to the warming of the earth over time as a layer of insulating gases traps solar heat inside the earth’s atmosphere.\textsuperscript{27} There are both natural and human (anthropogenic) causes of GHG emissions.\textsuperscript{28} Current studies indicate that there is a strong likelihood that the increase in the global temperature is primarily the result of human activities.\textsuperscript{29} There is a virtual consensus among leading scientists that global warming is real and that the current rates of warming are largely attributable to human activities.\textsuperscript{30}

\begin{itemize}
\item \textsuperscript{19} 343 US 579 (1952) (providing a method for evaluating the constitutionality of exercises of executive power, principally unilateral presidential action); see infra Part II.B.
\item \textsuperscript{20} 549 U.S. 497 (2007).
\item \textsuperscript{21} See infra Part III.
\item \textsuperscript{22} See infra Part IV.
\item \textsuperscript{23} See infra Part V.
\item \textsuperscript{24} See infra Part VI.
\item \textsuperscript{25} Ross Gelbspan, Boiling Point 1, 16–17 (2004).
\item \textsuperscript{26} Pew Ctr. on Global Climate Change, Science Brief: The Causes of Global Climate Change 1 (Aug. 2008) [hereinafter Science Brief].
\item \textsuperscript{27} Id. at 1–2.
\item \textsuperscript{28} Id. at 1.
\item \textsuperscript{29} Id. at 2; see Maureen D. Avakian et al., The Origin, Fate, and Health Effects of Combustion By-products: A Research Framework, 110 Envtl. Health Persp. 1155, 1155 (2002); Ari N. Sommer, Note, Taking the Pit Bull off the Leash: Siccing the Endangered Species Act on Climate Change, 36 B.C. Envtl. Aff. L. Rev. 273, 277-79 (2009).
\end{itemize}
Human-induced-global warming is mostly attributable to the utilization of combustion-powered machines.\textsuperscript{31} One way to categorize combustion-powered machines is by distinguishing whether the machine is stationary or mobile.\textsuperscript{32} Stationary sources of GHGs include factories, power plants, and refineries.\textsuperscript{33} Mobile sources, which are generally found in the transportation sector, include “passenger cars and light trucks, heavy duty trucks and off-road vehicles, and rail, marine, and air transport.”\textsuperscript{34} The latest research indicates that mobile sources account for at least one third of the total GHG emissions in the United States.\textsuperscript{35}

Conservative projections indicate that global warming is happening rapidly and is irreparably changing the earth’s ecosystems.\textsuperscript{36} Many species will become extinct or will be pushed to the brink of extinction as a result of human-induced climate change.\textsuperscript{37} James E. Hansen, Director of NASA’s Goddard Institute for Space Studies, noted that the global climate system is approaching various tipping points.\textsuperscript{38} If human emission rates continue at their current pace, the results could be very grim: sea levels will rise due to melting ice caps and hundreds of millions of people will be displaced from their homelands.\textsuperscript{39} Mass extinctions will be as likely as they were during the previous warming periods in the earth’s history.\textsuperscript{40} Even assuming a gradual phase-out of all GHG emissions by the year 2300, scientific models predict dire consequences

\textsuperscript{31} Avakian et al., supra note 29, at 1155.
\textsuperscript{33} Policy Brief, supra note 32, at 1.
\textsuperscript{34} Id.
\textsuperscript{37} GELBSPAN, supra note 25, at 1, 36; Roach, supra note 36.
\textsuperscript{39} Id.
\textsuperscript{40} Id. at 2.
unless immediate action is taken. Reports show that some effects of global warming are already irreversible.

The effects of global warming also have the potential to spill over into the realm of national security and politics. Global warming may deplete precious resources; result in infrastructure-destroying weather that will wreak economic havoc; create large numbers of refugees and migrants; and make weak governments susceptible to extremist takeovers. Consequently, civil, regional, and international war may become more common.

Presently, the American public is divided on the importance of global warming, and the government’s position on international climate agreements has hurt the United States’ credibility abroad. Domestically, the lack of a concerted effort to change Americans’ consumption patterns has eviscerated the possibility of climate consciousness for most of the population.

A new Pew Center survey of twenty national priorities for 2009 indicates that global warming ranks lowest. Furthermore, since global warming is a worldwide problem, international cooperation will be imperative in order to achieve any meaningful reduction in GHG emissions. The United States’ refusal to commit to any binding international climate treaties or agreements compromises its credibility and interferes with global efforts to combat

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42 See Susan Solomon, Irreversible Climate Change Due to Carbon Dioxide Emissions, 106 Proc. Nat’l Acad. Sci. 1704, 1704 (Feb. 10, 2009) (noting that climate change due to carbon dioxide emissions is irreversible for at least 1000 years).
45 See id. at 18; see also Walter Russell Mead, Markets Biggest Threat to Peace, L.A. TIMES, Aug. 23, 1998, at M1 (arguing that the collapse of the global economy would be the biggest risk of a new World War).
47 See Gelbspan, supra note 25, at 1, 37.
49 Jobs Trump, supra note 46.
50 See Gelbspan, supra note 25, at 1, 37.
global warming.51 Other major GHG-emitting countries simply will not take action without such commitments from the United States.52

Current proposals to address global warming fail to take immediate action to curb U.S. emissions from mobile sources.53 A recent congressional proposal dealing with climate change was the Boxer-Lieberman-Warner Resolution.54 Two problems were immediately evident with this proposal. First, the proposed action would have been gradual, unfolding over the course of years, and GHG emissions would not have immediately been impacted.55 Second, the proposal completely ignored mobile sources of GHGs, focusing exclusively on implementing a cap-and-trade program for stationary sources.56 The severity of global warming demands that the government act quickly, and mobile sources are prime targets for emission reductions given their substantial contributions to warming.57 Furthermore, the American public’s ambivalence toward global warming58 and its opponents’ suc-

51 See id.; Nigel Purvis, U.S. Global Leadership to Safeguard Our Climate, Security, Economy 5, 6–7(2008), available at https://www.policyarchive.org/bitstream/handle/10207/10917/ClimateChange.Purvis.FINAL.pdf. By a vote of 95–0, the Senate passed the Byrd-Hagel Resolution, which prohibits the United States from becoming a signatory to any treaty or international agreement designed to limit GHG emissions unless developing countries—including China and India—do not receive exemptions from such agreements. See S. Res. 98, 105th Cong. (1997).
52 See Purvis, supra note 51, at 5, 6–7; Broder, supra note 2.
55 See Cap-and-Trade Proposals, supra note 54, at 1; Sliz & Zanoff, supra note 54.
56 See Cap-and-Trade Proposals, supra note 54, at 1; Sliz & Zanoff, supra note 54.
58 Jobs Trump, supra note 46.
cessful filibuster of the Boxer-Lieberman-Warner proposal, suggests that any proposal will face a tough battle in Congress.\textsuperscript{59}

II. A Framework for Executive Action

A. Theoretical and Legal Underpinnings

One prominent theory regarding presidential power is the unitary executive theory.\textsuperscript{60} It is based on the Vesting Clause in Article II, Section 1 of the United States Constitution,\textsuperscript{61} which states that “[t]he executive power shall be vested in a President of the United States of America.”\textsuperscript{62} The unitary executive theory posits that the President has complete power to execute the law and, consequently, has complete control over the actions of all executive agencies.\textsuperscript{63} Conversely, the theory states that, since power has not been vested in either of the other two branches of government, the President alone has the power to execute the laws of the land.\textsuperscript{64}

Unitary executive theory is premised on constitutional originalism (originalism), which is the notion that the text of the Constitution should be understood as it was understood when it was ratified and that this original understanding should be the sole meaning given to the text.\textsuperscript{65} There are four methodological steps in employing originalism, the last three of which are used successively only if the meaning of the text in question is still elusive.\textsuperscript{66} The first methodological step examines the “plain meaning” of the constitutional text in question and “construe[s] [the words] holistically in light of the entire document.”\textsuperscript{67} The goal with this step is to ascertain the meaning of the text under review from the perspective of a person living at the time of the Constitution’s

\textsuperscript{59} Sliz & Zanoff, supra note 54.


\textsuperscript{61} Id. at 3.

\textsuperscript{62} U.S. Const. art. II, § 1.

\textsuperscript{63} See Pierce, supra note 60, at 3.

\textsuperscript{64} See Steven G. Calabresi & Saikrishna B. Prakash, The President’s Power to Execute the Laws, 104 YALE L.J. 541, 549 (1994).

\textsuperscript{65} See id. at 551.

\textsuperscript{66} See id. at 552–53.

\textsuperscript{67} See id. The call to read the text in light of the whole document is consistent with the theory of intertextuality. See infra notes 111–116 and accompanying text.
ratification. If such a tool does not clarify the plain meaning of the text, then one should proceed to the second methodological step: a review of any publicized or widely dispersed explanatory statements about the text that were disseminated contemporaneously to Constitution’s ratification. If “ambiguity still persists,” one then reviews the private statements made prior to or at the time of the ratification of the Constitution. Finally, if the plain meaning of the text cannot be ascertained from the three preceding steps, the analysis should then consider postratification history. However, it is important to note that when employing originalism, the focus is on what the public would have understood at the time of ratification, not on the private thoughts of the drafters or others close to the process.

Thus, under originalism, the term “vested” from the Vesting Clause of Article II, Section 1 means “‘[t]o place in possession’ of an individual or entity.” The plain meaning of the Vesting Clause is that the President is given the sole responsibility of executing the laws of the United States; it is an explicit grant of power to the President as the chief executive. This understanding of vested is also consistent with the word’s use in Article III, which states that “[t]he judicial Power of the United States, shall be vested in one supreme Court, and in such inferior Courts as the Congress may from time to time ordain and establish.” Article III can be interpreted to mean that judicial power is exclusively granted to the Supreme Court and other congressionally created courts. Conversely, if the definition of “vested” is not interpreted as an exclusive grant of judicial power, the Supreme Court and the inferior courts lack any con-

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68 See Robert H. Bork, The Tempting of America: The Political Seduction of the Law 144 (1990); Calabresi & Prakash, supra note 64, at 553.
69 Calabresi & Prakash, supra note 64, at 553.
70 See id.; see also Bork, supra note 68, at 144.
71 Calabresi & Prakash, supra note 64, at 553.
72 See id.
74 Calabresi & Prakash, supra note 64, at 572 (citing 2 Samuel Johnson, A Dictionary of the English Language 2102 (Librairie du Liban ed. 1978) (4th ed. 1773)).
75 See id. at 562, 574, 579; see also Harold H. Bruff, Balance of Forces: Separation of Powers Law in the Administrative State 448–49 (2006).
76 U.S. Const., art. III, § 1.
crete authority. Applying the same logic to Article II, since it does not vest executive authority in any other branch of government, no other branch has any power to execute the laws of the United States because “vested” is understood to be an exclusive and explicit grant of power to the President.

As the first of three arguments favoring originalism, several prominent constitutional scholars support originalism as the most appropriate method of constitutional interpretation. As noted by former Court of Appeals Judge Robert H. Bork, the law is supposed to function as a neutral yardstick, providing guidance and settling disputes. Consequently, interpretation of the law, particularly the Constitution, should not include judgments based on personal morals and values. Former United States Attorney General and constitutional law scholar Edwin Meese III notes that an originalist methodology ensures the law’s neutrality and freedom from personal bias because it is based on the assumption that each word in the Constitution has a discrete and concrete meaning. Originalism facilitates the ascription of definitive meaning to the Constitution. For instance, when the Constitution states in Article II that to be President an individual must be at least thirty-five years old, it literally means that any President must have lived for at least thirty-five years; it does not mean that the person must have obtained maturity equivalent to that of the average thirty-five-year-old. The descriptions of the organization of the House and Senate are also very specific.

Some scholars suggest that this line of reasoning is problematic because the words of the text are vague in many instances and require judgment calls regarding their level of abstraction. Originalist doctrine accounts for this by constraining abstractions to the likely scope during the time of ratification. One prominent scholar, Professor

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78 See id.
79 See id.; Calabresi & Prakash, supra note 64, at 571.
80 See generally Bork, supra note 68; Bruff, supra note 75; Edwin Meese III, Interpreting the Constitution, in Interpreting the Constitution: The Debate over Original Intent 13 (Jack N. Rakove ed., 1990); Calabresi & Prakash, supra note 64; Prakash, supra note 77.
81 See Bork, supra note 68, at 143–46.
82 See id. at 146–47.
83 See Meese, supra note 80, at 15–17.
84 See id.
86 See U.S. Const. art. I; Meese, supra note 80, at 15–17.
87 See Bork, supra note 68, at 148–49.
88 See id.
Akhil Amar, has implied that conceptualizing the Constitution as a neutral document to be read for its plain meaning, free from personal values and morals, makes the most sense given that the Constitution was written by “the People” and is supposed to be accessible to ordinary citizens.\textsuperscript{89} Many scholars have noted that maintaining a stable and consistent meaning for the people is essential to the continued legitimacy of the Constitution.\textsuperscript{90}

Secondly, the historical context in which the framers of the Constitution operated also supports originalism.\textsuperscript{91} Many prominent framers saw the Constitution as a neutral document with a precise meaning regardless of personal beliefs.\textsuperscript{92} James Madison, who is thought of as the father of the Constitution,\textsuperscript{93} concurred with Thomas Jefferson’s belief that “[o]ur peculiar security is in the possession of a written Constitution. Let us not make it a blank paper by construction.”\textsuperscript{94} Madison thus understood the Constitution not as a living document, but as a specific declaration of government and rights.\textsuperscript{95} Furthermore, Madison thought that construing the Constitution based on nonliteral interpretation was a biased methodology and did not reflect the intended use of the document.\textsuperscript{96}

In addition to the framers’ understanding of the function of the Constitution, the public’s general understanding of legal interpretation at the time of the Constitution’s ratification affirms the primacy of originalism.\textsuperscript{97} A largely Protestant people wrote the Constitution.\textsuperscript{98} As Professor H. Jefferson Powell notes, the phrase \textit{sola scriptura} captures a core belief of post-Reformation Protestants.\textsuperscript{99} This phrase refers to the belief that “all things necessary for salvation and concerning faith and life are taught in the Bible clearly enough for the ordinary believer to

\begin{thebibliography}{99}
\bibitem{89} Akhil Reed Amar, \textit{The Bill of Rights: Creation and Reconstruction} 296–97 (1998).
\bibitem{90} See Bork, \textit{supra} note 68, at 159–60; Meese, \textit{supra} note 80, at 20.
\bibitem{91} See Meese, \textit{supra} note 80, at 15–17.
\bibitem{92} Id. at 17.
\bibitem{94} George Thomas, \textit{The Madisonian Constitution} 16 (2008); Meese, \textit{supra} note 80, at 17.
\bibitem{95} George Thomas, \textit{The Madisonian Constitution} 16 (2008); Meese, \textit{supra} note 80, at 17.
\bibitem{96} H. Jefferson Powell, \textit{The Original Understanding of Original Intent, in Interpreting the Constitution, supra} note 80, at 53, 82–83.
\bibitem{97} See id. at 55–57.
\bibitem{98} See id.
\bibitem{99} See id. at 56.
\end{thebibliography}
find it there and understand.”100 The Protestants rejected nonliteral interpretations of the Bible, focusing instead on the text’s plain meaning.101 Prior to coming to what is now the United States, Puritans in England criticized nonliteral interpretations of the law and protested against judges who inserted their own biases into their rulings.102 Puritans demanded legal reform to ensure a stable law that could be discerned by looking to the plain meaning of the text of a statute, a method obviously similar to their adherence to *sola scriptura*.103 While this call for reform did not lead to real change in Britain, it was an important “intellectual foundation” of the founders of the United States104. It was in the context of this intellectual foundation that the founders encumbered the Constitution with their intent that its plain meaning controlled its interpretation.105 The framers rejected the practice of asserting nonliteral meanings and subsequently applying subjective interpretations of the law, which had become commonplace in Britain.106

Common law at the time of the Constitution’s ratification is also instructive in affirming the legitimacy of originalism.107 In designing and drafting the Constitution, the framers drew from their experience with English common law, which required skill in determining a law’s intent or intention.108 John Marshall, writing under the pseudonym “A Friend of the Constitution,” noted in an 1819 letter to the *Alexandria Gazette* that “intention is the most sacred rule of interpretation . . . .”109 For the framers, the intent of a law did not come from a nonliteral interpretation of the law but, rather, from the plain meaning of the text.110

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100 W. Robert Godfrey, *What Do We Mean by Sola Scriptura?, in Sola Scriptura!: The Protestant Position on the Bible* 1, 3 (Don Kistler, ed. 1995).
101 Powell, *supra* note 96, at 56.
102 *Id.* at 56–57.
103 See *id.*
104 See *id.* at 57.
105 See *id.* at 56–57.
106 See *id.*
107 See Powell, *supra* note 96, at 55.
108 See *id.* at 58.
110 See Powell, *supra* note 96, at 59.
A final justification for originalism is the Constitution’s intratextuality. Intratextuality refers to the Constitution’s repeated use of certain terms and language structures. Repeated uses of terms and language structures allow the Constitution to function as its own dictionary to the extent that meaning can be extracted by comparing the different uses of the same words. Therefore, a “contested word or phrase that appears in the Constitution [is read] in light of another passage in the Constitution featuring the same (or a very similar) word or phrase.” Seeing the Constitution through the lens of intratextualism is advantageous because it understands the document as a complete statement on government, and not as a compilation of unrelated articles, sections, and clauses. Moreover, since intratextualism is intuitive—identical words and phrases in the Constitution have identical meanings—it increases ordinary citizens’ access to the Constitution and to the law, solidifying the democratic philosophy underlying the United States government.

B. Evaluating Executive Action: Youngstown Sheet & Tube Co. v. Sawyer

The United States Supreme Court’s decision in Youngstown Sheet & Tube Co. v. Sawyer offers a framework for evaluating the legitimacy of presidential action. North Korea invaded the Republic of Korea (South Korea) on June 24, 1950, and the United States interpreted the aggression as a Soviet Union-instigated power play on behalf of all communists. Truman braced the country for protracted involvement, in part, by preparing the domestic economy to support a long-term war effort. For Truman, greater United States involvement in Korea included passing the Defense Production Act of 1950, which was designed to spur increased production of strategic materials, including steel.

Concurrently, steel industry labor unions and the steel companies disagreed about the terms of their most recent collective bargaining

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111 See Amar, supra note 89, at 296.
112 See id.
114 See id. at 748.
115 See id. at 795.
116 See id. at 796.
118 See Maeva Marcus, Truman and the Steel Seizure Case: The Limits of Presidential Power 1 (1977).
119 See id. at 4–5.
120 See id. at 4–6.
agreement. After months of negotiations, the union gave notice of its intent to commence a nationwide strike. Truman saw the strike as a danger to the United States’ national security, as steel was necessary to carry on the war effort. Truman issued an executive order directing the Secretary of Commerce to seize the steel industry.

The steel companies sued the Secretary of Commerce in Federal District Court, arguing that the President did not have the legislative or constitutional authority to seize the steel industry. Upon appeal, the Supreme Court ruled that Truman’s executive order was an unconstitutional use of his presidential power. Seven opinions were filed in *Youngstown*, but Justice Jackson’s concurring opinion has become the most widely cited opinion.

Justice Jackson rejected Truman’s seizure because Congress had never authorized it and he believed that there were no inherent constitutional powers allowing the President to do it. Jackson laid the framework for evaluating presidential power by declaring that “[p]residential powers are not fixed but fluctuate, depending on their disjunction or conjunction with those of Congress.” Jackson laid out three categories of presidential action, each with its own degree of presumed constitutionality. The first and least suspect category of action is when the “President acts pursuant to an express or implied authorization of Congress.” Specifically, the Court would likely uphold presidential action pursuant to an express or implied grant of power by Congress because it is this type of federal power arrangement that the Constitution explicitly envisions. The second category of action is “[w]hen the President acts in absence of either a congressional grant or denial of authority.” This category of action is different from the first

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121 *Youngstown Sheet & Tube Co. v. Sawyer*, 343 U.S. 579, 582 (1952).
122 See *id*.
123 See *id*.
124 See *id.* at 583. The order instructed the Secretary of Commerce to assume control of the nation’s steel mills, thereby conscripting the company presidents to be operating managers for the United States. See *id*.
125 See *id*.
126 *Marcus*, *supra* note 118, at 197.
127 *Id*.
129 See *Youngstown*, 343 U.S. at 635 (*Jackson, J.*, concurring).
130 *Id*.
131 See *Medellín*, 128 S. Ct. at 1368.
132 *Id.*; see *Youngstown*, 343 U.S. at 635.
133 *Youngstown*, 343 U.S. at 635–37.
134 *Id.* at 637.
category because the “Congress [and the President] may have concurrent authority,” and legitimacy of such actions may hinge on the national and international circumstances at the time.\textsuperscript{135} The third and final category of presidential action is “[w]hen the President takes measures incompatible with the expressed or implied will of Congress.”\textsuperscript{136} This category is the most suspect since it indicates that the President may be disregarding the will of Congress and attempting to prevail on his own powers.\textsuperscript{137} On several occasions, the Supreme Court has utilized and extended Jackson’s \textit{Youngstown} methodology.\textsuperscript{138} One important affirmation came in \textit{Dames \& Moore v. Regan}.\textsuperscript{139} In response to a constitutional and statutory challenge by Dames & Moore, the Court evaluated the constitutionality of an executive order using Jackson’s opinion in \textit{Youngstown} as a guide.\textsuperscript{140} The court upheld the presidential nullification of a judgment in favor of Dames & Moore.\textsuperscript{141} However, the court ruled that Regan did not have the statutory or constitutional authority to prohibit Dames & Moore, or any other party, from further legal proceedings against the Iranian defendants or anyone else.\textsuperscript{142} In upholding presidential nullification of orders of judgment and attachment, the court cited a specific authorization by Congress in the International Emergency Economic Powers Act (IEEPA).\textsuperscript{143} Because the IEEPA did not authorize the President to prohibit the pursuit of legal rights in a court of law, Regan could not use an executive order to prevent Dames & Moore from suing the Iranian defendants.\textsuperscript{144}

In addition to statutes, the Court has ruled that treaties also constitute a source of authority that Presidents can use to form and execute...
policy in the United States.\textsuperscript{145} For example, in \textit{Minnesota v. Mille Lacs Band of Chippewa Indians} the Supreme Court ruled that treaties, “every bit as much as statutes, are sources of law and may authorize Executive actions.”\textsuperscript{146} However, in \textit{Medellín v. Texas}, the Supreme Court clarified that non-self-executing treaties cannot authorize domestic implementation of treaty policy unless the Senate has consented to the treaty pursuant to Article II of the Constitution.\textsuperscript{147} In \textit{Medellín}, the court disallowed President George W. Bush’s attempt to give domestic effect to an International Court of Justice (ICJ) decision that ruled that Medellín’s Vienna Convention rights had been violated and that his state murder conviction should be reviewed.\textsuperscript{148} The Court reasoned that because the ICJ ruling was premised on a non-self-executing treaty provision and the treaty provision lacked the consent of the Senate, the President could not implement treaty policy that would interfere with Texas’s pursuit of justice.\textsuperscript{149} The rationale for this decision is that if the President could implement such a treaty without the consent of the Senate, then the President would be creating law for United States in violation of Article II, Section 2 of the Constitution.\textsuperscript{150}

Additionally, \textit{Medellín v. Texas} illustrates two other principles related to Jackson’s method. The first principle is that legitimate grants of authority to the President cannot authorize the President to act in ways that violate separation of powers principles.\textsuperscript{151} The first principle is articulated when the Court suggests that non-self-executing treaties, without the advise and consent of the Senate, cannot authorize the President to implement treaty provisions domestically because that would eclipse Congress’s constitutional duty to be the sole legislative body.\textsuperscript{152} The logic becomes clear if one reframes the principle in the following way: the President is merely implementing the will of Congress if he executes a treaty previously consented to by the Senate.\textsuperscript{153}

\textsuperscript{146} Mille Lacs Band of Chippewa Indians, 526 U.S. at 211.
\textsuperscript{147} See Medellín, 128 S. Ct. at 1368–70.
\textsuperscript{148} Id. Medellín alleged that his Vienna Convention right to alert the Mexican consulate in the United States of his arrest was violated because he was not notified of this right. See id. at 1354–59.
\textsuperscript{149} See id. at 1368–70.
\textsuperscript{150} See id.
\textsuperscript{151} See Medellín, 128 S. Ct. at 1368–71.
\textsuperscript{152} See id.
\textsuperscript{153} See id.
The second principle is that grants of authority to the President are to be interpreted narrowly with regards to the scope of the powers granted. The second principle can be seen in the Court’s refusal to interpret a statutory grant of authority to the President to represent the United States before the United Nations, the ICJ, and Security Council as a simultaneous, implicit endowment of “unilateral authority to create domestic law.” Representing the United States before various international bodies does not extend to the President the authority to unilaterally implement international law unless specified by Congress. This understanding follows from the Court’s basing its interpretation of presidential duties arising out of treaty obligations on the plain meaning of a treaty’s text.

III. Massachusetts v. EPA: A Foundation for Immediate Action

The Supreme Court’s decision in Massachusetts v. EPA opened a window for future EPA attempts to regulate GHG emissions under the CAA. One issue in the case was whether the EPA had the authority and obligation to regulate GHG emissions from mobile sources under section 202 of the Act. A group of states, local governments, and private organizations argued that the EPA—by not issuing regulations designed to curb pollution from mobile sources—had failed to comply with the mandates in section 202(a)(1) of the CAA. The EPA’s position was that GHGs did not fall within the CAA’s definition of air pollution; therefore, the Act did not grant the EPA authority to address GHGs and climate change.

Congress defined air pollutant as “any air pollution agent or combination of such agents, including any physical, chemical, biological,
radioactive (including source material, special nuclear material, and byproduct material) substance or matter which is emitted into or otherwise enters the ambient air.” Given this definition, petitioners argued that greenhouse gases were a form of air pollution. The Court agreed. Responding to the EPA’s argument that Congress did not intend for GHGs to be included within the purview of section 302’s definition of air pollution, the Court noted that the Act was clearly antithetical to the EPA’s understanding since the “definition embraces all airborne compounds of whatever stripe, and underscores that intent through the repeated use of the word ‘any.’ [GHGs] . . . are without a doubt ‘physical [and] chemical . . . substance[s] which [are] emitted into . . . the ambient air.” Thus, the Court ruled that regulating GHG emissions was within the authority that Congress granted to the EPA in the CAA.

IV. Understanding Agencies, the APA, and the EPA

At this point, there is a need to provide some background information about governmental agencies, particularly the EPA, to fully understand the scope of the President’s executive power. This part of the Note first discusses the general role of administrative agencies and the Administrative Procedures Act (APA), and then discusses the specific role of the EPA and its Administrator.

A. Agencies and the APA

The basic function of administrative agencies is to transform congressional policies concrete action. The administrative state in the United States can trace its roots to the late 1800s with the creation of the Interstate Commerce Commission (ICC). Decades later, the Great Depression lead to increased governmental control of the economy, and Congress created many more commissions and agencies as

\[\text{\textsuperscript{162}} 42 \text{ U.S.C.} \text{ § 7602(g)}.\]
\[\text{\textsuperscript{163}} \text{Massachusetts v. EPA}, 549 \text{ U.S. at 528}.\]
\[\text{\textsuperscript{164}} \text{Id}.\]
\[\text{\textsuperscript{165}} \text{Id. at 529}.\]
\[\text{\textsuperscript{166}} \text{Id. at 532}.\]
\[\text{\textsuperscript{167}} \text{See Richard B. Stewart Reformation of Administrative Law. 88 Harv. L. Rev. 1667, 1675–76 (1975)}.\]
\[\text{\textsuperscript{168}} \text{Bruff, supra note 75, at 144–45; George B. Shepherd, Fierce Compromise: The Administrative Procedure Act Emerges from New Deal Politics, 90 Nw. U. L. Rev. 1557, 1561 (1996)}.\]
part of President Franklin D. Roosevelt’s New Deal.\footnote{Cass Sunstein, Constitutionalism After the New Deal, 101 Harv. L. Rev. 421, 424 & n.9 (1987).} Anti-New Dealers used the courts to challenge the dramatic growth of the government, but Roosevelt was able to thwart that strategy with the threat of packing the Supreme Court with justices sympathetic to New Deal policies.\footnote{See Shepherd, supra note 168, at 1562–65.} Consequently, anti-New Dealers turned to Congress to pass legislation that would check the growth of government and bureaucracy.\footnote{See id. at 1564–65.} Specifically, the anti-New Dealers wanted to prevent the rise of an “arbitrary, tyrannical government.”\footnote{See Bruff, supra note 75, at 144.} Congress passed the Administrative Procedure Act (APA) in 1946, designing it to function as “the bill of rights for the new regulatory state.”\footnote{Administrative Procedure Act, Pub. L. No. 79–404, 60 Stat. 238 (codified as amended in scattered sections of 5 U.S.C.); Shepherd, supra note 168, at 1557, 1678.}

With few exceptions, the APA exists today as it did in 1946.\footnote{See Bruff, supra note 75, at 145.} It protects the American public from arbitrary and abusive governmental rule by requiring the agencies to provide due process rights in the course of rulemaking and law-applying activities.\footnote{See id. at 145–46; John C. Deal, Banking Law Is Not for Sissies: Judicial Review of Capital Directives, 12 J.L. & Com. 185, 190 (1993).} In the rulemaking process, agencies must publish notices of proposed rule-making and final rule-making in the Federal Register and provide opportunities for comment after giving notice of proposed rulemaking.\footnote{Anne Joseph O’Connell, Political Cycles of Rulemaking: An Empirical Portrait of the Modern Administrative State, 94 Va. L. Rev. 889, 901 (2008).} Additionally, agencies must respond to comments submitted in response to the notice of proposed rulemaking.\footnote{See Bruff, supra note 75, at 145.} This process generates an administrative record\footnote{Id. at 145–46.} that can be reviewed in the court of appeals.\footnote{See Zygmunt J.B. Plater et al., Environmental Law and Policy: Nature, Law, and Society 383 (3d ed. 2004).} In the case of applying regulations to particular facts, agencies utilize both formal and informal procedures, ranging from “internal administrative procedures [to] . . . direct[] . . . judicial proceedings.”\footnote{See Administrative Procedure Act, 5 U.S.C. § 706(2)(A) (2006); Plater et al., supra note 179, at 383–87.} Agency action is subject to challenge on the grounds that the agency acted arbitrarily and capriciously in the rulemaking process.\footnote{Id. at 384.} Agencies can be sued for acting arbitrarily...
and capriciously in the rulemaking process and for misapplying and/or refusing to fulfill their statutory and regulatory duties.\textsuperscript{182}

\textbf{B. The EPA}

The EPA is a unique agency, in that it was created by an executive order issued by President Nixon.\textsuperscript{183} In his June 1970 Reorganization Memo to Congress, Nixon indicated that necessity was the impetus for the creation of the EPA and, that such action was “an exception” to the general rule against presidential agency creation.\textsuperscript{184} The agency’s mission was to assert “a coordinated attack on the pollutants which debase the air we breathe, the water we drink, and the land that grows our food.”\textsuperscript{185} The creation of the EPA was a response to the government’s prior approach to dealing with pollution, which assumed that different parts of the environment were distinct entities.\textsuperscript{186} Nixon’s centralization of environmental rulemaking turned this assumption on its head by conceptualizing the environment as a singular entity with several interrelated parts and by granting to a single agency oversight of those parts.\textsuperscript{187}

\textbf{V. Unitary Executive Theory Applied to Agencies and the EPA}

The Court’s decision in \textit{Massachusetts v. EPA} creates an opening for regulating greenhouse gases (GHG) under the Clean Air Act.\textsuperscript{188} Section 202 of the Act grants authority to the EPA Administrator to create standards for the reduction of pollution from mobile sources.\textsuperscript{189} Accordingly, the EPA recently made an endangerment finding that categorized GHGs as pollutants.\textsuperscript{190} Action by Obama pursuant to such a finding will likely spark constitutional challenges.\textsuperscript{191}

Specifically, opponents could challenge Obama’s power to initiate the regulatory process via an executive order on the ground that it lacks

\textsuperscript{182} See 5 U.S.C. § 706(2)(A); Plater et al., \textit{supra} note 179, at 383–87.


\textsuperscript{184} See id.

\textsuperscript{185} See id.

\textsuperscript{186} See id.

\textsuperscript{187} See id.

\textsuperscript{188} See 549 U.S. 497, 532 (2007); \textit{supra} Part III.


\textsuperscript{190} Endangerment and Cause or Contribute Findings for Greenhouse Gases Under Section 202(a) of the Clean Air Act, 74 Fed. Reg. 66,496, 66,496–97 (Dec. 15, 2009) (to be codified at 7 C.F.R. ch 1).

\textsuperscript{191} See \textit{supra} notes 7–15 and accompanying text.
statutory authority.\textsuperscript{192} Indeed, the CAA specifically grants authority to the EPA Administrator, not the President.\textsuperscript{193} Some constitutional scholars suggest that without an explicit statutory authorization from Congress, the President cannot initiate the rulemaking process.\textsuperscript{194} This line of reasoning is bolstered by the fact that the EPA is often considered an independent agency\textsuperscript{195} and has recently been criticized as being overly politicized.\textsuperscript{196} \textit{Massachusetts v. EPA} arguably creates an impetus for EPA independence from the President.\textsuperscript{197} Such an interpretation lends itself to the argument that if the President initiated the EPA rulemaking process under the CAA, such behavior would fall into the third category of presidential action according to Justice Jackson’s \textit{Youngstown} opinion.\textsuperscript{198} In essence, Congress’s specification of the Administrator of the EPA, as the agent of action under the CAA, is an explicit exclusion of the President from rulemaking.\textsuperscript{199} Arguably, an executive order should receive little deference in the courts because it is inconsistent with the express will of Congress.\textsuperscript{200}

Given that the federal judiciary is primarily conservative and subscribes to originalist readings of the Constitution,\textsuperscript{201} it is important for

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\textsuperscript{192} See David J. Barron, \textit{From Takeover to Merger: Reforming Agency Law in an Age of Politicization}, 76 Geo. Wash. L. Rev. 1095, 1137–45 (2008). Jon Anderson, an environmental attorney and consultant to numerous state legislatures, governors, and Presidents Clinton and Bush, implies that the motive behind such suits will be to prevent the President from implementing a national plan to reduce GHG emissions or to delay the President from realizing his agenda long enough for opponents of such action to regain a majority voice in Congress. See Anderson, \textit{supra} note 12; see also 154 Cong. Rec. S7595, S7605–07 (2008) (statement of Sen. Whitehouse) (critiquing of the EPA under the Bush Administration shows that some policy makers are aware of the President politicizing the EPA) [hereinafter Whitehouse].

\textsuperscript{193} 42 U.S.C. § 7521.


\textsuperscript{196} See, e.g., Whitehouse, \textit{supra} note 192, at S7605–07.

\textsuperscript{197} See Barron, \textit{supra} note 192, at 1137–45. The argument is that \textit{Massachusetts v. EPA} shows the Agency’s independence from the President because it ruled the EPA would be required to regulate GHGs under the CAA if GHGs were classified as pollutants, which directly opposed President Bush’s policy position. See id.

\textsuperscript{198} See id.; \textit{supra} Part II.B.

\textsuperscript{199} See 42 U.S.C. § 7521; Barron, \textit{supra} note 192, at 1137–45; \textit{supra} Part II.B.

\textsuperscript{200} See \textit{supra} Part II.B.

\textsuperscript{201} See \textit{supra} notes 7–15 and accompanying text.
proponents of the President initiating GHG regulations pursuant to the CAA to understand their position in relation to the dominant judicial ideology. This Note argues that the judiciary’s ideology and reliance on originalism is compatible with presidential initiation of regulating GHGs under the CAA via an executive order. Under the unitary executive theory, executive agencies are not conceptually distinct from the presidency.202

A. Unitary Executive Theory Applied to Agencies

From a unitary executive framework, the Constitution grants the President the power to exert control over administrative agencies.203 Article II “vests” the power to execute all laws of the United States with the President.204 Consequently, agency Administrators must get their power from the President.205 The fact that agencies can only be located within the executive branch supports this conclusion.206 As Professors Steven Calabresi and Saikrishna Prakash explain, “[t]he administrative power, if it exists, must be a subset of the President’s ‘executive power’ and not one of the other two traditional powers of government.”207 The Constitution creates three branches of government.208 It does not provide for an administrative branch of government and it blocks members of Congress from concurrently serving in a law-executing function; therefore, administrative agencies logically fit exclusively within the executive branch.209

Moreover, the Constitution grants the President power to appoint all executive officers,210 including agency Administrators, indicating that the President has the authority to command and control them. The Appointment Clause states that:

[the President] shall nominate, and by and with the Advice and Consent of the Senate, shall appoint Ambassadors, other public Ministers and Consuls, Judges of the supreme Court, and all other Officers of the United States, whose Appointments are not herein otherwise provided for, and which shall

202 Bruff, supra note 75, at 441–49.
203 See Prakash, supra note 77, at 713.
204 See Prakash, supra note 77, at 714; supra Part II.B.
205 See Prakash, supra note 77, at 720.
206 See Bruff, supra note 75, at 393–94.
207 Calabresi & Prakash, supra note 64, at 569.
208 See id. at 559–60.
209 See id.
210 U.S. Const. art II, § 2, cl. 2.
be established by Law: but the Congress may by Law vest the Appointment of such inferior Officers, as they think proper, in the President alone, in the Courts of Law, or in the Heads of Departments.  

“President” is the subject of the Appointment Clause and “shall” is a helping verb that modifies the verb “appoint.” “Shall” has been used to express a command since the writing of the Torah, and this understanding of the word has continued into modern legal documents such as statutes and constitutions. The plain meaning of the Appointment Clause is that the Constitution commands the President to appoint officers of the United States.

However, that command is limited in two ways. The intervening prepositional phrase, “with the advice and consent of the Senate,” is the first limitation on presidential authority and the Excepting Clause is the second. Neither of these limitations contradicts the understanding of agencies that has been elaborated thus far. In regards to the condition requiring the advice and consent of the Senate on all presidential appointments, constitutional scholars have shown that the drafters of Article II, Section 2 intended to give the President the broad power to appoint officials. Evidence from notes taken during the Constitutional Convention suggests that there was no intent on the part

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211 Id.
212 Id. Clause Two only references the President as “he.” However, the first clause of section two uses the word “President” once in the beginning, but uses “he” in all instances thereafter in the section. Consequently, we can presume that the second clause is referring to the President when it uses the pronoun “he.” The fact that the entire Article is about the executive branch bolsters this inference. Id.
214 See id.
215 WEBSTER’S THIRD NEW INTERNATIONAL DICTIONARY (UNABRIDGED) OF THE ENGLISH LANGUAGE 2085 (1986) (definition 2(a)).
216 See supra Part II.A.
218 U.S. Const. art II, § 2, cl. 2.
219 Tuan Samahon, Are Bankruptcy Judges Constitutional? An Appointment Clause Challenge, 60 HASTINGS L.J. 233, 249 (2008). The Excepting Clause allows Congress to appoint inferior officers or to vest the President, courts, or heads of departments with the power to appoint inferior officers without the consent of the Senate. U.S. Const. art II, § 2, cl. 2.
220 In fact, many scholars note that the choice to grant the President appointment power for executive officers was the product of compromise: one side favoring presidential control, the other side wanting a check on the executive. See, e.g., Bruff, supra note 75, at 390; Prakash, supra note 77, at 734; Samahon, supra note 219, at 248–49, 253–54.
of the framers to undermine the power of the executive branch. Historical evidence indicates that some proponents of obtaining senatorial consent for appointments wanted a means by which the legislature could hold the President accountable for the actions of executive officers who report to the President. Thus, it follows that the President would have authority over his appointees. Further, the Excepting Clause is not a threat to the broad power of the President to appoint executive officers. The term “inferior officers,” as it is used in the Clause, implies officers who are subordinate to the appointed principal officers that are subject to senatorial consent. Historical research indicates that the Excepting Clause was inserted solely for administrative efficiency because it would have been arduous to subject every inferior officer to a senatorial appointment.

Additionally, the President’s ability to remove executive officers shows that the President has authority over administrative agencies. The vesting and take care clauses only delegate executive power to the President. While neither clause explicitly grants the President the power to remove executive officers, appointment and removal of such officers is inherently an executive duty. The historical record from the time period during and immediately following the ratification of the Constitution indicates that the average person would have understood the vesting and take care clauses as endowing the President with the power to remove executive officers at will. Both the federalists and anti-federalists saw the President as having removal powers and relied on those assumptions in creating executive agencies. President

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221 See Prakash, supra note 77, at 723.
222 See Samahon, supra note 219, at 249–52.
223 See id. at 251–52.
224 See id. at 250–52.
227 See supra Part II.B. The text of the Take Care Clause is as follows: The President “shall take Care that the Laws be faithfully executed.” U.S. CONST. art. II, § 3, cl. 4.
228 See U.S. CONST. art II, § 4. In fact, the only mention of removal in Article II is in the Impeachment Clause. See id.
229 See Myers v. United States, 272 U.S. 52, 117 (1926). The President must have the powers to both appoint and remove officers to fulfill his duty of executing the law; the President needs the power to assemble a staff of officers to execute his precise agenda. See id.
230 Prakash, supra note 226, at 1825–27.
231 See id. The agencies that were created were the Departments of Foreign Affairs and War, and the Treasury Department. Id. In what became known as the Decision of 1789,
Washington also believed that he had removal power over executive officers, terminating many officers himself.\textsuperscript{232}

Additionally, the Supreme Court has confirmed that the President has the power to remove principal executive officers.\textsuperscript{233} In \textit{Myers v. United States}, the Court held that the President could remove Myers, an appointed Postmaster of the First Class, without the consent of the Senate.\textsuperscript{234} The Court reasoned that even though the appointment power is subject to confirmation by the Senate, it does not mean removals also require confirmation.\textsuperscript{235} The Court noted that the framers did not intend to limit the removal power of the President, and that the Senate Consent Clause was part of a compromise and applied only to appointments.\textsuperscript{236} The Court also noted that the President’s removal power was especially relevant to executive officers, since Congress could define removal terms for inferior executive officers.\textsuperscript{237}

In \textit{Humphrey’s Executor v. United States}, the Supreme Court ruled that the President had to provide cause for the removal of the Commissioner of the Federal Trade Commission since he was not a principal executive officer but, rather, an inferior officer with quasi-legislative and quasi-judicial duties.\textsuperscript{238} The Court held that Congress could determine and prescribe the method of removal for the Commissioner, not the President.\textsuperscript{239} Thus, the President has absolute removal power over those executive officers whose term of service is at the pleasure of the President.\textsuperscript{240}

In \textit{Wiener v. United States}, the Court was asked to determine whether President Eisenhower had the power to remove Myron Wiener, an appointed member of the War Claims Commission.\textsuperscript{241} While Congress had created the War Claims Commission and provided for appointments

\begin{itemize}
  \item Congress agreed that the removal power would exist implicitly in the statutes creating the departments by way of not specifying removal procedures. \textit{See id.}
  \item \textsuperscript{232} \textit{See id.} at 1827–28; \textit{see also Myers}, 272 U.S. at 119 (confirming this history).
  \item \textsuperscript{233} \textit{See generally Morrison v. Olson}, 487 U.S. 654 (1988); \textit{Wiener v. United States}, 357 U.S. 349 (1958); Humphrey’s Ex’r v. United States, 295 U.S. 602 (1935); \textit{Myers}, 272 U.S. at 52.
  \item \textsuperscript{234} \textit{See Myers}, 272 U.S. at 117.
  \item \textsuperscript{235} \textit{See id.} at 119.
  \item \textsuperscript{236} \textit{See id.} at 118–20.
  \item \textsuperscript{237} \textit{See id.} at 160.
  \item \textsuperscript{238} \textit{See} 295 U.S. at 625–26, 629.
  \item \textsuperscript{239} \textit{See id.}
  \item \textsuperscript{240} \textit{See id.}
\end{itemize}
therein, it left out any directives regarding the removal process. Consequently, the Court was forced to look at the duties of the Commission and determined that the Commission had an “intrinsic judicial character,” given that its members were engaged in adjudication as part of their professional duties. The Commission was designed in such a way as to be free from both presidential and congressional influence.

Most recently, in *Morrison v. Olson*, the Supreme Court upheld an independent counsel provision in the Ethics in Government Act, which provided an opportunity for members of the Judiciary Committee to request that the executive branch, via the Attorney General, appoint an independent counsel for investigative purposes. The Act provided that the Attorney General could remove such counsel only for good cause. The Attorney General argued that this provision was unconstitutional and violated separation of powers principles because the removal provision prevented the President from fully exercising his executive duties. The Court ruled that the independent counsel was an inferior officer; therefore, the removal restriction did not meaningfully interfere with the President’s ability to execute his executive duties.

This line of cases has presented a rule that “is designed not to define rigid categories of those officials who may or may not be removed at will by the President, but to ensure that Congress does not interfere with the President’s exercise of the ‘executive power.’” Nonetheless, the contours of the rule are relatively clear. Executive officers can either be inferior or principal. In the case of inferior executive officers, the President has the power of removal that is granted to him by law unless removal restrictions impede the President from performing his executive duties. In the case of principal officers, the President has the power of removal.

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242 See *Wiener*, 357 U.S. at 353–54.
243 See *id.* at 355–56.
244 See *id.*
246 *Id.* at 663.
247 See *id.* at 668.
248 *Id.* at 691–92.
249 *Id.* at 689–90.
250 *Id.* at 689–91.
251 See *Morrison*, 487 U.S., at 689-90.
B. Implications for the EPA

The EPA should be understood as an executive agency that is led by President Obama, who is in turn represented by the Administrator, Lisa Jackson. The EPA is clearly an executive agency. Since the President has the power to execute the law only and not the power to make law, the EPA must be seen as a vehicle for executing laws passed by Congress. Consequently, legislative grants to the EPA represent congressional grants of authority to the President to execute policy goals through administrative agencies.

The EPA’s subservient position to the President is evidenced by the role of its Administrator. The EPA Administrator is a member of the President’s cabinet. Moreover, as with all EPA Administrators, Jackson’s term runs concurrently with President Obama’s. Administrator Jackson’s relationship with Obama is not unique in that the previous two Presidents both used the EPA Administrator to implement their policy objectives.

Furthermore, EPA Administrators are subject to the appointment and removal powers and the case law favors conceiving of the Administrator as taking direction from the President. Regarding the appointment power, the Administrator is appointed by the President.

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253 See supra Part IV.B.
254 See supra Part II.
255 See infra Part VI.
257 See Waterman et al., supra note 252, at 11.
The President has the power to choose the EPA Administrator, and the Administrator’s term of appointment runs concurrently with the President’s, meaning the sitting President has appointed any sitting Administrator.

Administrator Jackson is also subject to the presidential removal power. At the most basic level, Administrator Jackson—as a principal executive officer with cabinet-level rank—serves at the pleasure of President Obama. Since the Court has held that the President can terminate principal executive officers at will, it follows that Jackson must either obey directions from Obama or risk termination.

Current case law on presidential removal power also supports this conclusion regarding Obama’s power to terminate Administrator Jackson. The Administrator is like the postmaster in Myers v. United States in that she is a principal executive officer appointed by the President with the consent of the Senate; therefore, consent for her removal is not required. However, the EPA Administrator is not like the Federal Trade Commissioner in Humphrey’s Executor.

In the case of the EPA Administrator, Jackson is a principal executive officer because she has cabinet-level status, implements President Obama’s policy agenda, and executes environmental legislation from Congress on behalf of the President. Additionally, the distinction between the Federal Trade Commissioner and the EPA Administrator is further evidenced by the positions’ differing pay scales. The appointment provision for the EPA Administrator indicates that the officer

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261 See id.
262 See Waterman et al., supra note 252, at 11.
263 See supra Part V.A.
266 See Morrison, 487 U.S. at 689–90; Myers, 272 U.S. at 132–34; see also Verkuil, supra note 226, at 952 (explaining that the threat of removal is a powerful tool for Presidents to achieve their policy goals within agencies).
267 See, e.g., Morrison, 487 U.S. at 654; Wiener v. United States, 357 U.S. 349 (1958); Humphrey’s Ex’r, 295 U.S. at 629–30; Myers, 272 U.S. at 52.
268 See Myers, 272 U.S. at 132–34.
269 See 295 U.S. at 629 (holding that the President did not have the power to remove the Commissioner because he was an inferior executive officer and had quasi-judicial and legislative duties created by Congress).
will be paid at level II on the executive pay scale.271 The Commissioner is paid at level III.272 Similarly, the EPA Administrator is not like the member of the War Claims Commission in *Wiener v. United States* because she is not an inferior officer and because her job does not require her to engage in adjudication.273 Finally, the Administrator of the EPA is not like the independent counsel in *Morrison v. Olson* because her job is not independent from the President, and the President’s having removal power over her is essential to his ability to execute the law.274

**VI. THE PRESIDENT HAS CONSTITUTIONAL AND STATUTORY AUTHORITY FOR REDUCING GHG EMISSIONS UNDER THE CAA**

Global warming is becoming an emergency that warrants immediate action by the United States.275 President Obama has an obligation to lead the United States’ response to the climate crisis because there is currently no viable GHG reduction policy—especially one targeting mobile sources—under the existing federal environmental law regime.276

President Obama can and should issue an executive order instructing EPA Administrator Jackson to create regulations pursuant to the CAA to drastically reduce GHG emissions from mobile sources.277 Constitutionally, Justice Jackson’s *Youngstown* framework justifies an executive order initiating EPA action; consequently, the Court would afford Obama’s order the highest degree of judicial deference.278 There is authority for such an executive order.279 The Vesting Clause of Article II of the Constitution specifically grants executive power to the President.280 Agencies and their Administrators—including the EPA and Administrator Jackson—take their direction from the President as subordinate members of the executive branch.281 Therefore, statutory grants of authority to the Administrator can be interpreted as grants of

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275 See supra Part I.
276 See supra Part I.
277 See supra Part I.
278 See *Youngstown Sheet & Tube Co. v. Sawyer*, 343 U.S. 579, 635 (1952) (Jackson, J., concurring).
279 See *Medellín v. Texas*, 128 S. Ct. 1346, 1368 (2008); *Youngstown*, 343 U.S. at 635.
280 U.S. CONST. art. II, § 1, cl. 1.
281 See supra Parts IV.A–B, V.
authority to the chief executive to use the specified agency to implement the policy goals set forth by Congress in the statute.\textsuperscript{282}

In the proposed action, the CAA authorizes the EPA Administrator to create regulations to curb air pollution from mobile sources when it states that regulations “shall” be prescribed to “any” air pollutant that “may reasonably be anticipated to endanger public health or welfare.”\textsuperscript{283} However, the CAA does not state precisely what the regulations should entail.\textsuperscript{284} The CAA delegates this responsibly to the EPA Administrator, provided that the rulemaking process is followed and that certain standards—including the requirement that only pollutants “reasonably . . . anticipated to endanger public health or welfare” can be targeted—regarding the content of the regulations are met.\textsuperscript{285} The relationship between the President and the EPA Administrator and the CAA’s grant of broad authority to the Administrator supports the conclusion that Congress’s grant of power to the Administrator to design and implement pollution regulations is an implied grant of authority to the executive branch to use the EPA as a vehicle for creating an air pollution control scheme.\textsuperscript{286} Therefore, under Justice Jackson’s \textit{Youngstown} framework, an executive order from President Obama instructing the EPA to begin curbing mobile sources of GHGs per the CAA properly fits within the first category of presidential action because authorization is “implied” from Congress’s grant of authority to an executive officer who has cabinet-level status.\textsuperscript{287}

Moreover, an executive order would not violate any constitutionally protected rights, including rights upheld by separation of powers principles.\textsuperscript{288} The APA protects both substantive and procedural due process rights.\textsuperscript{289} In particular, an order instructing the Administrator to act pursuant to the CAA is by definition an order to abide by the APA.\textsuperscript{290} The CAA delegates authority to the Executive Branch via the instruction that the “Administrator shall” regulate air pollution.\textsuperscript{291} Agencies must

\textsuperscript{282} See \textit{supra} Part V.


\textsuperscript{284} See \textit{id}.

\textsuperscript{285} Id.

\textsuperscript{286} See \textit{supra} Part V.

\textsuperscript{287} Youngstown Sheet & Tube Co. v. Sawyer, 343 U.S. 579, 635 (1952) (Jackson, J., concurring).


\textsuperscript{289} See \textit{supra} Part IV.A.

\textsuperscript{290} See \textit{supra} Part IV.A.

abide by the rulemaking process specified in the APA.\textsuperscript{292} The administrative requirements, including notice of proposed rulemaking, opportunities for comment, and the EPA’s written response to comments, secure the public’s substantive and procedural due process rights.\textsuperscript{293} Additionally, such an order would not jeopardize separation of powers principles because Congress delegated legislative duties to the executive in the CAA.\textsuperscript{294}

Examples of executive orders that President Obama may issue could direct the EPA Administrator to (1) set strict emission standards for future automobiles that will compel technological innovations; (2) propose regulations that compel or encourage states to set strict emissions targets; or (3) establish an innovative permit scheme designed to both limit the use of mobile sources in the short-term and to fund research and development of new energy sources over the medium to long-terms.\textsuperscript{295} Regardless of the avenue he pursues, President Obama has wide constitutional latitude to prescribe regulatory standards under the CAA to reduce GHGs from mobile sources.

\textbf{Conclusion}

Mapping the national and international response to global warming poses a major challenge to President Obama. Given the climate crisis, President Obama should not wait for Congress to take action. He should initiate the United States’ climate policy through existing tools, particularly the CAA. While the CAA may not be an ideal vehicle for launching a national campaign to reduce GHG emissions, it is a vehicle that already exists and has congressional approval.\textsuperscript{296}

Conservatives opposed to a progressive climate policy will challenge the President’s agenda in the courts, where conservative judges who rely on originalist readings of the Constitution predominate. Therefore, the Obama Administration needs to justify its regulatory proposals in light of the judiciary’s conservative jurisprudence. Based on a unitary executive theory, President Obama has the constitutional

\begin{footnotes}
\item[292] See supra Part IV.A.
\item[293] See id.
\item[294] See supra Parts IV, V.
\end{footnotes}
authority to issue an executive order instructing the EPA Administrator to issue GHG-emission-limiting regulations pursuant to the CAA.