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ENVIRONMENTAL LAW AND POLICY ANNUAL REVIEW

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Thomas D. Peterson, Robert B. McKinstry Jr. & John C. Dernbach

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(With Responses by Robert D. Brenner & Anna Marie Wood, Michael B. Gerrard, Gary S. Guzy, and Raymond B. Ludwiszewski & Charles H. Haake)

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(With Responses by Richard E. Ayres and Kathleen A. McGinty)

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(With Responses by Mark A. Cohen and Gary D. Bass & Sean Moulton)

Wendy Wagner

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(With Responses by Mark Greenwood and Richard A. Denison)

Honorable Mentions

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Narrowing the Accountability Gap: Toward a New Foreign Investor Accountability Mechanism

Albert C. Lin

Size Matters: Regulating Nanotechnology

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Manuscripts should be submitted by e-mail attachment to schang@eli.org. We prefer that the file be in WordPerfect® or Microsoft Word® format.

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THE ENVIRONMENTAL LAW AND POLICY ANNUAL REVIEW

The Environmental Law and Policy Annual Review (ELPAR) is published by the Environmental Law Institute's (ELI's) *Environmental Law Reporter (ELR)* in partnership with Vanderbilt University Law School. ELPAR provides a forum for the presentation and discussion of the best law and policy-relevant ideas on the environment from the legal academic literature each year. The publication is designed to fill the same important niche as *ELR* by helping to bridge the gap between academic scholarship and environmental policymaking.

ELI and Vanderbilt formed ELPAR to accomplish three principal goals. The first is to provide a vehicle for the movement of ideas from the academy to the policymaking realm. Academicians in the environmental law and policy arena generate hundreds of articles each year, many of which are written in a dense, footnote-heavy style that is inaccessible to policymakers with strong time constraints. ELPAR selects the leading ideas from this large pool of articles and makes them digestible by reprinting them in a short, readable fashion accompanied by expert, balanced commentary. The second goal is to improve the quality of legal scholarship. Academicians have strong incentives to write theoretical work that ignores policy implications. ELPAR seeks to shift these incentives by recognizing scholars who write articles that not only advance legal theory but also reach policy-relevant conclusions. By doing so, ELPAR seeks to induce academicians to generate new policy-relevant ideas and to improve theoretical scholarship by inducing them to account for the hard choices and constraints faced by policymakers. To draw on an old joke in the academy, policymakers cannot simply assume a trap door when they need one, and theoretical scholarship will be far better if scholars cannot either. The third and most important goal is to provide a first-rate educational experience to law students interested in environmental law and policy.

To nominate articles to be included in ELPAR, the ELPAR Editorial Board and Staff conducted a key word search for "environment!" in an electronic database. The search was limited to articles published from August 1, 2007, until July 31, 2008, in the law reviews from the top 100 *U.S. News and World Report*-ranked law schools and the top 50 Washington and Lee-ranked environmental law journals. Student comments were excluded. The students then screened articles for consistency with the five ELPAR selection criteria, with the first two criteria receiving greatest weight: issue of environmental quality importance; policy-relevant solution; creative/novel approach; feasible/implementable; and readability/persuasiveness.

Through discussion and consultation, the students ultimately chose 20 articles for review by the ELPAR Advisory Board. The Advisory Board provided invaluable insights to the students on article selection. Vanderbilt University Law School Professor Michael Vandenbergh, ELI Senior Attorney Linda Breggin, and *ELR* Editor-in-Chief Scott Schang also assisted the students in the final selection process. Responses or comments on the selected papers then were solicited from practicing experts in both the private and public sectors.

On April 10, 2009, ELI and Vanderbilt cosponsored a conference on Capitol Hill at which the authors of the articles and responses presented their ideas to an audience of business, government (federal, state, and local), think tank, media, and non-profit representatives. The conference was structured in a manner that encouraged dialogue among presenters and attendees.

The students worked with the authors to shorten the original articles and to highlight the policy issues presented, as well as to edit the responses. Those articles and responses are presented as ELPAR, which is also the August issue of *ELR*.

NEW FROM ELI PRESS

The Clean Water Act and the Constitution 2nd Edition

by *Robin Kundis Craig*

In this second edition of a landmark book, author Robin Kundis Craig explores the ways in which constitutional requirements impact on water quality regulation through a review of the Clean Water Act and recent court and administrative decisions.

This second edition thoroughly updates the first edition with particular emphasis on the controversial 2006 Supreme Court decision *Rapanos v. United States*. This case has reignited a vociferous debate among lower courts, in Congress, and among regulators about the reach of federal jurisdiction over water pollution, which has resulted in enforcement difficulties and much uncertainty. This second edition helps explain these conflicts and the underlying constitutional issues at play.

"One of the most revolutionary statutes ever enacted by Congress, the Clean Water Act has produced remarkable progress over the past 25 years. Much of that progress, however, is threatened today — and some of those threats come from a number of recent Supreme Court decisions. Professor Craig's book presents a thorough, straightforward examination of the Clean Water Act's approach to delegated federalism and the constitutional provisions that have both empowered and bedeviled the statute."

—William L. Andreen
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"Given the current legal flux, there is no better time for the publication of an authoritative guide to the constitutional issues with which the Clean Water Act is entangled. And there is no better guide to this subject than the new edition of Robin Kundis Craig's book on this complicated subject. It is, now and forever, a significant contribution to the canon."

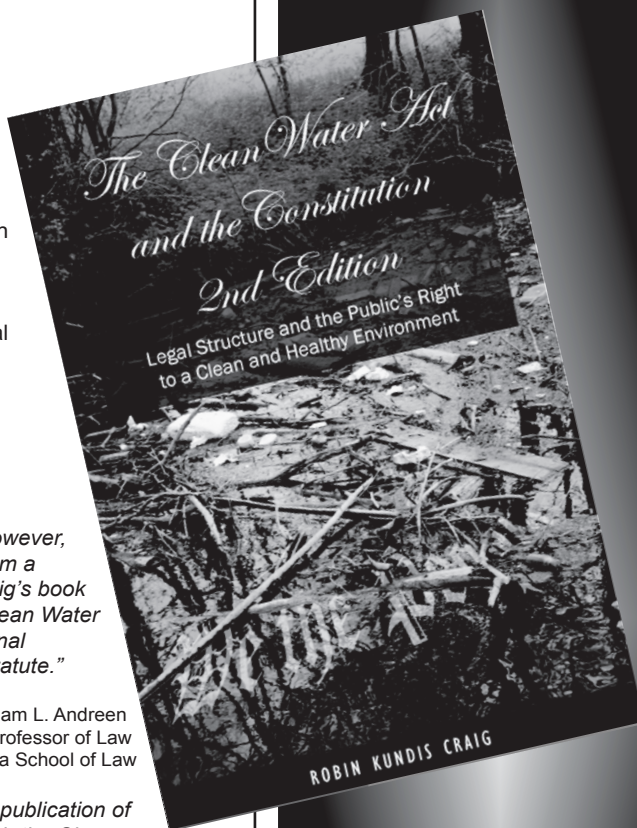
—G. Tracy Mehan, III
Former Assistant Administrator for Water, U.S. E.P.A.
and Adjunct Professor at George Mason University School of Law

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A R T I C L E

Developing a Comprehensive Approach to Climate Change Mitigation Policy in the United States: Integrating Levels of Government and Economic Sectors

by Thomas D. Peterson, Robert B. McKinstry Jr., and John C. Dernbach

Thomas D. Peterson is a Senior Research Associate at the Penn State Department of Geography and Adjunct Professor at the Dickinson-Penn State Law School. He also serves as Executive Director of the Center for Climate Strategies. Robert B. McKinstry Jr. is the Maurice K. Goddard Professor of Forestry and Environmental Resources Conservation at The Pennsylvania State University. He is also Of Counsel to the law firm, Ballard Spahr Andrews & Ingersoll, LLP. John C. Dernbach is Distinguished Professor of Law at Widener University.

Over the past several years the issue of global warming has become a national political priority and will likely remain one of the United States' and the world's most pressing and unresolved policy issues for many years. The U.S. Supreme Court's decision in *Massachusetts v. EPA*¹ makes possible a national program to address climate change under the Clean Air Act (CAA).² Even before *Massachusetts v. EPA*, the congressional shift in power had produced a flurry of bills coalescing around the need for strong national goals and mandatory GHG emissions reductions. While many of the bills before Congress in past sessions moved toward stronger emissions reduction goals³ and poten-

tially broader and more inclusive policy approaches, they were relatively silent or short on details for the specific pathways necessary to achieve climate stabilization goals. For example, past bills did not fully describe how to:

1. Vertically integrate rapidly expanding state and local climate change programs, as well as international programs, into a comprehensive national program that addresses unique differences between states and regions as well as unique jurisdictional issues for each level of government;
2. Horizontally integrate a full range of effective sector based policies and measures (including non price instruments) with a cap and trade program (principally using a price instrument) across all economic sectors in order to achieve the lowest cost and highest co-benefit policy outcomes;
3. Implement a full range of near term actions, without undue delay, that capture immediate economic recovery and expansion opportunities.

Consequently, federal legislation and rulemaking has needed to significantly clarify and expand the approach to policy integration and governance issues for the United States to make an effective commitment to climate stabili-

This Article is excerpted from the Virginia Environmental Law Journal, 26 VA. ENVTL. L.J. 227 (2008), and is reprinted with permission.

1. 549 U.S. 497, 497, 37 ELR 20075 (2007).
2. 42 U.S.C. §§7401-7671q, ELR STAT. CAA §§101-618. Reversing the Administration's denial of a petition to regulate mobile source emissions under section 202 of the CAA, the Court held that (1) the Act provides the U.S. Environmental Protection Agency (EPA) with authority to regulate emissions of carbon dioxide and other GHGs as "pollutants", and (2) the EPA improperly failed to articulate reasons for its refusal to regulate GHG emissions pursuant to the statutory requirement that the EPA Administrator regulate emissions that "in his judgment, cause, or contribute to, air pollution which may reasonably be anticipated to endanger public health or welfare." *Id.* § 7521(a)(1). The Court remanded the matter to EPA to make a finding consistent with the statutory standard.
3. Not all of the bills include meaningful goals. For example, a bill introduced by Senator Bingaman utilizes the concept of carbon intensity, which seeks to reduce the emissions per unit of gross domestic product. S. 1115, 110th Cong. § 402(a)(1) (2007). This concept bears no relationship to the emissions reductions necessary to stabilize atmospheric carbon levels. Equally importantly, it gives no reliable guidelines to industry or other planners of a guideline for

planning targets and, although intended to mitigate impacts on economic growth, is likely to be a two edged sword that may impede efforts to stimulate growth during times of recession or stagnation. Most growth has resulted in reduced carbon intensity and it is much easier to incorporate measures to

zation. Legislation introduced in the new (111th) session of congress appears to be moving in these directions. On March 31, 2009, House Energy and Commerce Committee Chair Henry Waxman, and Energy and Environment Subcommittee Chair James Markey, released a draft of the much anticipated "American Clean Energy and Security Act of 2009"⁴ with four separate titles that provide a more integrated approach to climate policy than past bills. These include: 1) clean and renewable energy supply policies and measures; 2) energy efficiency policies and measures; 3) a federal cap and trade program and standards for direct control of greenhouse gases; and 4) economic transition programs. The general architecture of the bill is much more aligned with comprehensive policy approaches (including those developed by the states and localities) than any legislation that precedes it.

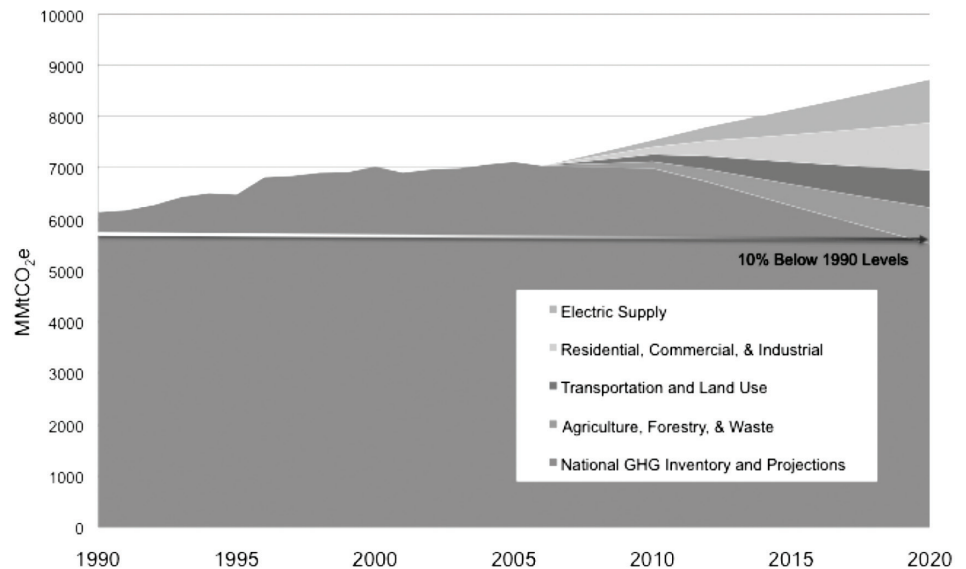
Recent state and existing federal laws provide useful federal guidance by providing a workable template for engineering full integration of governmental and economic needs with respect to climate change. In fact, most state plans were developed in anticipation of federal policy and the need for fully designed and integrated federal programs. By adapting and enhancing the existing framework of national standards, state programs and market-based systems found to a large extent in the CAA (and with adjustment), the United States could create a highly tested and widely approved approach to address climate change. At the same time, the United States could begin taking action quickly on critical near term policy opportunities while also building toward longer term policy strategies needed to support major shifts in emissions. The near term opportunities for use of the existing CAA, however, may not fully address greenhouse gas management needs and the need for targeted legislative enhancements, particularly in the long term.

achieve both relative (intensity) and absolute carbon dioxide emissions reductions in a growing economy where capital goods are turning over. The carbon intensity measure would require greater absolute emissions reductions when the economy is stagnant or shrinking than when it is growing—precisely at the time these reductions will be most difficult to achieve.

4. American Clean Energy and Security Act of 2009, H.R. 2454, 111th Cong. §1 (2009).
5. Unless otherwise noted, the original data for all graphs and charts in this Article were obtained from the Center for Climate Strategies, a non-partisan, independent nonprofit service organization that works directly with public officials and stakeholders to identify, design, and implement policies to address climate mitigation. The calculations provided the data and information embodied in the graphs were provided by employees and consultants for the Center and were culminated for a meeting of state environmental leaders in 2007. Center for Climate Strategies, <http://www.climatestrategies.us> (last visited Feb. 15, 2009).

Growth and Stabilization of United States GHG Emissions⁵

Economy-wide Greenhouse Gas Reduction Potential of United States
(Includes Recent and Planned Actions)
Center for Climate Strategies, 2008



I. Accumulating Scientific Evidence Underscores the Urgent Need for an Integrated and Comprehensive National Approach to Reach Climate Stabilization Goals

Perhaps the greatest single factor driving changes in the call for action has been the continued ascension of scientific evidence through the Intergovernmental Panel on Climate Change (IPCC), and national science bodies such as the Academies of Science and American Meteorological Society. The most recent Fourth Assessment concludes that the causes of climate change in the last century are 90% certain to be human induced. In addition, warming is well underway, with about 1.5 degrees Fahrenheit increase in global average temperatures in the last four decades alone, and projected increases of 3.5 to 8 degrees Fahrenheit as early as 2050 without mitigation. This rate and magnitude of temperature change is unprecedented in human history. These changes will be mirrored by equally unprecedented adverse effects.

This was succinctly summarized by a group of the world's climate change scientists in an *amicus* brief submitted to provide the Supreme Court with information on the state of climate science in *Massachusetts v. EPA*, as follows:

As practicing scientists who study the earth's climate system, we and many in our profession have long understood that continued human-caused emission of greenhouse gases—primarily carbon dioxide (CO₂), but also methane (CH₄), nitrous oxide (N₂O), and fluorocarbons—would eventually warm the earth's surface. Most were skeptical that we would see strong signs of human-induced climate change in our lifetimes. But by the beginning of this decade, we observed that global temperatures are rising, plant and animal ranges

are shifting, glaciers are in retreat globally, and arctic sea ice is retreating. Sea levels are rising and the oceans are becoming more acidic. To the extent that these changes result from human alteration of the atmosphere, we know that they are just the first small increment of climate change yet to come if human societies do not curb emissions of greenhouse gases.⁶

Because greenhouse gases are persistent and cumulative once emitted, effects will last over a century and continue unabated without any natural upward limitation on warming. The scientists noted above informed the Court that:

[D]elaying action to reduce greenhouse gas emissions will certainly result in greater buildup of greenhouse gases in the atmosphere, and thus we commit the earth to long-lasting climate change and associated damages decades before these damages can be measured. Reversing the impacts of climate change becomes vastly harder, or impossible, and more expensive as we allow greenhouse gas pollutants to accumulate in the atmosphere.⁷

In order to prevent some of the more dangerous impacts from climate change, scientists predict that we will likely need to reduce worldwide emissions by 75% to 85% by the year 2100, including reductions required for the United States, which currently emits 22% of the world's GHGs with 5% of the population.⁸

II. The U.S. Failure to Seriously Address Climate Change at the National Level Has Adverse International Consequences

The response to this growing challenge has not been symmetrical. Worldwide, virtually all industrialized nations have agreed to adopt mandated targets and timetables for emissions reductions under a protocol (the Kyoto Protocol⁹) to the United Nations Framework Convention on Climate Change (UNFCCC),¹⁰ with the exception of the United States. Developing nations have set these early commitments under a previous accord (the "Berlin Mandate")¹¹ that

was incorporated into the express terms of the UNFCCC and requires developed nations to move first.¹² The differential has confounded multinational companies with operations in both covered and uncovered nations, including many in the United States, and has led to a global patchwork of compliance.

III. State Responses to Climate Change Show How to Attain Climate Stabilization Goals at a National Level, and Are an Essential Source of Learning on How to Address This Issue

Since 2000, 31 states have developed and implemented a variety of comprehensive climate action plans.¹³ These states, with dramatically different emissions growth rates, have established, or will establish, statewide emissions reduction targets. Numerical goals and targets for emissions reductions are typically developed through consensus-based planning processes and in depth economic feasibility analyses. The goals and targets vary, but all are moving toward climate stabilization levels using a range of tools.

State planning targets are consistent with long-term climate stabilization pathways recommended by the scientific community for the short term (through 2020). The targets provide a platform for the steeper reductions by 2050 to achieve stabilization of atmospheric levels of GHGs.¹⁴ State plans have been remarkably consistent in the level of achievable emissions reductions, at about 50% below projected emissions levels by 2020.¹⁵

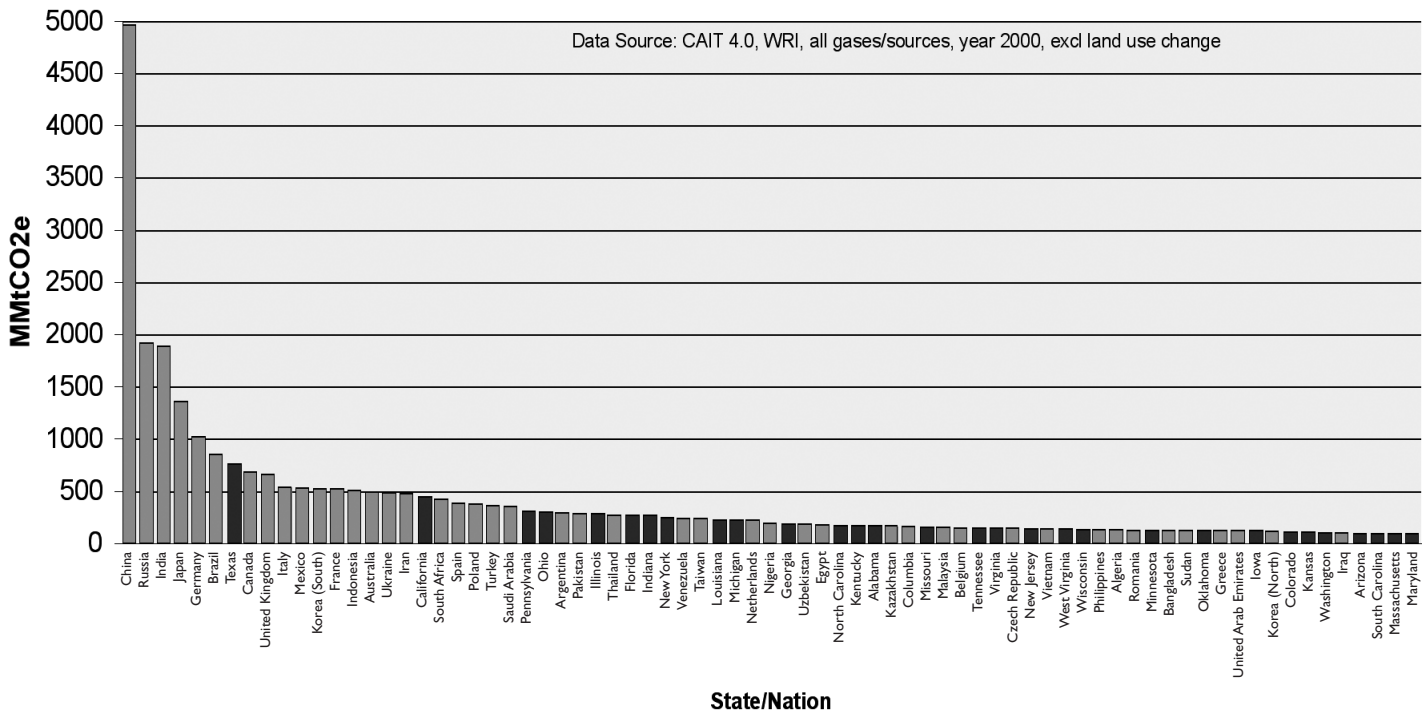
State experience identifies the following six key action areas that are critical to achieving national GHG emissions reductions targets:

developing nations. This support of this decision by the United States State Department did not involve consultation with the United States Senate, and was cited by Senate members as a key barrier to approval of United States participation in the Kyoto Protocol.

6. Brief for David Battisti et al. as Amici Curiae Supporting Petitioners at 2-3, *Massachusetts v. EPA*, 549 U.S. 497 (2007) (No. 05-1120), 2006 WL 1491307. This group included two Nobel prizewinners and the majority of the NAS/NRC panel that advised President Bush on the state of climate science.
7. *Id.* at 29-30.
8. Terry Barker et al., *Technical Summary*, in *CLIMATE CHANGE 2007: MITIGATION OF CLIMATE CHANGE, CONTRIBUTION OF WORKING GROUP III TO THE FOURTH ASSESSMENT REPORT OF THE INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE* 25, 30 (Bert Metz et al. eds., Intergovernmental Panel on Climate Change 2007), available at http://www.mnp.nl/ipcc/pages_media/FAR-4docs/final_pdfs_ar4/TS.pdf [hereinafter *FOURTH IPCC REPORT, WGIII*].
9. United Nations Framework Convention on Climate Change, Kyoto, Japan, Dec. 1-10, 1997, *Kyoto Protocol to the United Nations Framework Convention on Climate Change*, U.N. Doc. FCCC/CP/1997/L.7/Add. 1 (Dec. 10, 1997), available at <http://unfccc.int/resource/docs/convkp/kpeng.pdf> [hereinafter *Kyoto Protocol*].
10. United Nations Framework Convention on Climate Change, May 29, 1992, U.N. Doc. A/AC.237/18 (1992), reprinted in 31 I.L.M. 849 (1992), available at <http://unfccc.int/resource/docs/convkp/conveng.pdf> [hereinafter *UNFCCC*].
11. The Berlin Mandate was a decision reached by the Third Conference of Parties of the UNFCCC to require actions by developed nations to precede those by

12. UNFCCC, *supra* note 10, art. 4, para. 2 ("(a) Each of these Parties shall adopt national policies and take corresponding measures on the mitigation of climate change, by limiting its anthropogenic emissions of greenhouse gases and protecting and enhancing its greenhouse gas sinks and reservoirs. These policies and measures will demonstrate that developed countries are taking the lead in modifying longer-term trends in anthropogenic emissions consistent with the objective of the Convention . . . ; (b) In order to promote progress to this end, each of these Parties shall communicate, within six months of the entry into force of the Convention for it and periodically thereafter, and in accordance with Article 12, detailed information on its policies and measures referred to in subparagraph (a) above, as well as on its resulting projected anthropogenic emissions by sources and removals by sinks of greenhouse gases not controlled by the Montreal Protocol for the period referred to in subparagraph (a), with the aim of returning individually or jointly to their 1990 levels these anthropogenic missions of carbon dioxide and other greenhouse gases . . .") (emphasis added).
13. A number of plans were developed before that date. However, these plans were far from comprehensive, did not involve stakeholder input, and were largely formulaic with no significant implementation.
14. Most of the long-term goals have been based upon the reductions ultimately needed to stabilize atmospheric levels.
15. This translates into reductions ranging from 10% below 1990 levels to a return to 2000 levels. The differences are due to the fact that growth rates from state to state vary.

State and National GHG Levels, 2000¹⁶



- Energy efficiency and conservation
- Clean and renewable energy
- Transportation and land use efficiency
- Agriculture and forestry conservation
- Waste management and recycling
- Industrial process improvements.¹⁷

States consistently find that meaningful progress in these critical action areas requires a combination of implementation mechanisms, particularly if high levels of public consensus and economic performance are desired. These mechanisms typically include a range of traditional approaches, as well as innovative means by which market forces can be mobilized, including:

- Codes and standards
- Voluntary and negotiated agreements
- Targeted spending
- Financial incentives
- Market based systems
- Technical assistance
- Pilots and demonstration projects
- Education and awareness

State GHG Forecasts, Reduction Goals, Plan Results¹⁸

State	GHG Forecast	State Goals	Climate Plan Coverage
AZ	149%	2000 levels by 2020; 50% below by 2040	106%
CA	41%	E.O.: 2000 level by 2010; 10% below by 2020; 80% by 2050 AB-32: 1990 levels by 2020	100%
CT	32%	1990 level by 2010; 10% below by 2020; 75% below 1990 levels by 2050	100%
ME	34%	1990 level by 2010; 10% below by 2020; 75% below 1990 levels by 2050	100%
NJ	TBD	1990 levels by 2020; 80% below 2006 levels by 2050	100%
NM	64%	2000 level by 2012; 10% below by 2020; 75% by 2050	137%
OR	38%	1990 level by 2010; 10% below by 2020; 75% "ultimately"	85%
WA	37%	1990 level by 2010; 25% below by 2035; 50% below 1990 levels by 2100	TBD
RI	35%	1990 level by 2010; 10% below by 2020; 75% below 1990 levels by 2050	100%
VT	TBD	25% below 1990 levels by 2012; 50% below 1990 by 2028; 75% below 1990 levels by 2050	TBD

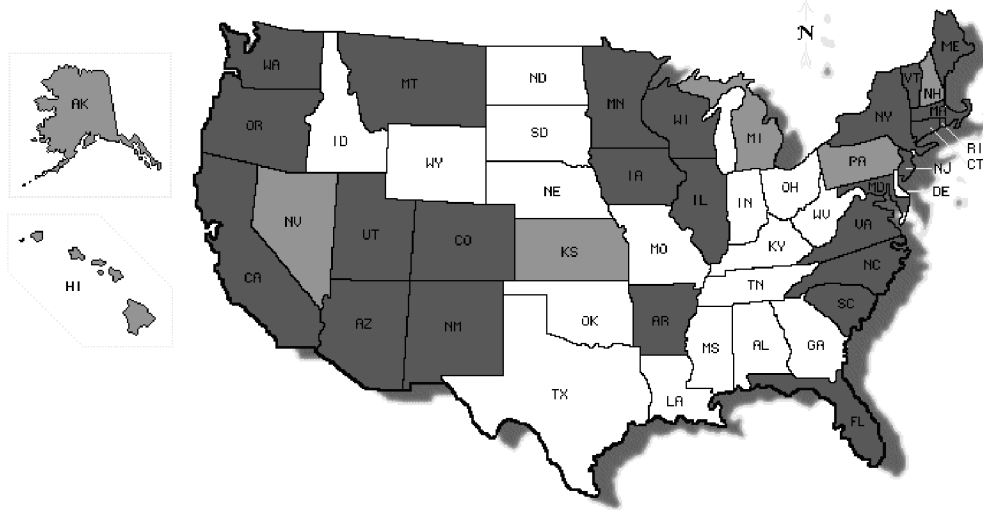
16. Year 2000 data from WRI CAIT with analysis performed by the Center for Climate Strategies. Center for Climate Strategies, *supra* note 5.

17. Center for Climate Strategies, *supra* note 5.

18. *Id.*

Comprehensive State Climate Mitigation Action Plans Since 2000¹⁹

- - Plans Completed
- - Plans In Progress



- Reporting and disclosure
- Public recognition and reward²⁰

The combination of different actions and mechanisms across all relevant sectors is critical to meeting strong new targets. It also provides overall low costs of implementation by allowing the government to balance the costs and savings of individual actions to achieve an overall negative cost for achieving GHG emissions reduction. This comprehensive “portfolio” approach—characterized by 10 to 20 policy choices from each of six sectoral columns—is crucial to gaining political support for any climate-related action, as it provides an enormously flexible range of choices by which potential conflicts may be resolved.²¹

If state climate action targets recently established by sixteen leadership states through completed action plans were emulated nationally, they would reduce U.S. GHG emissions by one third of total projected emissions by 2020 to the equivalent of 1990 levels. Preliminary estimates also suggest that national emulation of state efforts could provide the United States net economic *savings* of about 100 billion dollars (or about 31 billion dollars in savings during 2020 alone),

19. *Id.*

20. *Id.*

21. See ARIZ. CLIMATE CHANGE ADVISORY GROUP, CLIMATE CHANGE ACTION PLAN 1 (2006), available at <http://www.azclimatechange.gov/download/O40F9347.pdf>. The Arizona Climate Action Plan was completed in 2006. Following an intensive consensus building process through joint fact-finding and policy development, the state developed a plan with 49 separate actions across all sectors, using a variety of implementation approaches. The plan achieved high levels of emissions reductions and net economic savings (estimated at \$5.5 billion by 2020) by focusing on actions to reconfigure new economic growth to become cleaner and more efficient, rather than costly actions requiring retrofitting of existing infrastructure. *Id.* at 8. Despite the fact that Arizona has the highest estimated growth rate in GHG emissions in the United States, it was able to set reduction targets consistent with climate stabilization needs without negative impacts on economic growth. Results of the Arizona Climate Action Plan are available at www.climatestrategies.us.

based on an extrapolation to the national level from a series of extensive and openly-reviewed studies by the states conducted through public stakeholder processes and advanced economic analysis.²²

The portfolio based policy architecture developed by individual states is mirrored in the climate plans of virtually all nations in compliance with UNFCCC treaty obligations.²³ Key structural elements include:

1. Comprehensive emissions inventories and forecasts;
2. A common but differentiated system of targets and timetables for GHG reduction;
3. Comprehensive GHG reduction in all economic sectors and levels of government;
4. A variety of matching implementation mechanisms tailored to underlying sector-based actions that reduce GHGs; and
5. Reporting and measurement systems to support implementation.

Typically each jurisdiction covers major stationary source actions (usually a minority of total emissions) under a central policy instrument such as a tax, levy, cap and trade system, or combination. The remaining portion of emissions reductions (often the majority) from other emitting sources such as transportation, commercial and residential actions are covered through a set of decentralized policies and measures. Emissions reduction measures in these other sectors are often directed to areas where market imperfections make application of a cap and trade or tax less likely to be effective. The

22. Center for Climate Strategies, *supra* note 5 (compiling scale-up analysis of state leadership actions).

23. See FOURTH IPCC REPORT, WGIII, *supra* note 8, at 31-33 (providing details on international GHG plans).

Estimated Scale Up of State Climate Plan Actions²⁴

Potential US 2020	% National GHG Plan Reductions	MMTCO ₂ e	Cost/ Cost Savings Per Ton GHG Removed	Estimated Total Savings Below BAU 2020
Energy Efficiency and Conservation* [RCI]	29%	1035	-\$13/ton	12%
Clean and Renewable Energy** [ES]	29%	1020	\$6/ton	12%
Transportation and Land Use Efficiency	16%	575	\$13/ton	6%
Agriculture and Forestry Conservation, Waste Management & Recycling	26%	933	\$8/ton	11%
Total	100%	3563	\$3/ton	41%

* Includes efficiency in residential, commercial and industrial buildings as well as industrial process improvements.

** Includes energy supply (improved conventional sources, renewables such as wind and solar) and demand management (e.g., reducing peak demand through pricing, etc.) programs.

two approaches are merged in a comprehensive plan or portfolio of actions, tailored to the jurisdiction.²⁵ Through this common framework, jurisdictions may engage in joint or reciprocal actions that capture geographic efficiencies. Due to the wide scope of policy actions within the plans, this approach requires an effective governance structure across sectors as well as horizontal and vertical levels of government.

IV. Past Federal Legislative Proposals Have Not Adequately Integrated State Climate Initiatives or Existing Mechanisms Available Under the CAA

As recently as 2008, none of the proposed federal bills introduced adopted the comprehensive portfolio approach.²⁶ The bills failed to take advantage of the breadth of legal tools made available by the CAA or even to address how carbon dioxide and other GHGs will be integrated into that existing framework. New draft legislation is raising these issues more directly, but has not yet fully resolved them.

Past bills' almost exclusive focus on emissions trading was driven by a number of assumptions that are founded upon the successful record of the acid deposition program, and other experiences, suggesting a cap and trade program may be able to achieve reductions at minimal cost. These successes contributed to the popular belief that "command and control" regulation found in the major environmental

laws enacted between 1969 and 1990 does not work as well in terms of cost containment, and assumes the next generation of pollution controls need to be managed via cap and trade instead. This conclusion is based on the assumptions that (1) the measures employed in environmental laws before cap and trade do not achieve success in a cost-effective manner because they do not rely solely upon price based instruments, (2) the acid rain cap and trade program applicable to a single, highly regulated sector can readily be applied to emissions of GHGs across the whole economy, and (3) the cap and trade program was successful as a "stand alone" venture.

None of these assumptions ultimately hold up fully under scrutiny. Most notably, while the acid deposition cap and trade program established by Subchapter IV-A of the CAA²⁷ succeeded in achieving very significant reductions of acid rain precursors at a minimal cost,²⁸ its success was due to a number of unique circumstances. While a number of the characteristics of GHG emissions suggest that a trading system may be an effective tool to address climate change, there are important limitations that militate towards limiting its use to particular circumstances.²⁹ An effective trading program requires careful consideration of where such a program can be effective.³⁰ Many of the conditions that made the acid deposition cap and trade program so successful do not apply to GHG emissions.³¹

Secondly, the assumptions that economic growth is primarily tied to energy prices, and that energy prices will necessarily rise due to climate policy, are incorrect. State actions provide substantial evidence on the economic benefits of climate mitigation. Recent state plans show net economic savings from the combined effects of specific, proven actions at the state level when combined with long-term transitions

27. 42 U.S.C. §7651, ELR STAT. CAA §401.

28. See Joseph Goffman, *Title IV of the Clean Air Act: Lessons for Success of the Acid Rain Emissions Trading Program*, 14 PENN ST. ENVTL. L. REV. 177, 180-81 (2006).

29. For example, the facts that carbon dioxide mixes rapidly throughout the atmosphere, there is no concern about hot spots, and there is significant fungibility allowing trading between various types of GHGs at fixed scientific ratios makes use of trading particularly useful as a tool in addressing climate change. See Robert B. McKinstry Jr., *Putting the Market to Work for Conservation: The Evolving Use of Market-Based Mechanisms to Achieve Environmental Improvement in and Across Multiple Media*, 4 PENN ST. ENVTL. L. REV. 151, 158-160 (2006) (discussing limitations on use of trading programs); David M. Driesen, *Trading and Its Limits*, 14 PENN ST. ENVTL. L. REV. 169, 170-72 (2006).

30. See Tom Tietenberg, *Tradable Permits in Principle and Practice*, 14 PENN ST. ENVTL. L. REV. 251 (2006).

31. For example: while acid deposition could be regulated through controls on the utility sector, control of GHG emissions will require significant reductions across the economy. In the case of acid deposition control, the utility market was highly regulated, which provided assurance that allocations of emissions rights would not cause unjust enrichment. But many of the markets involved in GHG regulation are not regulated, so distributional considerations come into play. See generally Adam Rose & Gbadebo Oladosu, *Greenhouse Gas Re-*

24. Center for Climate Strategies, *supra* note 5. (using results of state climate action plans completed since year 2000, as of April 2007).

25. For example, the United Kingdom relies upon a "climate levy" imposing a tax on GHG emissions while allowing industry to opt into a cap in return for reduced tax rates. This is supplemented by policies covering transportation, residential and commercial activities. See FOURTH IPCC REPORT, WGIII, *supra* note 8, at 28-29.

26. S. 280, 110th Cong. (2007); S. 309, 110th Cong. (2007); S. 485, 110th Cong. (2007); H.R. 620, 110th Cong. (2007); H.R. 1590, 110th Cong. (2007). These bills are directed at all major sectors, as well as each of the six major GHGs covered by the Kyoto Protocol.

toward new technologies, systems and practices. The economic performance of these plans is driven both by the new energy economy and by opportunities to save energy and diversify supply through a host of reform actions. Today, energy prices are significantly higher than a decade ago when international treaty negotiations peaked, and they are widely expected to increase for the indefinite future.

V. The Existing CAA Provides a Possible Approach to Governance and Full Policy Coverage

Given the record of accomplishment among the states, it appears that successful climate change mitigation requires strong goals and diverse solutions that must involve all sectors and levels of government. The United States must construct a new approach based on a model that effectively incorporates the successful models used by states but also provides federal consistency. The following matrix illustrates the need to integrate economic sectors, policy instruments and levels of government into one holistic system.

Climate Policy Integration Matrix

Economic Sector	Level of government			
	Local	State	Regional	National
Energy Supply				
Residential, Commercial, Industrial				
Transportation and Land Use				
Agriculture and Forestry				
Waste Management				

With the Supreme Court's determination in *Massachusetts v. EPA*, there is little doubt that the regulatory construct for addressing climate change at the federal level will build upon the CAA. Because it is very unlikely that Congress will amend the law to remove environmental protections, the focus has necessarily shifted from question of *whether* there will be a federal response under the CAA to the question of *how* that response should best be managed and what amendments would be required to make the federal response appropriately integrated it with international, state and local efforts.

Under the existing provisions of the CAA, EPA can implement an effective governance structure for GHGs. Such an

approach depends both upon a willing EPA and the development of new regulations, an already time-consuming process that could face further delays incident to legal challenges.

An effective approach could, potentially, consist of the following elements:

1. The establishment of an NAAQS at a level sufficient to prevent "dangerous anthropogenic climate change;"³²
2. The establishment of short, intermediate and long term emissions reduction goals necessary to maintain the NAAQS with corresponding sectoral and state elements;
3. National and regional performance or technology-based limits and cap and trade programs for some sectors;
4. SIPs designating additional measures necessary to achieve the emissions reduction goals;
5. Provisions to effectively engage individuals in implementation; and
6. Establishment of United States as a serious actor in the international community.

Equally importantly, provisions may be needed to integrate these measures and require specific EPA action and to reduce delays is desirable. Amending the CAA to incorporate specific directives and deadlines with the specificity normally found in regulations would be one mechanism to minimize delays and uncertainty.³³ States could also contribute by adopting consistent deadlines and plans that could serve as SIPs if and when a federal system is in place. Cooperative ventures, already underway by several states, could also provide Congress with a model for action.

A. National Ambient Air Quality Standards for GHGs

The first step towards a coordinated federal approach under the CAA would be the establishment of NAAQS. After listing an air pollutant under section 108,³⁴ the EPA Administrator is required by section 109 of the CAA to establish primary NAAQS which, "allowing an adequate margin of safety, are requisite to protect the public health," as well as secondary NAAQS "requisite to protect the public welfare from any known or anticipated adverse effects associated with the presence of such air pollutant in the ambient air."³⁵ Although significant scientific uncertainties make the establishment of NAAQS for GHGs difficult,³⁶ scientists

duction Policy in the United States: Identifying Winners and Losers in an Expanded Permit Trading System, 23 ENERGY J. 1 (2002) (surveying the impact of GHG caps on different income groups in the United States). Additionally, market imperfections will make use of market mechanisms more problematic for reduction of GHG emissions in many sectors. GHG emissions reduction requires reduction of energy demand through mechanisms such as green buildings and smart growth. Unlike the utility sector, those making the decisions in this sector are not the same as those who will incur costs. See GUIDO CALABRESI, THE COSTS OF ACCIDENTS: A LEGAL AND ECONOMIC ANALYSIS, 135 (1970); Guido Calabresi & A. Douglas Melamed, *Property Rules, Liability Rules, and Inalienability: One View of the Cathedral*, 85 HARV. L.R. 1089, 1096 (1972).

32. UNFCCC, art. 2, *supra* note 10.

33. This approach was taken in the Hazardous and Solid Waste Amendments of 1984, Pub. L. No. 98-616, 98 Stat. 3221, and the Superfund Amendments and Reauthorization Act of 1986, Pub. L. No. 99-499, 100 Stat. 1615. In response to very specific statutory directions, the EPA could quickly issue an interpretive regulation that simply restated the statutory requirements. See Hazardous Waste Management System, 50 Fed. Reg. 28702, 28703 (July 15, 1985) (final rule).

34. 42 U.S.C. §7408, ELR STAT. CAA §108.

35. 42 U.S.C. §7409(b), ELR STAT. CAA §109(b).

36. Robert R. Nordhaus, *The New Power Generation: Environmental Law and Electricity Innovation: Colloquium Article: New Wine in Old Bottles: The Feasibility*

are currently addressing the issue by determining what level of GHGs will prevent “dangerous anthropogenic” climate change. Information currently suggests that the threshold should be established at a level that would seek to keep atmospheric concentrations of carbon dioxide below 450 ppmv and concentrations of total GHGs below 500 ppmv in carbon dioxide equivalents.³⁷ There are uncertainties concerning the establishment of NAAQS for GHGs that may be resolved with better scientific information. Similar uncertainties arise with respect to most NAAQS, however, and the standards for existing criteria pollutants are often modified as better information becomes available. Indeed, the CAA specifically contemplates this process by requiring that the EPA review air quality criteria and standards every five years and make revisions as warranted.³⁸

Leaving it to the EPA to establish NAAQS administratively may entail substantial delays. Progress is better assured if Congress specifies a 500 ppmv GHG NAAQS, allowing this figure to be reevaluated and revised consistent with evolving science and international accords, as already provided for in the CAA. This approach is already taken by the many states that establish ambitious long-term reduction goals.³⁹

B. Short, Intermediate, and Long-Term Emissions Reduction Goals

The CAA requires the adoption and implementation of SIPs to achieve and maintain the NAAQS. The statute gives states considerable flexibility in the choice of regulated sources as well as legal and policy tools, so long as the SIP is capable of achieving and maintaining the NAAQS.⁴⁰

Some suggest that SIPs are not an appropriate legal tool for regulating GHGs.⁴¹ The reasoning underlying this dis-

inction is flawed insofar as it is based on the nature of pollutants regulated under the SIP mechanism in the past, all of which tend to have localized effects. GHGs, by contrast, have a relatively uniform concentration throughout the atmosphere. Most areas will be in compliance with the NAAQS for GHGs when and if they are promulgated. GHGs mix rapidly in the atmosphere, and their health and welfare impacts arise from average concentrations. GHGs reside in the atmosphere for long periods of time.⁴² Consequently, establishment of NAAQS for GHGs will require somewhat different SIP implementation mechanisms than those used for other criteria pollutants. NAAQS could be implemented either under the existing CAA through the promulgation of regulations calling for regulation of GHGs, or through a statutory amendment mandating such an approach. Because of the nature of GHG emissions, it would be appropriate for the EPA to establish specific numeric emissions reduction goals on a national basis that are phased in over time and that are horizontally and vertically differentiated among states, sectors, and policy implementation mechanisms.

Maintenance of the NAAQS would therefore require the establishment of total emissions reduction goals with corresponding emissions caps. Such an emissions-based approach to SIPs could be accommodated within the current structure of the CAA. While an emissions cap approach appears appropriate for GHGs, what the reduction goals and caps will look like raises a number of questions. These relate to what the ultimate goals and caps should be, how a cap for the United States relates to international emissions, whether and how the reductions should be phased in, and how reduction goals and caps should be allocated among the states. Again, the experience of the states is instructive.

Any approach to determining an emissions reduction goal must start with what is necessary to stabilize worldwide emissions to maintain the NAAQS. Most sources concur that worldwide emissions must be reduced 50 to 85% by 2050,⁴³ and many states set long term emissions goals based on that number.⁴⁴ The United States, which only contains 5% of the world’s population, emits 22% of the world’s emissions.⁴⁵ Consequently, the emissions reductions goal, if based upon the assumption that each person in the world is entitled to emit an equal increment of GHGs, would be in the range of 94% to 96%.

Neither the 75% nor the 96% emissions reduction goal can be achieved without realistic intermediate benchmarks

of Greenhouse Gas Regulation Under the Clean Air Act, 15 N.Y.U. ENVTL. L.J. 53, 61-62 (2007) (suggesting that establishing NAAQS presents “substantial legal and practical obstacles,” focusing on the fact that emissions come from around the world and mix throughout the atmosphere).

37. See, e.g., James E. Hansen, *Scientific Reticence and Sea Level Rise*, 2 ENVTL. RES. LETTERS 1, 6 (2007), available at <http://arxiv.org/ftp/physics/papers/0703/0703220.pdf>. The actual level is a function both of GHG concentrations and the impacts of aerosols that reflect radiance and have a cooling impact. We are currently at a level above 380 ppmv carbon dioxide, while the total GHG levels, in carbon dioxide equivalents are about 50 ppmv higher, or 430 ppmv, but the aerosols create a negative (cooling) effect that roughly cancels out the effect of the non-carbon dioxide GHGs. Scientists do not expect that aerosols will increase and assuming they remain roughly the same a total GHG level of 500 ppmv would have the equivalent warming potential of the 450 ppmv level believed to protect against “dangerous” anthropogenic climate change. Interview with Gavin A. Schmidt, Goddard Institute for Space Studies, and Michael Mann, Pennsylvania State University (May 1, 2007).

38. 42 U.S.C. §7409(d), ELR STAT. CAA §109(d).

39. See Cal. Exec. Order No. S-3-05 (June 1, 2005) (stating a goal to reduce emissions to 80% below 1990 levels by 2050); COMM. ON THE ENV’T AND THE NE. INT’L COMM. ON ENERGY OF THE CONFERENCE OF NEW ENGLAND GOVERNORS AND EASTERN CANADIAN PREMIERS, NEW ENGLAND GOVERNORS/EASTERN CANADIAN PREMIERS CLIMATE CHANGE ACTION PLAN 2001, at 6-7 (Aug. 28, 2001) [hereinafter NEG/ECP Climate Change Action Plan] (providing the long term goals of the New England Governors and Eastern Canadian Premiers). Both of these reports are based upon the goal of stabilizing and then reducing emissions to prevent dangerous anthropogenic climate change.

40. 42 U.S.C. §7410(a), ELR STAT. CAA §110(a).

41. In denying the petition to regulate GHG emissions at issue in *Massachusetts v. EPA*, the EPA suggested that the CAA was an inappropriate mechanism to

regulate GHG emissions. Control of Emissions From New Highway Vehicles and Engines, 68 Fed. Reg. 52,922, 52,924 (Sept. 8, 2003) (stating that the NAAQS regime is ill-suited to address GHGs in relation to global climate change); Nordhaus, *supra* note 37, at 61 (“It is difficult to see how the SIP mechanism could be used to control global concentrations. It appears to be fundamentally ill-suited to the task.”).

42. NASA Goddard Inst. for Space Studies, Earth’s Temperature Tracker, <http://www.giss.nasa.gov/research/features/temptracker/page2.html> (last visited Jan. 3, 2008) (“Because greenhouse gases reside in the atmosphere for decades, while aerosols usually wash out over a span of days to weeks, the warming influence of greenhouse gases gradually won out.”).

43. See generally Fourth IPCC Report, WGIII, *supra* note 8.

44. NEG/ECP Climate Change Action Plan, *supra* note 40, at 7.

45. U.S. ENVTL. PROT. AGENCY, INVENTORY OF U.S. GREENHOUSE GAS EMISSIONS AND SINKS: 1990-2005, at 104 (2007).

and immediate reduction incentives to guide the market. Intermediate reduction goals are particularly important. Because carbon dioxide accumulates, less radical reductions will be required later on if there are earlier reductions. For this reason, many states are facing the difficult question of what degree of reduction will ultimately be required for the United States⁴⁶ and adopt intermediate goals appropriate for any of the most significant national reduction goals.⁴⁷ Intermediate national goals could also be based upon those set forth in the NEG/ECP Climate Action Plan. Alternatively, goals could be derived by scaling up the various intermediate goals originating from the state planning processes. This latter approach would make it possible for states to coordinate their actions by specifying common goals, even before Congress acts.

There is sufficient flexibility built into the CAA to allow long-term and intermediate emissions reduction goals to be established administratively by regulation. While this is possible from a legal perspective, it may not be desirable from a policy perspective. Decisions of this importance arguably carry added political legitimacy if made by Congress. Specific targets and timetables will provide the framework around which U.S. actions to address climate change will be undertaken, and on which all sectors in the U.S. economy may rely.⁴⁸ Perhaps more importantly, EPA action could be delayed by litigation challenging its authority and its choices of limitations. The goals could be similar to those stated in the proposed bills. Even if goals are established by Congress, however, the EPA must still be authorized to reassess and modify these goals based on actual progress, new scientific developments, and new international agreements.

Long-term goals and planning are not only necessary to achieve the emissions reductions required, but also to assist industry. Many capital investment decisions require a long-term horizon. Many capital goods and buildings have mini-

mum life spans of 20 years, and some have life spans ranging up to 50 years. Capital investment decisions also require long lead times. The establishment of long-term goals, with opportunities to adjust in light of emerging science and actual experience, will enable capital investment decisions to be based on a long-term horizon.

After long-term and intermediate national emissions reductions goals are established, it is necessary to allocate those emissions reductions among states and sectors of the economy. This requires consideration of (1) the emissions reductions that will be achieved through national technology-based standards under the CAA, (2) emissions reductions that will be required under sectoral cap-and-trade systems, and (3) characteristics of the states that will govern the establishment of emissions reduction goals for state implementation plans. Finally, mechanisms must be established to modify these goals in light of actual experience. These mechanisms will be described below.

C. National Technology-Based Limits and Cap-and-Trade Programs for Some Sectors

Under the CAA, uniform national or multi-state performance or technology-based limitations or sectoral cap-and-trade programs will be established as primary tools for emissions reductions in industrial and mobile source sectors, where feasible and appropriate.⁴⁹ *Massachusetts v. EPA* makes the promulgation of mobile source emissions standards under section 202 of the CAA appear likely at some point. Technology-based standards are particularly appropriate for mobile sources, for which cap and trade programs are difficult to administer.⁵⁰ While California already has emissions standards, EPA recently denied California's application for an exemption from preemption.⁵¹ Although the new Administration has ordered reconsideration of this decision, to prevent its recurrence, amendments to the CAA could require the adoption of standards at least as stringent as California's, or require that the EPA adopt new federal standards on par with other major industrialized nations every five years.⁵²

46. The question of the ultimate emissions allocations among nations has bedeviled international negotiations and this issue is responsible, at least in part, for the United States failure to participate. The United States has taken the position that it is entitled to its existing "baseline" while developing nations contend that emissions should be allocated per capita or even that developing nations should have a greater share of future emissions, due to the fact that past emissions by the developed world have caused a significant part of the current problem. See DONALD A. BROWN, *AMERICAN HEAT: ETHICAL PROBLEMS WITH THE UNITED STATES' RESPONSE TO GLOBAL WARMING* 203-221 (2002) (discussing international allocation issues); DONALD BROWN ET AL., *WHITE PAPER ON THE ETHICAL DIMENSIONS OF CLIMATE CHANGE*, 19-23 (2006), available at <http://rockethics.psu.edu/climate/edcc-whitepaper.pdf> (discussing issues for allocation among nations).

47. This approach is taken by California, which sets the goal of 80% reductions from 1990 levels by 2050. Cal. Exec. Order No. S-3-05 (June 1, 2005). The legislature endorsed this order in the California Global Warming Solutions Act of 2006, which set the goal of achieving 1990 emission levels by 2020, and which maintained and continued emission reductions beyond 2020. Cal. Health & Safety §§38550, 38551(b). This goal is endorsed by a growing number of college and university presidents. See JULIAN DAUTREMONT ET AL., *A CALL FOR CLIMATE LEADERSHIP: PROGRESS AND OPPORTUNITIES IN ADDRESSING THE DEFINING CHALLENGE OF OUR TIME* (2007), available at www.presidentsclimatecommitment.org/pdf/climate_leadership.pdf.

48. See John C. Dernbach, *Targets, Timetables and Effective Implementing Mechanisms: Necessary Building Blocks for Sustainable Development*, 27 WM. & MARY ENVTL. L. & POL'Y REV. 79, 96-102 (2002) (explaining that targets and timetables demonstrate commitment, help to give real-world meaning to often vague goals, and help focus debate on concrete objectives).

49. Factors to consider in establishing uniform national or multi-state performance or technology-based limits include the economic importance of national or multi-state standards, the potential emissions reductions to be achieved through uniform performance or technology-based standards, the extent to which the creation of such standards would augment or disrupt existing state efforts to control emissions from the same class of sources, and the extent to which there are already performance or technology-based standards for other pollutants from the same sources under the CAA. The last factor would include technology-based standards for mobile sources and some stationary sources under sections 202 and 111 of the CAA and electric power sector cap and trade programs. Some of the bills before Congress would force the adoption of such standards for GHGs.

50. A cap-and-trade system for mobile sources would necessarily require regulation "upstream" with allowances provided for the sale of gasoline. Robert B. McKinstry Jr. et al., *Incentive-Based Approaches to Greenhouse Gas Mitigation in Pennsylvania: Protection the Environment and Promoting Fiscal Reform*, 14 WIDENER L.J. 205 (2004).

51. Caroline Wetzel & Steven D. Cook, *EPA Rejects Waiver Request to Regulated Vehicle-Related Emissions*, ENV'T REP., Dec. 2007, at 2696.

52. Federal corporate average fuel economy standards are significantly weaker than GHG emissions standards applicable in most major foreign automobile markets. See FENG AN & AMANDA SAUER, PEW CTR. ON GLOBAL CLIMATE CHANGE,

Two of the comprehensive bills before Congress in early 2007 would have required immediate adoption of the California standards and the adoption of more stringent motor vehicle regulations every five years.⁵³ Congress could also consider repealing preemption of state mobile source standards, or broadening the California exemption from preemption to allow any state or group of states to establish more stringent mobile source standards if they exceed a certain population threshold.⁵⁴

In lieu of technology-based standards, sectoral cap-and-trade programs similar to the acid deposition cap-and-trade program could be established for the utility sector and most major industrial sectors.⁵⁵ For GHG emissions, it makes most sense for caps to be established representing the emissions reductions needed to achieve climate stability through 2100, dropping in predictable amounts consistent with nationwide emissions reductions. Although the caps could initially be specified through 2100, provisions would need to be included for reassessment in light of new science and actual experience. In the establishment of caps and the allocation of credits, it would be important to include assurances that early reducers be given full credit for their reductions. This could be accomplished by treating their early reductions as “banked.”

Although a cap-and-trade program could be established under existing authority in the Clean Air act, amendments to the CAA specifying caps and their reductions may be desirable. Changes in the law would remove any question regarding authority and could more precisely guide the EPA in implementation. Designation of long-term goals might be more readily achieved through statutory amendment. California and the states participating in the Regional Greenhouse Gas Initiative (RGGI) already initiated efforts to establish similar sectoral programs.⁵⁶ Although state cap-and-trade programs deal solely with initial caps and do not include long-term reduction requirements, the existing model could be employed to establish long-term caps.

For some industrial sources, a cap-and-trade program may not be desirable. Such a program may be cumbersome for industries with many small emissions sources because of its needs for effective monitoring and reporting. For these sources, performance or technology-based standards could be established. While such standards might be established for new or modified sources under section 111 of the CAA,⁵⁷ a different model establishing standards applicable to new and existing sources, similar to that employed in some cases by the Clean Water Act, may⁵⁸ be more appropriate. While this approach might be employed by the EPA under section 110 of the CAA, as in the case of the CAIR,⁵⁹ statutory amendments requiring such an approach and requiring periodic adjustments of these limitations could be included in CAA amendments.

Finally, any amendments to the CAA should necessarily address the problems created by NSR requirements and the need to integrate GHG emissions reductions with those for other pollutants. Delaying the requirements for conventional pollutants or otherwise authorizing states and the EPA to relax the requirements of NSR for projects replacing high emission technologies with low emission technologies would enhance efficiency and pollution reduction.⁶⁰

D. State Implementation Plans and Measures for Integration and Adjustment

All remaining emissions reductions could, potentially, be achieved through a reinvented version of state implementation plans (SIPs). Much as state climate plans do today, SIPs could address crucial demand reduction measures for utilities, other stationary sources, and mobile sources. SIPs could also independently address other sectors not directly addressed by the cap-and-trade and technology-based standards, such as commercial and residential heating, cooling, and hot water.⁶¹ The use of SIPs provides a higher level of certainty that legal and policy measures would be vertically integrated at federal, state, and local levels in an effective manner.

Establishment of the emissions reductions goals for SIPs requires calculations of (1) demand reductions for the utility sector, (2) reductions required to achieve the necessary national emissions reductions after consideration of reductions that will be achieved after application of technology-based standards and sectoral cap and trade programs, and (3) allocation of emissions reductions among the various

COMPARISON OF PASSENGER VEHICLE FUEL ECONOMY AND GREENHOUSE GAS EMISSION STANDARDS AROUND THE WORLD 25 (2004), available at http://pewclimate.org/global-warming-in-depth/all_reports/fuel_economy.

53. S. 485, 110th Cong. §101 (2007) (adding §704 to CAA); H.R. 1590, 110th Cong. §3 (2007) (adding §706 to CAA).

54. Mobile sources represent an exception to the general rule against federal preemption of more protective state standards under the CAA. 42 U.S.C. §7416, ELR STAT. CAA §116.

55. Section 110(a)(2)(D) of the CAA, 42 U.S.C. §7410(a)(2)(D), authorizes states to include cap and trade programs in their state implementation plans. The EPA promulgated regulations establishing a trading mechanism in lieu of technology-based standards for the utility industry for a variety of pollutants in the Clean Air Interstate Rule (CAIR). See 70 Fed. Reg. 25162 (May 12, 2005). Section 110(a)(2)(D) requires that each SIP “contain adequate provisions—(i) prohibiting . . . any source or other type of emissions activity within the State from emitting any air pollutant in amounts which will—(I) contribute significantly to nonattainment in, or interfere with maintenance by, any other State with respect to any such national primary or secondary ambient air quality standard. . . .” 42 U.S.C. §7410(a)(2)(D), ELR STAT. CAA §110(a)(2)(D).

56. See California Global Warming Solutions Act, CAL. HEALTH & SAFETY CODE §§38500-38597 (2007); see also Regional Greenhouse Gas Initiative, Regional Gas Initiative Model Rule (August 15, 2005), available at http://www.rggi.org/docs/model_rule_8_15_06.pdf (providing a model rule for the utility sector).

57. 42 U.S.C. §7411, ELR STAT. CAA §111.

58. See, e.g., 33 U.S.C. §§1311, 1317, ELR STAT. FWPCA §§301, 307.

59. 42 U.S.C. §7410(a)(2)(D), ELR STAT. CAA §110(a)(2)(D).

60. For example, coal-fired utilities may spend hundreds of millions of dollars installing scrubbers to remove sulfur dioxide and nitrogen oxides, while increasing energy consumption and thus increasing GHG emissions. Abandoning a conventional coal-fired plant to a combined cycle coal gasification plant would increase efficiency while reducing emissions of all pollutants.

61. It may be possible to create federal technology standards for some of these sectors, but a statutory amendment would likely be required, similar to the “area source” mechanism for hazardous air pollutants under §112 of the CAA. 42 U.S.C. §7412(k), ELR STAT. CAA §112(k).

states.⁶² Some of these calculations will follow from the measures employed and others will best be informed from state experience. Current state climate action plans provide an excellent starting point for these allocation decisions by providing estimates of emissions reductions from specific, sector based actions agreed upon through rigorous stakeholder negotiation.

It would be useful for Congress to require that GHG SIPs draw, at least initially, from the same menu of legal and policy tools. State actions to date tend to be based on energy efficiency and conservation, clean and renewable energy, transportation and land use efficiency, agriculture and forestry conservation, waste management, and industrial processes. Within each category is a standard set of legal and policy tools. Many of these tools, in turn, are specific to particular economic sectors like electricity generation and transportation.⁶³ This menu would put in front of any state the most comprehensive list of available choices that is available anywhere. It would thus help states choose the most appropriate and cost-effective options needed to meet emissions reductions targets. The “other” category is intended to include legal and policy choices that are not specifically identified on the menu but can nonetheless contribute to reduction of the state’s GHG emissions. The menu should, in turn, be periodically revised to specifically identify new legal and policy tools and otherwise reflect new experience and learning.

The “efficiency and conservation” category will necessarily include the calculation of electricity demand reduction measures. The electric utility sector will not achieve the proportional reductions required to stabilize carbon dioxide levels without reduction in demand, which continues to grow. Many of the measures that can be employed to reduce demand from the electric utility industry are best employed at the state and local level. These include measures such as green building, replacement of traffic lights and indoor lighting with LED bulbs and compact fluorescents, and other measures traditionally managed by state and local governments. Scaling up the demand reduction measures developed by state plans could be used to calculate emissions reductions in the utility sector that can be achieved through demand reduction. This scaling up could then be used to generate both the demand reduction goals for SIPs and the percentage of the emissions reductions necessary to meet utility caps.

Integration of demand reduction requirements into SIPs and integration of utility emissions reductions requirements with demand requirements could be accomplished through the promulgation of regulations under existing authority provided by the CAA. Statutory amendments specifying these procedures would facilitate implementation. Amend-

ments would also be required to provide a more appropriate sanctioning mechanism for states failing to meet their demand reduction requirements. The elimination of transportation funding or the promulgation of a federal implementation plan as provided by the current version of the CAA are not appropriately targeted sanctions. A measure such as a standby federal tax on the sale of electricity sold within non-complying states or incentives such as providing the states with revenues from cap-and-trade auctions would provide more effective means to achieve compliance.

Before establishing emissions reductions goals for SIPs, it is necessary to calculate the emissions reductions that will be required. This will require calculation of the emissions reductions that will be achieved through emissions caps and technology-based standards, and then subtracting that number from the overall emissions reductions required across the United States.⁶⁴

The final calculation would involve allocation of the nationwide emissions reduction goals among the states. This will undoubtedly become the subject of much negotiation. Here, state experience can also provide instruction.⁶⁵ Allocations must consider factors such as population and projected growth rates. The results of the state planning efforts suggest that very similar results can be achieved in states with dramatically different growth rates, so that this task will be less difficult than it might seem, whether the allocation is made via rulemaking or by Congressional action. Finally, the phasing of reductions will also be necessary. Overall reductions and appropriate caps should be phased to achieve reductions needed through 2100. These reductions could be paralleled by reductions in caps, with demand reduction measures allocated pro rata. It will likely be feasible to project technology-based emissions through 2020, so that the SIPs would be required to plan for necessary reductions to meet a 2020 goal with a roadmap to achieve the ultimate 2100 goal. Plan revisions and reallocation of goals by the EPA could be required periodically (five or ten years), so that a plan required in 2010 would need to achieve the reductions for 2025, one required in 2020 would need to achieve the reductions for 2035, and so forth.

Regardless of whether Congress mandates these changes or the EPA acts independently to create the system described above, additional measures would be desirable to assure that some of the problems with existing SIP implementation do not arise. For example, a measure for approval by third party certifiers might be provided.⁶⁶

62. A more detailed list of categories, as well as legal and policy tools, is contained in Robert B. McKinstry Jr. & Thomas D. Peterson, *The Implications of the New “Old” Federalism in Climate-Change Legislation: How to Function in a Global Marketplace When States Take the Lead*, 20 PAC. GLOBAL BUS. & DEV. L.J. 61, 72-80 (2007) (listing over 260 options for GHG reduction by states).

63. For example, two tools within the category of “clean and renewable energy” for the electricity generation sector are renewable energy portfolio standards and tax credits.

64. For example, if the initial goal requires a 10% reduction and half of those reductions can be achieved through the application of uniform federal standards, the SIPs will need to develop measures that account for the remaining half or 5% reduction.

65. The states with completed plans have varying economic growth rates. The business-as-usual extrapolation of emissions growth and the emissions reductions identified for 2020 and 2040 provide realistic individual goals for other states.

66. These SIPs may be simpler to implement than existing SIPs because they will be based on emissions reductions rather than local air quality and would consequently not require considerations such as air dispersion modeling. Although consideration of demand changes from other states would be necessary, interference resulting from GHG emissions from other states would not create the same difficulties present under the current SIP process.

E. Provisions to Effectively Engage Individuals in Implementation

Any comprehensive effort must fully engage citizens and consumers in its implementation. The CAA contains a variety of provisions for citizen participation in its enforcement and implementation, including citizen suits.⁶⁷ Beyond the availability of these mechanisms, the precision with which Congress directs agency and nongovernmental activities will have considerable bearing on the speed with which any legislation is implemented, and on the effectiveness of citizens in influencing its implementation. Fully engaging individuals also means fully engaging consumers by providing them with information, incentives, and the means necessary to make energy conservation and renewable energy both attractive and available.

F. Relation to International Actions

Unilateral action by the United States will not suffice to prevent “dangerous anthropogenic climate change.” Reductions by the rest of the developed and developing world are required to achieve the 85% reduction in emissions required. But proactive and unilateral action by the United States is a necessary prerequisite to international re-engagement, just as unilateral action by individual states has been necessary to induce federal action. In the UNFCCC, the United States and the rest of the developed nations of the world agreed to take the lead in reducing emissions.⁶⁸ By failing to ratify the Kyoto Protocol, the United States undercut its ability to negotiate reductions required by the developing world. Without a significant unilateral commitment to meet this obligation, the United States will be unable to establish the bona fides necessary to induce others to achieve the obligations required.⁶⁹

VI. Conclusion

The task facing the United States in reducing GHG emissions to levels necessary to avoid dangerous interference with the climate is significant. The challenge is so great and so complex that no single tool will likely be able to do the job by itself, not even cap and trade or GHG emissions taxes. Still, there are a portfolio of legal and policy tools that, taken together, could result in the necessary emissions reductions even as GDP grows, new technology is developed, and the United States is freed from foreign energy dependence. The approach suggested here builds on those tools, but expands their range and purpose. Although this specific approach may not ultimately be adopted, something very similar is needed to craft an effective strategy for reducing GHG emissions. Harnessing the creativity and local knowledge of state governments is a crucial part of any effective approach. With the Supreme Court’s decision in *Massachusetts v. EPA*, it is clear that the CAA should be the vehicle for a federal approach. And by following the states, the United States can overcome the international impasse, lead by example, and regain its status as an international environmental leader.

67. 42 U.S.C. §7604, ELR STAT. CAA §304.

68. UNFCCC, *supra* note 10.

69. This is the implication of the “tit for tat” strategy in the Prisoners’ Dilemma game in game theory. According to game theory, parties will cooperate in most instances, but if one fails to cooperate or reneges on a deal, as the United States did, the other party will retaliate and withdraw cooperation. However, if the first party reinitiates cooperation, the other will quickly forgive. See ROBERT AXELROD, *THE EVOLUTION OF COOPERATION vii-ix* (1984). U.S. action is, under this scenario, a necessary prerequisite for resumption of cooperation.

Comment on *Developing a Comprehensive Approach to Climate Change Mitigation Policy in the United States: Integrating Levels of Government and Economic Sectors*

by Robert D. Brenner and Anna Marie Wood

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In the article *Developing a Comprehensive Approach to Climate Change Mitigation Policy in the United States: Integrating Levels of Government and Economic Sectors*,¹ Peterson, McKinstry, and Dernbach² demonstrate the

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Anna Marie Wood focuses on issues related to technology development and innovation and the New Source Review and Title V permitting programs under the Clean Air Act. Prior to joining EPA, Ms. Wood worked for law firms in Houston and Atlanta and also as senior counsel for an energy company in Houston. She holds a Bachelor of Arts in Economics, with a concentration in Environmental Sciences, from the University of Virginia and also a Juris Doctorate and Masters of Law in Energy, Environment, and Natural Resource Law from the University of Houston.

The views and opinions expressed in this Comment are those of the commenters and do not reflect or represent the views or policy of EPA.

1. Thomas D. Peterson et al., *Developing a Comprehensive Approach to Climate Change Mitigation Policy in the United States: Integrating Levels of Government and Economic Sectors*, 39 ELR (ENVTL. L. & POL'Y ANN. REV.) 10711 (Aug. 2009) (a longer version of this Article was originally published at 26 VA. ENVTL. L.J. 227 (2008)).
2. Peterson, McKinstry & Dernbach are collectively referred to as "the authors" in this Comment.

importance of a comprehensive approach to climate change policy in the United States. The article notes that climate change legislation proposed thus far fails to integrate state and local climate change programs with national and international efforts. The authors also assert that the proposals do not ensure integration across all economic sectors of the full range of measures and programs needed to achieve significant greenhouse gas (GHG) reductions. The authors suggest that, either through federal legislation or rulemaking, a comprehensive approach should be established to address governance issues and signal an effective commitment by the United States to address climate change.

The authors propose an approach to address this shortcoming using a combination of elements under the Clean Air Act (CAA),³ the most significant of which include: (1) the establishment of a national ambient air quality standard (NAAQS) for greenhouse gasses with short, intermediate and long term reduction goals implemented through state implementation plans (SIPs); (2) national and regional performance or technology based standards and cap-and-trade programs for some sectors; and (3) SIPs that include measures necessary to achieve additional GHG reductions.

Between the time the authors wrote their article and the publication of this comment, much has changed in a relatively short time period. In July, EPA issued an advanced notice of proposed rulemaking concerning the regulation of greenhouse gas emissions under the CAA (ANPR).⁴ The ANPR examined and solicited public comment on the CAA provisions that could be used to reduce emissions of GHGs, and the interconnection among these authorities. Then, in

3. 42 U.S.C. §§7401-7671q, ELR STAT. CAA §§101-618.

4. Regulating Greenhouse Gas Emissions Under the Clean Air Act, 73 Fed. Reg. 44354 (July 30, 2008).

November, the presidential election led to a change in political leadership in the United States.

President Obama pledged to make addressing climate change a priority of his Administration. EPA Administrator Lisa Jackson recently stated that in addition to working closely with Congress on climate change legislation, EPA will move forward to comply with the Court's decision in *Massachusetts v. EPA*⁵ "recognizing EPA's obligation to address climate change under the Clean Air Act."⁶ The new Administration is actively engaged in assessing mechanisms to address GHGs under the CAA. The science is compelling that swift action is necessary and a full and diverse portfolio of approaches and enabling technologies are needed to achieve significant GHG reductions.

The authors are correct concerning the importance of a coordinated and comprehensive approach to address climate change in the United States. However, to address this shortcoming through the establishment of a NAAQS for GHGs presents a number of technical, practical and legal difficulties. Conversely, several of the elements noted in the article present meaningful opportunities for EPA to begin addressing GHGs in the near term.

In considering the use of the CAA to address GHGs, we identify important factors to guide our thinking. We then briefly discuss the characteristics of GHGs, their impact on climate change and whether a NAAQS for GHGs is practical. We conclude by discussing the potential of other elements noted in the article to mitigate GHGs and important additional issues that should also be addressed.

I. Considerations for Using the Clean Air Act to Address Greenhouse Gases

In using the CAA to address GHGs, we believe it is useful to consider certain factors. First and foremost, reductions achieved using the CAA should be cost-effective and complement opportunities for greater reductions in the future, either through regulation or legislation. Because swift action is imperative, meaningful GHG reductions should be pursued as soon as possible and provide flexibility to meet requirements through market based approaches, to the extent possible from a practical and legal perspective. The use of available technology and incentives for the development of new and emerging game changing technologies to mitigate GHGs should also be encouraged.

The implications of controlling GHGs under the CAA for the New Source Review (NSR) and Title V permitting programs must be addressed. To facilitate capital planning and maximize operational and economic efficiencies, the interface between controlling GHGs and anticipated measures to address other traditional pollutants should also be considered.

5. *Massachusetts v. EPA*, 549 U.S. 497, 37 ELR 20075 (2007).

6. Memorandum from Lisa Jackson, Adm'r, Env'tl. Prot. Agency, to Environmental Protection Agency Employees (Jan. 23, 2009), available at <http://www.epa.gov/administrator/memotoemployees.html>.

Climate change legislation should also harmonize actions taken under the CAA with approaches contained in the legislation to minimize delay and uncertainty, build upon mitigation measures and programs in place and provide a tool to address governance and the integration of national, state, tribal and local climate change programs. For example, ensuring a common methodology and metric for GHG trading undertaken through international, national, state and regional GHG programs is important. Additionally, a planning mechanism similar to the SIP process that facilitates the coordination of GHG mitigation measures and measures progress towards achieving GHG reductions is also needed. Careful attention and consideration of public acceptance and participation and the states' roles in implementing the range of measures needed to achieve significant reductions in GHGs are critical to the execution of a successful mitigation strategy.

The authors note a number of these factors in their article. With the foregoing factors in mind, below we examine the authors' proposal to develop a comprehensive approach to climate policy in the United States.

II. The Characteristics of Greenhouse Gases and Climate Change: Potential Challenges in Establishing and Implementing a NAAQS for GHGs

The authors discuss the role the establishment of a NAAQS and SIPs could play as an initial step to develop a coordinated federal approach under the CAA. A concentration-based NAAQS is suggested (e.g., 450 ppmv for CO₂ or 500 ppmv for all GHGs based on CO₂ equivalents) coupled with the use of SIPs to establish short, intermediate and long-term emission reduction goals and implement additional measures. The authors acknowledge that significant scientific uncertainties present challenges for the establishment of a NAAQS but note that inherent in the NAAQS process are opportunities to resolve such uncertainties as science evolves during future NAAQS review cycles. The use of a NAAQS, however, presents a number of challenges that, even with more scientific certainty, may not be easily remedied in the absence of legislation.

EPA discussed the scientific, legal and program design challenges associated with establishing and implementing a GHG NAAQS in the ANPR.⁷ As compared to the criteria pollutants for which NAAQS already exist, GHGs are global, rather than local or regional in nature and have a much longer residence time. Moreover, the effects of climate change may be unequally distributed around the world. Significant GHG contributions from outside the United States would affect the ability of states to meet or maintain a NAAQS. Thus, if worldwide emissions continued to increase, global concentrations would also increase despite

7. See *Regulating Greenhouse Gas Emissions Under the Clean Air Act*, 73 Fed. Reg. at 44477-86 (discussing the many challenges inherent in the establishment and implementation of a GHG NAAQS).

the best efforts of the United States.⁸ As a result, meeting or maintaining over the long term a NAAQS for GHGs might not be possible in the absence of worldwide action to stabilize GHG concentrations.

Given the nature of GHGs and the effects of climate change, a number of issues must be addressed. For example, would a NAAQS be established for CO₂ or all GHGs? Under the NAAQS, should EPA set a primary, public health-based or secondary, public welfare-based standard for GHGs, or both? Should the form of the NAAQS be concentration-based and if so, should the level be above current GHG concentrations in the atmosphere, or at or below current levels, in view of the statutory setting language? Would states be required to adopt measures to achieve or maintain GHG levels meeting the NAAQS regardless of foreign emissions, or could an alternative approach be defined for determining the states' emission reduction requirements? What would be the costs of implementation? How would states be protected from unintended consequences (e.g., triggering the general requirements for nonattainment area plans) if they are considered nonattainment for the NAAQS because of contributions of GHGs from outside the United States?

States use SIPs as the primary tool to attain, maintain and enforce NAAQSs.⁹ A SIP contains the regulations, control requirements and other measures used by a state to meet its NAAQS obligations.¹⁰ SIPs are not typically designed to implement a national control program or strategy for global pollutants.¹¹ Instead, SIPs are used to address criteria pollutants that are local or regional in nature. The actions taken by each state should enable the state to achieve or maintain the NAAQS for the local or regional pollutant. Conversely, the ability of a state to meet or maintain a concentration-based NAAQS for GHGs is inextricably linked to contributions of GHGs from sources in other states and outside the United States for which the state has limited, if any, ability to control.

The authors' proposal, however, of a SIP-like planning tool to coordinate and integrate the full range of measures at the federal, local, state and tribal levels is a good one. As noted by the authors, the tool should be applied to achieve vertical integration and harmonization of state, local and tribal climate change programs with national and international efforts and ensure horizontal integration of measures and programs undertaken across all economic sectors. Even in the absence of an agreed-upon national emissions reduction target for GHGs, all levels of government should be collaborating and coordinating on strategies, plans and measures to achieve significant GHG reductions.

III. The Role of National and Regional Performance or Technology-Based Standards and Cap-and-Trade

The authors acknowledge the importance of taking near term actions to mitigate GHGs without delay and point to performance or technology-based standards and the use of cap-and-trade where appropriate, as the primary tools for emission reductions in certain sectors. We agree.

In the wake of the Supreme Court's decision in *Massachusetts v. EPA*¹² and the change in political leadership, EPA is poised to address a number of issues that could result in a framework to begin addressing GHGs. If undertaken, the actions could provide the initial building blocks of a national strategy using the CAA and ultimately serve as a bridge to more comprehensive federal GHG legislation in the future. The authors correctly note that the new Administration has directed EPA to reconsider the California waiver. Moreover, in response to the FY 2008 Consolidation Appropriations Act, EPA proposed a rule that requires mandatory reporting of GHG emissions from large sources in the United States.¹³ EPA also proposed endangerment and cause-or-contribute findings for greenhouse gases under the CAA to address the endangerment issues raised in *Massachusetts v. EPA*.¹⁴

In addition, proposals to reduce GHGs from light duty vehicles¹⁵ and for New Source Performance Standards in certain key sectors could initiate the process of reducing GHGs. Section 111 provides flexibility to tailor emission standards to address GHG emissions.¹⁶ For example, as the ANPR notes, EPA has the authority to select the source categories for which to establish standards and could focus on GHG standards for source categories that emit the largest amount of GHGs, e.g., electric generating units, refineries and cement plants. It also states that the flexibility to include emissions trading and phased in declining performance standards based on current technology and /or two-phased or multi-phased performance standards for the future may also exist. The ability to implement a cap-and-trade approach for any given sector will require a careful reading of the specific text and context set forth in §111 and Title II of the CAA, and relevant case law. To the extent possible, cap-and-trade programs should be used to achieve greater emissions reductions, maximize flexibility and reduce costs for sources required to make GHG reductions. The actions EPA could take, coupled with those already underway by state, local and tribal governments, could result in significant GHG reductions.

8. *Id.* at 44485.

9. See 42 U.S.C.A. §7410, ELR STAT. CAA §110 (providing the process by which states are required to adopt and implement a plan for meeting NAAQS set by the EPA); Regulating Greenhouse Gas Emissions Under the Clean Air Act, 73 Fed. Reg. at 44480 (describing states' responsibilities under the Clean Air Act in relation to NAAQS).

10. Regulating Greenhouse Gas Emissions Under the Clean Air Act, 73 Fed. Reg. at 44480.

11. *Id.*

12. *Massachusetts v. EPA*, 549 U.S. 497, 37 ELR 20075 (2007).

13. See Mandatory Reporting of Greenhouse Gases, 74 Fed. Reg. 16448 (Apr. 10, 2009).

14. See Proposed Endangerment and Cause or Contribute Findings for Greenhouse Gases Under Section 202(a) of the Clean Air Act, 74 Fed. Reg. 18886 (Apr. 24, 2009); *Massachusetts v. EPA*, 549 U.S. 497, 533-35.

15. See generally Regulating Greenhouse Gas Emissions Under the Clean Air Act, 73 Fed. Reg. at 44440-47 (discussing various alternatives for reducing the GHG emissions of light-duty vehicles).

16. See *id.* at 44354, 44486-93 (describing current and possible uses of §111 for addressing GHG emissions).

IV. Additional Issues to Consider

The authors note that any amendments to the CAA should address the New Source Review (NSR) program¹⁷ requirements and the integration of GHG emissions reductions with reductions required for other pollutants. The authors do not address, however, what could be done to the NSR and Title V Programs in the interim, particularly if GHGs become pollutants subject to regulation under the CAA prior to GHG legislation. Under these circumstances, the construction or modification of a major source with the potential to emit 100 or 250 tons per year of CO₂ or GHGs could become subject to the Prevention of Significant Deterioration Program and Title V requirements immediately.¹⁸

As noted in the ANPR, the mass CO₂ emissions from many source types are orders of magnitude greater than other criteria pollutants.¹⁹ The existing thresholds for traditional pollutants capture a relatively limited number of new and modified sources each year. Applying the same size thresholds to CO₂ and possibly all GHGs would pull in a very large number of sources.²⁰ State, local and tribal permitting authorities may not have the capacity or resources to issue the increased number of permits. Similarly, the burden would also increase for the Title V program.²¹ For these reasons, the ANPR solicits comment on phasing in NSR and Title V requirements to address large sources in the near term and for additional sources over time. This mechanism could be used (and given available resources, may be administratively necessary) to manage the transition during the interim period. If Congress passes climate change legislation, it may want to consider other options to address NSR and Title V for GHGs.

V. Conclusion

We applaud and support the authors' call to action and their goal of establishing a comprehensive approach to climate change policy in the United States. Their article provides valuable insights and proposals concerning the integration of existing state climate mitigation plans with a new national strategy. We agree that close coordination, collaboration and integration of the full range of mitigation measures is needed; a comprehensive plan could be developed by all levels of government voluntarily. Alternatively, Congress could decide to provide greater certainty through a set of planning requirements.

Using a concentration-based GHG NAAQS to serve as the basis for a comprehensive strategy, however, is fraught with scientific, technical and practical challenges. Instead, other policy tools noted by the authors (e.g., performance and technology-based standards, and cap-and-trade) appear to provide a more direct and near-term path to begin to mitigate GHGs under the CAA and could serve as a bridge to more comprehensive legislation to achieve the deep reductions in GHGs that will be necessary.

17. The term "New Source Review" refers to both the attainment and nonattainment provisions of the NSR Program.

18. Regulating Greenhouse Gas Emissions Under the Clean Air Act, 73 Fed. Reg. at 44500.

19. *Id.*

20. *Id.*

21. *Id.* at 44511.

Comment on *Developing a Comprehensive Approach to Climate Change Mitigation Policy in the United States: Integrating Levels of Government and Economic Sectors*

by Michael B. Gerrard

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The article by Thomas D. Peterson, Robert B. McKinstry Jr., and John C. Dernbach (PM&D) has two central insights: (1) Any serious national effort to control emissions of greenhouse gases (GHGs) must continue to leave important roles to the states; and (2) It would be a mistake to put too many eggs in the cap-and-trade basket. A portfolio approach that utilizes many different regulatory techniques is important.

I certainly agree with PM&D about these insights, and they are correct that much of the current Congressional debate has given too little attention to these considerations. However, I have serious reservations about PM&D's proposal to use the mechanism of the national ambient air quality standards (NAAQS) and state implementation plans (SIPs) as the way to give states the vital roles they deserve. I believe there are alternative methods that would be superior.

I. Importance of Continued State Action

During the eight long years of the presidency of George W. Bush, the states played a role similar to that of the isolated centers of learning in Europe during the medieval period. While the forces in power not only stalled progress but attempted to spread a paralytic poison, some of the hinterlands developed their own thriving centers of thought and innovation. In this way, A.D. 1001-1008 and A.D. 2001-2008 have something in common.

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During the latter period, the states were not only laboratories of democracy—some of them were full-scale production facilities. California was in front, as it often is, with its Global Warming Solutions Act, A.B. 32¹; its Pavley Law, mandating stringent air quality standards for motor vehicles (if Washington would only get out of the way)²; and its application of the California Environmental Quality Act to GHGs.³ In the northeastern and mid-Atlantic states, the Regional Greenhouse Gas Initiative (RGGI) led the way with the first U.S. cap-and-trade program for GHGs.⁴ Several states pioneered with renewable portfolio standards for their electric utilities, and with all manner of other innovations, many of which are now being studied for incorporation into a federal program.⁵ The reports of the climate change task forces created in many of the states are a treasure trove of ideas and proposals.⁶

PM&D are absolutely right that a federal cap-and-trade program will not in itself be sufficient to achieve the necessary emissions reductions. The form that the seemingly inevitable program will take is still uncertain, but it is unlikely to thoroughly cover certain sectors of the economy that play important roles in the GHG picture, notably buildings and agriculture. Those sectors are more naturally regulated (if at all) at the state and local levels.

1. Global Warming Solutions Act of 2006, CAL. HEALTH & SAFETY CODE §38500 (Deering 2006).
2. CAL. HEALTH & SAFETY CODE §43018.5(a) (West 2007).
3. See Governor's Office of Planning and Research, *CEQA Guidelines and Greenhouse Gases*, at <http://www.opr.ca.gov/index.php?a=ceqa/index.html> (last visited May 31, 2009).
4. For information on RGGI, see Pew Center on Global Climate Change, *Regional Greenhouse Gas Initiative (RGGI)*, http://www.pewclimate.org/what_s_being_done/in_the_states/rggi/ (last visited May 31, 2009).
5. For examples of renewable portfolio standards, see PEW CTR. ON GLOBAL CLIMATE CHANGE, *CLIMATE CHANGE 101: STATE ACTION 3 fig.2* (2009).
6. See PACE LAW SCH. CTR. FOR ENVTL. LEGAL STUDIES, *THE STATE RESPONSE TO CLIMATE CHANGE: 50 STATE SURVEY* (2009), available at http://www.abanet.org/abapubs/globalclimate/docs/stateupdate_102908.pdf (last visited May 31, 2009).

II. National Ambient Air Quality Standards

Having said that, I do not believe that the best way to foster state action is to adopt NAAQS for GHGs and then require states to develop and implement SIPs.

First of all, NAAQS seems to be an unnecessary but cumbersome step on the way to state plans. The underlying idea of the NAAQS/SIP architecture is that the areas of the country where NAAQS are exceeded would be required to undertake special measures to attain the standards.⁷ EPA determines the attainment status of each air quality control region for each criteria pollutant; and the states prepare SIPs, subject to federal approval, to move the nonattainment regions into attainment.⁸ But GHGs, especially carbon dioxide, are so thoroughly mixed in the atmosphere that every air quality control region in the country will be either in attainment or nonattainment, depending only on where the NAAQS is set. Thus we lose the central role of NAAQS in helping to determine which areas need improvement and which do not.

Moreover, the Clean Air Act envisions ongoing monitoring to see how each air quality control region is doing in achieving or maintaining attainment.⁹ This is intended as a feedback loop; as regions succeed in improving their air quality, they are rewarded by being subject to less stringent requirements. But no region's own actions alone will have a discernable effect on the airborne levels of carbon dioxide in that region; those levels are determined by the cumulative actions of all the countries on the planet.

Determination of where to set NAAQS would be a thorny issue for EPA. PM&D suggest 500 ppmv in carbon dioxide equivalents. We are now slightly above 380 ppmv in carbon dioxide.¹⁰ As PM&D acknowledge, some major voices, led by Dr. James Hansen of NASA, argue that 350 ppmv of carbon dioxide is necessary.¹¹ Whether the number is above or below 380 ppmv carbon dioxide makes all the difference in the attainment status of each air quality control region.

The attainment status of a locality also determines what technology standard applies to stationary sources in the locality undergoing new source review. In attainment areas, it is best available control technology (BACT); in nonattainment areas, it is lowest achievable emission rate (LAER).¹² Here too, this distinction makes no sense in the GHG context. To pick the most prominent technology, EPA will need to determine whether new coal-fired power plants will have to incorporate carbon capture and sequestration (CCS), and CCS may or may not be deemed to be BACT or LAER; but

that determination will not be related to whether a particular plant is in an attainment or a nonattainment region.

Thus I believe the NAAQS step is unproductive for this process and should be skipped altogether.

III. State Implementation Plans

The next step proposed by PM&D is the preparation of SIPs. There is an appeal in requiring each state to develop its own plan to reduce GHG emissions. However, PM&D's suggestion that each state be allocated a share of the nation's GHG reduction burden is fraught with difficulty. PM&D suggest that this allocation "will undoubtedly become the subject of much negotiation," and that "[a]lllocations must consider factors such as population and projected growth rates."

To return to the medieval analogy, I think this is an invitation to another Hundred Years' War. Every state will be able to make a compelling case why it should have a low burden. Some states will cite their economic distress; others, their existing strong mass transit system, or their land use patterns that make mass transit impossible. If the decision is thrown to Congress, one might expect the outcome to more closely reflect the relative political power of individual members of the House and the Senate than the physical and economic attributes of each state. Occasionally Congress punts difficult decisions to independent appointed bodies, such as the Defense Base Closure and Realignment Commission (BRAC), which had the politically impossible task of deciding which military bases to close.¹³ But at least BRAC was given criteria to apply; it is not at all clear what criteria would be established for allocation of state GHG reduction mandates. For example, I have difficulty imagining how one would quantify the relative obligations of Delaware and North Dakota, states with similar populations but almost nothing else in common economically or geographically.

The SIP approach also invites considerable difficulties with respect to emissions leakage. Much of the electricity used in California is generated in Arizona and Nevada; which state's SIP is responsible for reducing this electricity generation and use?¹⁴ Which state is responsible for reducing motor vehicle use, when there is a central city at the core but commuters arrive from more than one state (I am thinking here of New York, Washington, D.C., Philadelphia, and Chicago)? Answers can be devised to these questions, but they rob the state allocation process of some of the purity that might be apparent on first look.

If the NAAQS framework is preserved in conjunction with SIPs, then, at least the way the Clean Air Act is currently structured, SIPs for nonattainment areas must contain a long list of items. Among them are the adoption of all Reasonably Available Control Measures; provisions for Reasonable Fur-

7. The NAAQS/SIP architecture is set forth in Clean Air Act of 1970, 42 U.S.C. §§7409–7410, ELR STAT. CAA §§109–110.

8. See *id.* §7410.

9. See *id.* §7407.

10. U.S. Department of Commerce, National Oceanic and Atmospheric Administration, *Carbon Dioxide, Methane Rise Sharply in 2007*, Apr. 23, 2008, at http://www.noaa.gov/stories/2008/20080423_methane.html (last visited May 31, 2009).

11. James Hansen et al., *Target Atmospheric CO₂: Where Should Humanity Aim?*, 2 OPEN ATMOSPHERIC SCI. J. 217, 228–29 (2008).

12. See 42 U.S.C. §§7475(a)(4), 7503(a)(2), ELR STAT. CAA §§165(a)(4), 173(a)(2).

13. For an example of the political maneuvering surrounding base closures and discussion of the BRAC process, see Eric Schmitt, *Panel on Base Closings Says the List Is Likely to Change*, N.Y. TIMES, May 23, 2005, at A16.

14. See CAL. ENERGY COMM'N., INTEGRATED ENERGY POLICY REPORT 2007 SUMMARY 11 (2007), available at <http://www.energy.ca.gov/2007publications/CEC-100-2007-008/CEC-100-2007-008-CMF-ES.PDF> (last visited May 31, 2009).

ther Progress; “general conformity” and “transportation conformity” provisions; and (impossibly, depending on where the NAAQS is set) attainment of NAAQS within five years of the effective date of the nonattainment designation (or ten years if EPA makes certain findings).¹⁵

IV. Alternative Approach to State Role

Though the Clean Air Act’s current SIP mechanism may not work, I agree with PM&D that a federal GHG system should preserve an important role for the states. This might be done through an opt-in system, which I describe below. The two questions to be addressed are:

- 1) How does a state get into the system?
- 2) What does a state get in return?

As to the first question, a state might be eligible if it adopted certain items from a menu of potential action items. Some of these items might become obsolete if the federal program establishes them on a national level, but surely some will survive. The menu might include a renewable portfolio standard, an energy efficiency portfolio standard, a California-level motor vehicle emissions standard, a low-carbon fuel standard; stringent standards for energy efficiency in buildings, forest preservation programs, and sustainable agriculture programs. These are just a few examples of what could be a long list. PM&D have listed many possible actions in their discussion of possible portfolios. The items on the menu would need to be weighted so that a given level or rate of GHG reduction would be achieved.

States that are eligible to opt into the system might then be entitled to a portion of the proceeds from the national sale of GHG emissions allowances. They might also be entitled to some flexibility structuring how they meet other requirements of the new law. For example, if the new law has technology standards for certain kinds of facilities, perhaps a state that has earned the opt-in designation could excuse some facilities from the standards or give them more time to comply. (Care would have to be exercised that this did not lead to environmental justice problems by allowing the excessive emissions of non-GHG pollutants that have adverse local impacts.)

The Clean Air Act, the Clean Water Act, and other federal environmental programs have many success stories based on technology standards, fuels controls, and other command-and-control strategies. A federal GHG law could do well by adopting a number of such strategies, but states might enjoy the ability to relax some of these command-and-control mandates in exchange for other actions that achieve comparable GHG reductions.

V. Conclusion

Regardless of the mechanisms that are ultimately adopted, PM&D have made a major contribution in highlighting the importance of continued state action and authority. In the legislative battles that are in our immediate future, we should recognize the central role that the states can play, and we should be slow to adopt provisions that could unduly pre-empt this role.

15. See 42 U.S.C. §7502(c), ELR STAT. CAA §172(c).

Comment on *Developing a Comprehensive Approach to Climate Change Mitigation Policy in the United States: Integrating Levels of Government and Economic Sectors*

by Gary S. Guzy

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In marking the one year anniversary of the U.S. Supreme Court's decision in *Massachusetts v. EPA*,¹ in April 2007, then-Chair of the House Energy and Commerce Committee John Dingell argued that developing trends—without the adoption of rationalizing comprehensive federal climate legislation—would lead to a “glorious mess.”² He was referring to the potential combination facing businesses of U.S. Environmental Protection Agency (EPA) piecemeal climate regulations, emerging state and regional programs, and the consequences of continuing litigation pursuing a wide variety of legal theories that could impose liabilities for greenhouse gas emissions. Are we able to find a path out of that mess?

Peterson et al. (the authors) set forth a wonderfully laudatory goal of leveraging and integrating state strategies, economic sectors, and policy instruments to create a robust regulatory platform for addressing climate change. Yet, several of the central weapons they seek to deploy, such as the Clean Air Act's national ambient air quality standards (NAAQS) and state implementation planning process, clearly are not neat fits for this challenge. These approaches raise three kinds of concerns: can they practically be administered or accomplished; are they politically attainable; and in the end, would they provide sufficient tools to accomplish this task.

Current Clean Air Act provisions and emerging state programs at best serve as an important backstop to comprehensive congressional action to redress global warming, not as a necessarily essential component of it. One wonders whether,

in pursuing the strategy set out by the authors, they might instead exacerbate the very glorious mess envisioned by Congressman Dingell, as compared to other tools that are available to take on this challenge.

One must question the political practicality of the solution envisioned. Many of the approaches examined by the authors would themselves require targeted and deeply detailed congressional action. These steps would require at least as broad, and arguably even greater, a measure of congressional support as comprehensive cap-and-trade climate legislation, given their highly detailed nature.

The centerpiece for a robust and effective policy response to climate change is most likely to be economy-wide cap-and-trade legislation that also fully addresses, integrates, and resolves existing Clean Air Act authorities. Otherwise, our approach will have neither the operational clarity nor the level of political buy-in that will be necessary to move an effective legislative response forward. A comprehensive cap-and-trade program is essential to incenting and deploying new technology. Neither targeted source control nor sectoral cap-and-trade programs would provide the broad-based incentives for the development of solutions that are necessary to address the scale of the greenhouse gas climate problem. Nor is the relative simplicity of the acid rain program a reason why cap-and-trade would not be effective in this admittedly more complicated context.

Similarly, a critical part of the climate solution must be supplied by robust, functioning, efficient markets that provide the means to deploy capital and encourage technology solutions. Simply weaving together existing state and regional trading programs would not provide two of the essential elements for making these markets a success. First, they would not, in themselves, provide either the depth or sufficient liquidity to promote adequate levels of trading. On

1. *Massachusetts v. EPA*, 549 U.S. 497, 37 ELR 20075 (2007).

2. *Strengths and Weaknesses of Regulating Greenhouse Gas Emissions Using Existing Clean Air Act Authorities: Hearing Before the Subcomm. on Energy and Air Quality of the H. Comm. on Energy and Commerce*, 110th Cong. (2008) (statement of Rep. John D. Dingell, Chairman, House Comm. on Energy and Commerce).

the other hand, these markets should not be given free reign to operate on their own. Rigorous market oversight, designed to provide a level of transparency, integrity, and confidence in these markets, is also a critical component of their success. It is hard to imagine how that level of oversight could be supplied at the state level; rather, a carefully constructed federal program is necessary to ensure that a market accomplishes its environmental objectives and that participants have the confidence to partake in a robust fashion.

Despite this concern, it is important to recognize the significance of state activities as a backstop for inadequate federal action. Likewise, many of the features of federal legislation derive from pilots created by the states over the last several years. States should be encouraged to continue to serve as laboratories for innovation and should retain a role as a backstop in the event a federal scheme ultimately does not go far enough.

The authors' fundamental tenant, that it is possible to set scientific goals at the same time as the science can—and is even encouraged to—continue to develop, is an important insight. The Clean Air Act NAAQS process has been uniquely successful in this regard. Likewise, the authors importantly recognize the significance of congressional action in some fashion in setting or ratifying the scientific basis of the fundamental emissions reduction targets, so as to provide political buy-in, long-range business planning certainty, and to help avoid state-by-state rulemaking litigation. Yet, that critical insight appears to be at tension with the multi-pronged and more disparate approach envisioned in the rest of this Article.

In envisioning complex systems, few things are likely to rival an attempt to apply the state implementation plan (SIP) process of implementing NAAQS to greenhouse gases. This challenge should not be underestimated. Certainly the SIP process is capable of accounting for extraneous contributions of pollutants, such as in the interstate transport provisions.³ But it is difficult to imagine Congress itself developing state-by-state goals or calculating and parceling out the appropriate compliance component derived from utility demand reduction state-by-state, as the authors suggest. There is no reason to think, as the authors also seem to argue, that it would be much faster or that it would root governmental action any more firmly in science to have Congress itself establish NAAQS. And if it is hard to imagine the current Congress digging into the details of state-based compliance programs for either maintaining or attaining a standard in the future, it is perhaps even more difficult to picture Congress developing the necessary detailed information and understanding to legislate firm granular backstops where EPA fails to take adequate action—akin to the highly proscriptive soft and

hard hammers of the Resource Conservation and Recovery Act⁴—as suggested by the authors.

A comprehensive cap-and-trade program looks far simpler in the end than these multiple state-based efforts. Combining such an approach with targeted source regulations, building on, for example, possible Title II findings regarding motor vehicles, is perhaps within reach and could be tremendously effective at combining firm action with cost effective compliance flexibilities. Likewise, there are also areas where states are uniquely qualified to contribute to a broad-based solution, particularly in charting plans to promote adaptation to manage unavoidable climate impacts.

Perhaps the greatest concern with the authors' approach is that it could, in the end, divert pressure for comprehensive federal legislation, rather than build consensus for it. The recently introduced discussion draft by Chairmen Waxman and Markey, the American Clean Energy and Security Act of 2009, presents a viable approach to comprehensive cap-and-trade legislation that reconciles state and targeted source reduction efforts.⁵ That proposal pragmatically suspends state activities,⁵ recognizing that it will take concentrated and broad-based effort and support to enact and implement the kind of comprehensive program necessary to address effectively the greenhouse gas challenge. It may take time to iron out the details, but state programs still serve as a critical long-term backstop and potential laboratory of experimentation.

3. 42 U.S.C. §7426, ELR STAT. CAA §126.

4. 42 U.S.C. §§6901-6992k, ELR STAT. RCRA §§1001-11011.

5. American Clean Energy and Security Act of 2009, H.R. 2454, 111th Cong. §1 (2009).

Comment on *Developing a Comprehensive Approach to Climate Change Mitigation Policy in the United States: Integrating Levels of Government and Economic Sectors*

by Raymond B. Ludwiszewski and Charles H. Haake

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Addressing global climate change through the regulation of greenhouse gas emissions is an issue of broad national and international concern, touching on many facets of this country's environmental and economic well-being. Crafting a workable solution will require a coordinated and comprehensive approach, for only such an approach will maximize the environmental benefits of regulation while not imposing undue costs on already strained American businesses and consumers. *Developing a Comprehensive Approach to Climate Change Mitigation Policy in the United States: Integrating Levels of Government and Economic Sectors* by Peterson, McKinstry, and Dernbach highlights two threshold questions that policymakers face in addressing greenhouse gas regulation.¹ First, given that federal action to address greenhouse gas emissions is a virtual certainty, what role should be left for states and localities to play? Second, in crafting a federal response, do the existing authorities under the Clean Air Act² provide a workable framework for greenhouse gas regulation, or is a new regulatory regime required?

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1. Thomas D. Peterson et al., *Developing a Comprehensive Approach to Climate Change Mitigation Policy in the United States: Integrating Levels of Government and Economic Sectors*, 39 ELR (ENVTL L. & POL'Y ANN. REV.) 10711 (Aug. 2009) (a longer version of this Article was originally published at 26 VA. ENVTL. L.J. 227 (2008)).
2. 42 U.S.C. §§7401-7671q, ELR STAT. CAA §§101-618.

On the first question, Peterson et al. suggest that states will continue to play a significant role in shaping climate change regulation in conjunction with federal action. The authors' conclusion, however, begs the threshold question of which level of government—the state governments or the federal government—is best suited to enact requirements addressing climate change that balance the various competing interests and reach the optimal level of stringency.

The proper allocation of regulatory responsibility between the state and federal governments has been described by one commenter as the pursuit of the best “jurisdictional match.”³ Often this match is not made, thus resulting in a “jurisdictional mismatch”—that is, “[t]he federal government regulates in many areas where there is no clear analytical basis for federal regulation,” while “[a]t the same time, the federal government is relatively absent where a stronger federal presence could be justified.”⁴ This commenter concludes, correctly in our opinion, that “[g]lobal climate change policy is a prime example of increasing state activity where federal action would provide for a greater jurisdictional match.”⁵

There are many reasons why the federal government is best suited to regulate greenhouse gas emissions. Deciding the optimum level of regulation entails an analysis of the relative costs and benefits of more stringent regulations; in other words, regulations will be set at the level where the benefits of additional stringency is outweighed by the additional costs to society. In the case of greenhouse gas emissions, often neither the costs nor the benefits of a state regulation are fully internalized within the regulating state, thus making that state

3. Jonathan H. Adler, *Jurisdictional Mismatch in Environmental Federalism*, 14 N.Y.U. ENVTL. L.J. 130, 175 (2005).
4. *Id.* at 132.
5. *Id.* at 175.

the suboptimal body to weigh the costs and benefits of regulation. This is especially true for mobile sources like cars and trucks, as exemplified by California's motor vehicle emissions program,⁶ which Peterson et al. reference in their article. For these sources, the "consumer states," such as California and New York, which seek to impose limits on the level of greenhouse gases emitted from vehicles sold in those states,⁷ are different from the "producer states," such as Michigan and Tennessee. Thus, the costs of motor vehicle emissions regulations are borne disproportionately by states other than the ones setting the regulations.

This result might be justifiable where the regulating state internalizes the benefit of its regulatory program. For example, California has traditionally regulated the emissions of pollutants that cause localized smog, such as hydrocarbons and oxides of nitrogen. Such regulations have provided the citizens of California (and the other states that have adopted the California program) with significant tangible benefits in the form of improvements in the quality of their air. Those states therefore have been able to fully internalize the benefits of their regulations. However, greenhouse gases like carbon dioxide do not stay localized, but rather disperse evenly throughout the atmosphere. Accordingly, carbon dioxide emissions in California have no greater impact on the climate in California than they do elsewhere in the world.⁸ For this reason, California has recognized that its proposed motor vehicle greenhouse gas regulations will not by themselves have any meaningful impact on ambient temperature or on the climate in that state.⁹ In such a circumstance, where both the costs and the benefits of regulation will be realized across the nation as a whole, the federal government is best positioned to chart the appropriate course, taking into account

all of the relevant considerations—such as the anticipated environmental benefits, the costs borne by consumers, and the regulatory burdens imposed on industry.

The second question identified is how the federal government should structure its regulatory response to climate change. Peterson et al. are correct that, in light of the Supreme Court's decision in *Massachusetts v. EPA*,¹⁰ federal action seems inevitable and that the Clean Air Act is the most likely avenue for such action. However, we fear that the authors overstate the extent to which the Clean Air Act provides a workable framework for regulating greenhouse gases like carbon dioxide. As former EPA Administrator Stephen L. Johnson stated in the Agency's Advance Notice of Proposed Rulemaking: Regulating Greenhouse Gas Emissions Under the Clean Air Act (ANPR),¹¹ "the Clean Air Act, an outdated law originally enacted to control regional pollutants that cause direct health effects, is ill suited for the task of regulating global greenhouse gases."¹² This sentiment was echoed by the heads of the Departments of Agriculture, Commerce, Transportation, and Energy, who, in a very unusual move, published their opposition to regulating carbon dioxide under the Clean Air Act in the *Federal Register* along with the ANPR.¹³ From the other side of the political spectrum, Congressman John Dingell, then-Chairman of the House Energy and Commerce Committee, put it best when he said that the likely result of regulating carbon dioxide under the Clean Air Act would be a "glorious mess."¹⁴

As Peterson et al. point out, there are other sections of the Clean Air Act that contain "endangerment" language that is very similar to that construed by the Supreme Court in *Massachusetts*. Once EPA determines that carbon dioxide triggers an endangerment when emitted from a tailpipe, it is very difficult to understand why it does not trigger a similar finding when emitted from other regulated sources. However, applying these other provisions to carbon dioxide would be unworkable and demonstrates that the Act is not well-suited to regulating carbon dioxide.¹⁵

For example, one such section identified by Peterson et al. is §108, which governs the creation and attainment of national ambient air quality standards (NAAQS).¹⁶ These standards, or more stringent standards adopted by the states, are implemented through federally approved state implementation plans (SIPs). State and regional compliance with

6. Section 209(a) of the Clean Air Act preempts states from adopting or enforcing motor vehicle greenhouse gas regulations. 42 U.S.C. §7543(a), ELR STAT. CAA §209(a). However, §209(b) allows the state of California to receive a waiver of Clean Air Act preemption if the conditions of that statute are met. *Id.* §7543(b). Other states may then adopt the California program under §177 of the Act. *Id.* §7507.

7. California's motor vehicle greenhouse gas regulations are set forth at CAL. CODE REGS. tit. 13, §1961.1 (2009). On March 6, 2008, then-EPA Administrator Stephen Johnson denied California's request for a Clean Air Act waiver for these regulations. See California State Motor Vehicle Pollution Control Standards; Notice of Decision Denying a Waiver of Clean Air Act Preemption for California's 2009 and Subsequent Model Year Greenhouse Gas Emission Standards for New Motor Vehicles, 73 Fed. Reg. 12156 (Mar. 6, 2008). That decision is being reconsidered by the new EPA Administrator.

8. The National Academy of Sciences asserts that:
"[G]reenhouse gases released anywhere in the world disperse rapidly in the global atmosphere. Neither the location of release nor the activity resulting in a release makes much difference. A molecule of CO₂ from a cooking fire in Yellowstone or India is subject to the same laws of chemistry and physics in the atmosphere as a molecule from the exhaust pipe of a high-performance auto in Indiana or Europe."

COMM. ON SCI., ENG'G, & PUB. POLICY, NAT'L ACAD. OF SCI., POLICY IMPLICATIONS OF GREENHOUSE WARMING: MITIGATION, ADAPTION, AND THE SCIENCE BASE 5 (1992).

9. See CAL. ENVTL. PROT. AGENCY, AIR RES. BD., REGULATIONS TO CONTROL GREENHOUSE GAS EMISSIONS FROM MOTOR VEHICLES, FINAL STATEMENT OF REASONS 229, 231–34 (2005), available at <http://www.arb.ca.gov/regact/grnhsas/fsor.pdf> (last visited May 30, 2009).

10. 127 S. Ct. 1438, 37 ELR 20075 (2007).

11. Regulating Greenhouse Gas Emissions Under the Clean Air Act, 73 Fed. Reg. 44354 (July 30, 2008).

12. *Id.* at 44355.

13. *Id.* at 44356-78.

14. *Strengths and Weaknesses of Regulating Greenhouse Gas Emissions Using Existing Clean Air Act Authorities: Hearing Before the Subcomm. on Energy and Air Quality of the H. Comm. on Energy and Commerce*, 110th Cong. (2008) (statement of Rep. John D. Dingell, Chairman, House Comm. on Energy and Commerce).

15. *Id.* (statement of Raymond B. Ludwizewski, partner, Gibson, Dunn & Crutcher LLP).

16. Peterson et al., *supra* note 1, at 10717.

NAAQS requirements is judged from the perspective of pollutant concentration in the ambient air. For traditional criteria pollutants, compliance with NAAQS depends in large part on local conditions such as local emissions, prevailing air flow conditions, and topography. If an area is a nonattainment area, it may be required to implement strict limits on emissions of the nonattainment pollutants in an effort to meet NAAQS concentrations.

This regulatory construct makes little sense in the context of greenhouse gas emissions. Because greenhouse gases disperse globally, it would be impossible for EPA to distinguish attainment from nonattainment areas for any greenhouse gas NAAQS. If NAAQS for greenhouse gases is set at a level below the current global atmospheric concentration, then EPA would be required to list all states as nonattainment areas. Under this scenario, a state could never achieve attainment status with its own efforts; rather, the ability of states to reach attainment would depend on the willingness not only of other states, but also of nations around the globe, to reduce their greenhouse gas emissions. Alternatively, if EPA set the greenhouse gas NAAQS at the current atmospheric concentrations, states would have to offset all new emissions—both from within their own borders, as well as far away venues like India and China—in their SIPs. Neither of these scenarios makes much sense.

Regulating greenhouse gases under the Clean Air Act would also trigger the new source review (NSR) program, which requires preconstruction review and permitting for major emitting facilities.¹⁷ The term “major emitting facility” is defined in the statute as a source that has the potential to emit at least 250 tons per year of a regulated pollutant or, if included on EPA’s select list of source categories, at least 100 tons per year of a regulated pollutant.¹⁸ Although the 100 to 250 tons per year levels of traditional pollutants is a threshold that generally limits permit requirements to large stationary sources, like electric utilities, chemical plants, and refineries, that threshold is not set high enough to capture only major stationary sources of the carbon dioxide. Rather, the 250 tons per year threshold will dramatically expand the number of facilities that would be forced to undergo the arduous preconstruction permitting process. Office and apartment buildings, hotels, enclosed shopping malls, large retail stores, warehouses, college buildings, and hospitals could become subject to the Clean Air Act permitting process for the first time. For example, the average office building in New York City emits 20 pounds of carbon dioxide per square foot. This average would indicate that any building over 25,000 square feet would be a major stationary source. Applying this threshold, EPA estimates that the number of sources subject to the NSR requirements would increase by

10 fold, and that the agency would have to process 2,000 to 3,000 permits per year.¹⁹ The notion that a landowner would have to engage climate scientists and emissions experts and develop air emissions studies and models in order to satisfy the requirements of NSR permitting program before being able to build a small office building or medical facility illustrates the inappropriateness of existing Clean Air Act programs to regulate greenhouse gases.

Both the current Administration and the new Congress have set climate change as their top environmental priority. Congressional leaders have signaled that they hope to have draft legislation out of committee by Labor Day, while the new EPA is working on complying with the mandate from *Massachusetts v. EPA*. As these initiatives move forward, it is incumbent that all sectors of the federal government work together on a coordinated national approach to climate change that properly balances all of the costs against all of the benefits. Doing so will require either new legislation or amendments to the Clean Air Act that specifically address greenhouse gases and that vest primary regulatory responsibility with the federal government. Any other approach threatens to impose unnecessary costs on businesses and consumers at a time when the economy can ill-afford it.

17. 42 U.S.C. §7475, ELR STAT. CAA §165.

18. 42 U.S.C. §7479(1), ELR STAT. CAA §169(1).

19. Regulating Greenhouse Gas Emissions Under the Clean Air Act, 73 Fed. Reg. at 44499.

ARTICLE

Climate Change and the Endangered Species Act: Building Bridges to the No-Analog Future

by J.B. Ruhl

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I. Introduction

The pika is toast. More specifically, the American pika (*Ochotona princeps*) is running out of places to live,¹ and global climate change appears to be the primary cause of its decline.² This tiny rabbit-like species has the unfortunate

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1. The background on the pika in this paragraph is derived from Donald K. Grayson, *A Brief History of Great Basin Pikas*, 32 J. BIOGEOGRAPHY 2103 (2005), and Erik A. Beever et al., *Patterns of Apparent Extirpation Among Isolated Populations of Pikas (*Ochotona princeps*) in the Great Basin*, 84 J. MAMMALOGY 37 (2003).
2. In this Article, I unapologetically adopt the premise that global climate change is occurring at anomalously rapid rates compared to historical trends, and that anthropogenic (human-induced) sources of greenhouse gases (primarily carbon dioxide) are a significant causal factor. I do not endeavor here to attempt to convince anyone of this. The Intergovernmental Panel on Climate Change (IPCC), an international scientific project representing hundreds of scientists, has produced a series of reports, including a comprehensive set in 2007, synthesizing scientific information on climate change and its effects on ecological conditions, all of which support the premises adopted herein. See, e.g., INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, SUMMARY FOR POLICYMAKERS, CLIMATE CHANGE 2007: IMPACTS, ADAPTATION, AND VULNERABILITY, CONTRIBUTION OF WORKING GROUP II TO THE FOURTH ASSESSMENT REPORT OF THE INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE 8-10 (2007), available at <http://www.ipcc.ch/pdf/assessment-report/ar4/wg2/ar4-wg2-spm.pdf> [hereinafter CLIMATE CHANGE 2007: IMPACTS, ADAPTATION, AND VULNERABILITY]; INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, SUMMARY FOR POLICYMAKERS, CLIMATE CHANGE 2007: MITIGATION, CONTRIBUTION OF WORKING GROUP III TO THE FOURTH ASSESSMENT REPORT OF THE INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE *passim* (2007), available at <http://www.ipcc.ch/pdf/assessment-report/ar4/wg3/ar4-wg3-spm.pdf> (last visited May 18, 2009); INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, SUMMARY FOR POLICYMAKERS, CLIMATE CHANGE 2007: THE PHYSICAL SCIENCE BASIS, CONTRIBUTION OF WORKING GROUP I TO THE FOURTH ASSESSMENT REPORT

trait of being remarkably well-adapted to the cold, high-altitude, montane habitat of the Sierra Nevada and Rocky Mountain ranges in the North American Great Basin. The pika's problem is that as global climate change causes surface temperatures to rise, the altitude below which pikas cannot find suitable conditions for survival also is rising.

The pika's recent decline and gloomy future call to mind the protective capacity of the Endangered Species Act (ESA),³ often referred to as the "pit bull" of environmental laws.⁴ The United States Fish & Wildlife Service (FWS), which administers the ESA for terrestrial and freshwater species,⁵ has identified over 1250 animal and plant species in the United States for protection and has exercised its regulatory authority throughout the nation to fulfill the statute's goal of conserving imperiled species.⁶ The ESA is credited

- OF THE INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE 2-5 (2007), available at <http://www.ipcc.ch/pdf/assessment-report/ar4/wg1/ar4-wg1-spm.pdf> [hereinafter PHYSICAL SCIENCE BASIS SUMMARY] (last visited May 18, 2009); INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, CLIMATE CHANGE AND BIODIVERSITY, IPCC TECHNICAL PAPER V 1 (2002), available at <http://www.ipcc.ch/pdf/technical-papers/climate-changes-biodiversity-en.pdf> [hereinafter CLIMATE CHANGE AND BIODIVERSITY] (last visited May 18, 2009). See generally INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, CLIMATE CHANGE 2007 SYNTHESIS REPORT: SUMMARY FOR POLICY MAKERS (2007), available at http://www.ipcc.ch/pdf/assessment-report/ar4/syr/ar4_syr_spm.pdf (last visited May 18, 2009) (summarizing the IPCC's work to date).
3. Endangered Species Act of 1973, 16 U.S.C. §§1531-44, ELR STAT. ESA §§2-18.
4. See, e.g., Steven P. Quarles, *The Pit Bull Goes to School: The Endangered Species Act at 25: What Works?*, 15 ENVTL. F. 55, 55 (1998) (discussing the origins of this reputation). See generally Steven P. Quarles & Thomas R. Lundquist, *The Pronounced Presence and Insistent Issues of the ESA*, 16 NAT. RESOURCES & ENV'T 59 (providing additional historical context highlighting the Act's "overbearing statutory certainty").
5. The National Oceanic and Atmospheric Administration's National Marine Fisheries Service (NMFS) (also known as NOAA-Fisheries) administers the ESA for most marine species and anadromous fish. My principal focus is on FWS and terrestrial and freshwater species. What is observed in this article about the ESA, however, applies equally to administration of the statute by the NMFS.
6. See U.S. Fish & Wildlife Serv., *The Endangered Species Program*, <http://www.fws.gov/endangered/> (last visited May 22, 2009) (providing information about the program and highlighting recent stories).

with preventing the vast majority of protected species from ultimate extinction.⁷

Practically speaking, however, what can the ESA do for the pika? The ESA takes a species-specific approach that has proven effective when employed to address discrete human-induced threats that have straightforward causal connections to a species, such as clearing of occupied habitat for development or damming of a river. That is not the pika's situation. Rather, *all* anthropogenic sources of greenhouse gases throughout the planet, from a small farm to a sprawling refinery, are contributing to the demise of the pika, and the species' decline is gradual and largely invisible to human perception. Pikas will not drop dead because of exposure to greenhouse gas emissions—they will just fade away as their habitat transforms below their feet. The ESA has proven to be unwieldy when applied on large working landscape levels,⁸ so is there reason to believe it will be any more effective when applied on global levels to this kind of creeping oblivion?

The pika thus serves as an example of the tension global climate change will create in the administration of the ESA and other environmental laws. On the one hand, the case for bringing these and other climate-threatened species under the ESA's protective wings seems as unequivocal as they come. On the other hand, given the reasonably anticipated trajectory of global climate change and its effects on ecosystems, there soon may be no practical way to administer the ESA in its present form for those species.

The ESA is by no means unique in finding itself between a rock and a hard place due to climate change. For example, the U.S. Environmental Protection Agency (EPA) recently denied a citizen rulemaking petition asking the agency to regulate greenhouse gas emissions from motor vehicles as an air pollutant under the Clean Air Act.⁹ The agency dismissed the petition on the basis that global climate change is so complicated either Congress did not provide for greenhouse gas emissions to be subject matter for the Clean Air Act or, if Congress did so provide, the agency properly identified conflicting policy concerns as a basis for deciding not to regulate emissions.¹⁰

But the Supreme Court nipped this kind of reasoning in the bud. In *Massachusetts v. EPA*,¹¹ a majority of the Court found that the EPA erred in denying the rulemaking petition, making clear the principle that simply because Congress did not have climate change on its mind when it drafted a law does not mean 30 or however many years later the agency responsible for implementing the law can ignore

the effects of climate change.¹² Like any other phenomenon that comes along after a statute is enacted, if global climate change becomes relevant to the statutory text and policy, it is fair game, if not *mandatory* fodder, for incorporation into the regulatory program. Hence, the Court concluded, greenhouse gas emissions, because they are linked to climate change and its numerous anticipated ill effects, fit the Clean Air Act's broad definition of an air pollutant.¹³

After *Massachusetts v. EPA*, one can argue it is incumbent on *all* federal regulatory agencies to assess how global climate change is to be integrated into their respective regulatory programs. Evaluating the fit between a regulatory program and climate change, however, often boils down to identifying the scope of discretion an agency has at its disposal with respect to climate change and determining how the agency can legitimately exercise it. The EPA knows now that it must make a decision about the effects of greenhouse gas emissions from motor vehicles and whether to regulate them, but what is the scope of the agency's discretion in making that decision? That is the question the Court in *Massachusetts v. EPA* left for the EPA to answer under the Clean Air Act¹⁴ and the question this article explores from the perspective of the ESA as presently constituted.¹⁵ Many ecologists believe we face a no-analog future—one for which we have no experience on which to base projections of ecosystem change¹⁶ and for which models designed to allow active management decisions as climate change takes effect are presently rudimentary and imprecise.¹⁷

I propose a coherent game plan for the FWS based on four assumptions: (1) even with swift and effective adoption of global-wide greenhouse gas emission mitigation measures, some residual climate change will continue to occur over the next 50 years¹⁸; (2) realistically, global-wide mitigation measures will not entirely reverse greenhouse gas emissions to 1990 levels; but (3) mitigation measures will stabilize emis-

7. See J. Michael Scott et al., *By the Numbers*, in *THE ENDANGERED SPECIES ACT AT THIRTY* 16, 29-32 (Dale D. Goble et al. eds., Island Press 2006) (discussing measures of success).

8. See A. Dan Tarlock, *The Dynamic Urban Landscape*, in *THE ENDANGERED SPECIES ACT AT THIRTY*, *supra* note 7, at 127, 127-32; Barton H. Thompson Jr., *Managing the Working Landscape*, in *THE ENDANGERED SPECIES ACT AT THIRTY*, *supra* note 7, at 101, 104-26.

9. 42 U.S.C. §§7401-7671q, ELR STAT. CAA §§101-618. See Control of Emissions From New Highway Vehicles and Engines, 68 Fed. Reg. 52922, 52922 (Sept. 8, 2003) (denying petition requesting EPA regulation of certain GHG emissions from new motor vehicles and engines under CAA).

10. *Id.* at 52929-31.

11. 549 U.S. 497, 37 ELR 20075a (2007).

12. *Id.* at 532-34. See generally Arnold W. Reitze Jr., *Controlling Greenhouse Gas Emissions From Mobile Sources*—*Massachusetts v. EPA*, 37 ELR 10535 (July 2007) (summarizing the rulemaking petition, EPA decision, federal court proceedings, and effects of the case); Michael Sugar, *Massachusetts v. Environmental Protection Agency*, 31 HARV. ENVTL. L. REV. 531 (2007) (commenting on the case and providing additional background material).

13. *Massachusetts*, 549 U.S. at 527-30. The Clean Air Act defines "air pollutant" in sweeping terms to include "any air pollution agent . . . including any physical, chemical [or] biological . . . substance or matter which is emitted into or otherwise enters the ambient air." 42 U.S.C. §7602(g), ELR STAT. CAA §302(g). The Court found that "greenhouse gases fit well within [this] capacious definition." *Massachusetts*, 549 U.S. at 532.

14. See *Massachusetts*, 549 U.S. at 534-35 ("We need not and do not reach the question whether on remand EPA must make an endangerment finding, or whether policy concerns can inform EPA's actions in the event that it makes such a finding.").

15. This Article addresses the scope of agency discretion under existing statutory provisions. Although the article examines potential rulemaking reforms within the scope of existing statutory authority, I neither suggest nor review proposed statutory reforms of the ESA or any other statute to respond to climate change.

16. See Douglas Fox, *Back to the No-Analog Future?*, 316 SCIENCE 823, 823 (2007); Douglas Fox, *When Worlds Collide*, CONSERVATION, Jan.-Mar. 2007, at 28.

17. See Peter Cox & David Stephenson, *A Changing Climate for Prediction*, 317 SCIENCE 207, 207 (2007). For more on these modeling difficulties, see *infra* Part II.A.

18. See Richard A. Kerr, *How Urgent Is Climate Change?*, 318 SCIENCE 1230, 1230 (2007) ("The system has built in time lags. Ice sheets take centuries to melt after a warming. The atmosphere takes decades to be warmed by today's greenhouse gas emissions.").

sions at a level which will allow global climate regimes eventually to settle into a “natural” pattern of variation; and (4) some species will not survive the transition from the present to that future no matter what actions the FWS takes under the ESA, but others can make it if we help them through the transition. Under these assumptions, I argue that the FWS should *not* attempt to use the ESA to combat greenhouse gas emissions or save all species threatened by climate change, but rather should use it as the bridge to the no-analog future for those species that can benefit from the ESA’s helping hand.

II. Climate Change as an Agent of Ecological Reshuffling

The ESA is a change-management law designed to arrest change in one direction—the decline of a species—and bring about a new trajectory of change—recovery of the species. FWS administers several core programs that provide the regulatory firepower needed to effectively intervene in four categories of environmental change that cause species decline: (1) “the present or threatened destruction, modification, or curtailment of” habitat; (2) “overutilization for commercial, recreational, scientific, or educational purposes;” (3) “disease or predation;” and (4) “other natural or manmade factors.”¹⁹

- Section 4 authorizes FWS to identify “endangered” and “threatened” species, known as the listing function,²⁰ and then to designate “critical habitat”²¹ and develop “recovery plans”²² for the species.
- Section 7 requires all federal agencies to “consult” with FWS to ensure that actions they carry out, fund, or authorize do not “jeopardize” the continued existence of listed species or “adversely modify” their critical habitat.²³
- Section 9 requires that all persons, including all private and public entities subject to federal jurisdiction, avoid committing “take” of listed species of fish and wildlife.²⁴
- Sections 7 (for federal agency actions)²⁵ and 10 (for actions not subject to §7)²⁶ establish a procedure and criteria for FWS to approve “incidental take” of listed species.²⁷

19. 16 U.S.C. §§1533(a)(1)(A)-(E), ELR STAT. ESA §§4(a)(1)(A)-(E) (enumerating the factors by which endangered and threatened species are identified).

20. *Id.* §1522(a)(1).

21. *Id.* §1533(a)(3).

22. *Id.* §1533(f).

23. *Id.* §1536(a)(2).

24. *Id.* §1538(a)(1).

25. *Id.* §1536(b)(4).

26. *Id.* §1539(a)(1).

27. “Incidental take,” although not explicitly defined in a specific statutory provision, is described in §10 of the statute as take that is “incidental to, and not the purpose of, the carrying out of an otherwise lawful activity.” *Id.* §1539(a)(1)(B). FWS has adopted this meaning in regulations implementing §7’s incidental take authorization. 50 C.F.R. §402.02 (2003).

Of course, this authority is only useful in circumstances where intervention is feasible and to the extent it is effective.

In this respect climate change presents a complicated scenario. First, regulating emissions in the United States alone is highly unlikely to be sufficient to reduce global emission levels. Second, even if regulatory measures are implemented worldwide to curtail emissions, the political reality is that they will impose phased-in reductions taking several decades to return to benchmark emission levels designed to stabilize or reduce greenhouse gas concentrations in the troposphere. Most significantly, however, even if benchmark levels are attained in the near future, the physical dynamics of greenhouse gas effects on climate are such that climate change will continue on its present trajectory for a significant time period.²⁸

A. Feedback, Nonlinearity, and Reshuffling—Facing a No-Analog Future

Three metrics drive much of the discussion of climate change as a *global* phenomenon: rising tropospheric carbon dioxide levels as a causal agent, escalating mean global surface temperatures, and rising sea levels.²⁹ The cause and effect relationships at this level are fairly well understood: carbon dioxide and other greenhouse gases trap heat radiating from the earth’s surface, which causes surface level temperatures to rise, which in turn causes polar and glacial ice to melt and ocean water volume to expand, which cause sea levels to rise.³⁰

Of course, what matters for most regulatory agencies is not how well we predict global trends such as surface temperature and sea levels, but what happens at the sub-global regional and local levels at which agencies act. For the FWS it often will be the case that what matters for a particular species is primarily a function of local ecological conditions and their effects on the species. The FWS, in other words, has to find models that predict the effects of global climate warming on a wide range of physical and biological cycles, “downscale” those effects to local ecological conditions, and then evaluate the effects of those local changes on the species of concern.

The FWS has no model of this sort at its disposal because nobody has the experience or knowledge upon which to base them. Ultimately, moreover, such models may simply be beyond our capacity. Although all ecosystems undergo disturbance regimes such as flood, fire, and drought, ecologists understand that these forms of disturbance are part of the stable disequilibrium of resilient, dynamic ecosystems.³¹ Cli-

28. See CLIMATE CHANGE IMPACTS SUMMARY, *supra* note 2, at 19 (“Past emissions are estimated to involve some unavoidable warming . . . even if atmospheric greenhouse gas concentrations remain at 2000 levels”).

29. See Stefan Rahmstorf et al., *Recent Climate Observations Compared to Projections*, 316 SCIENCE 709, 709 (2007) (presenting climate trends and comparing them to previous projections).

30. See PHYSICAL SCIENCE BASIS SUMMARY, *supra* note 2, at 10-17 (covering this causal chain, as well as other primary and secondary drivers, both natural and anthropogenic).

31. See generally PANARCHY: UNDERSTANDING TRANSFORMATION IN HUMAN AND NATURAL SYSTEMS (Lance H. Gunderson & C.S. Holling eds., 2002) (covering

mate change does not represent a mere disturbance regime, the operations of which we can extrapolate from current ecological knowledge; rather, it will be the undoing of ecosystems as we know them.³²

B. A Typology of Climate Change Threats to Species

Although accurate prediction of climate change effects on local ecological conditions is for now (and perhaps always will be) beyond the capacity of ecological models, a taxonomy of effects can be constructed and may be useful for evaluating where the ESA can be employed most effectively when climate change threatens the continued existence of a species.³³

I. Primary Ecological Effects

The pika presents a relatively straightforward scenario of climate-induced species decline—the ecological conditions it needs for survival do not exist below a particular temperature regime. They do not have the option of relocating once the temperature regime lifts above the peaks which they now call home.³⁴ Rather, the pika and other species with specific ecological needs and limited migration capacity are likely to face significant threats from this kind of first order change in ecological conditions. Threats in this category will come from stranding,³⁵ life-stage habitat loss,³⁶ and altered biological events.³⁷

2. Secondary Ecological Effects

Not all species will find it necessary and possible to depart their current ecosystems in order to withstand the direct effects of climate change, but many will. Others will stay to fight it out. While humans might cheer these species on, the aggregate effects of ecological disruption and species reshuffling are likely to lead to several secondary threats, including

disequilibrium and resilience theories of ecosystem dynamics).

32. See CLIMATE CHANGE IMPACTS SUMMARY, *supra* note 2, at 8 (“The resilience of many ecosystems is likely to be exceeded this century by an unprecedented combination of climate change, associated disturbances (e.g., flooding, drought, wildfire, insects, ocean acidification), and other global change drivers (e.g., land use change, pollution, overexploitation of resources).”).

33. All of the impact categories covered in my typology have been discussed to one extent or another in scientific literature. See, e.g., CLIMATE CHANGE AND BIODIVERSITY, *supra* note 2, at 16-23. My arrangement of them is designed to coincide with the legal analysis of the ESA covered *infra* Parts III-V.

34. Of course, humans have the option of moving pikas to new locations. I take up the issue of “assisted migration” below. See *infra* Part IV.D.2.

35. See, e.g., CLIMATE CHANGE AND BIODIVERSITY, *supra* note 2, at 22 (discussing lifestyle-changing effects of climate change in various ecosystems).

36. See, e.g., *id.* at 17-18 (explaining the varying global effects of increasing temperatures).

37. See, e.g., *id.* at 12 (listing observed changes in the timing of biological events).

increased stress,³⁸ successful adaptive migration,³⁹ and opportunistic invasion.⁴⁰

3. Human Adaptation Impacts

Just as the primary threats to species before climate change centered around human-induced ecological change, it is likely that human adaptation to climate change will play a leading role in threatening species. Human adaptation impacts in the form of direct habitat conversion,⁴¹ degraded ecological conditions,⁴² and induced invasions⁴³ will present the most pernicious of such threats.

III. The Impact of Climate Change on the ESA

A. Reshuffling the Regulatory Landscape

The ESA instructs the FWS to use the regulatory powers it confers on the agency to “provide a means whereby the ecosystems upon which endangered and threatened species depend may be conserved.”⁴⁴ While preserving ecosystems is clearly the statute’s primary goal, how precisely to use the agency’s regulatory discretion to “provide a means” of achieving the goal is not self-evident from the text of the statute. Add to that the presence of secondary goals sprinkled throughout the statute, such as the command that the FWS “shall cooperate with State and local agencies to resolve water resource issues in concert with conservation of endangered species”⁴⁵ and that designation of critical habitat must take “into consideration the economic impact, the impact on national security, and any other relevant impact”⁴⁶ and the agency is confronted with yet another layer of policy balanc-

38. See, e.g., *id.* at 13-14 (explaining that coral bleaching, widespread in the late 1990s, is a sign of ecological stresses like pollution and disease).

39. See, e.g., *id.* at 17 (discussing the challenges of species community reorganization and regional limitations imposed by changing temperatures on land and at sea).

40. See, e.g., *id.* at 16-17 (outlining how climate change can drive complicated, uneven changes in habitat and ecosystem characteristics).

41. Many human communities are likely to find it necessary and possible to migrate to avoid rising sea levels along coastal areas, to relocate agricultural land uses, and to obtain secure water supplies. These migrations will necessarily involve some conversion of land uses in areas that presently provide suitable ecological conditions for particular species, in some cases at scales sufficient to pose a threat to the species. See *id.* at 3-4 (discussing some environmental effects of climate-motivated human migration).

42. See *id.* at 43 (examining effects of new adaption strategies on ecosystems).

43. Human adaptation to climate change is likely to involve spatial relocations, as well as increased flow of goods to new settlement areas, which as in the past are likely to introduce non-native species to local ecosystems, some of which will establish successfully. The EPA has suggested that “important progress has been made in identifying climate change effects on invasive species, but . . . our understanding of effects on specific species and interactions of other stressors needs to be improved.” Effects of Climate Change on Aquatic Invasive Species and Implications for Management and Research, 72 Fed. Reg. 45046, 45047 (Aug. 10, 2007) (notice of availability of research report and public comment period). Most invasive species introductions are human-induced. Peter M. Vitousek et al., *Biological Invasions as Global Environmental Change*, 84 AM. SCIENTIST 468, 468.

44. 16 U.S.C. §1531(b), ELR STAT. ESA §2(b).

45. *Id.* §1531(c)(2).

46. *Id.* §1533(b)(2).

ing. A third important driver of policy discretion under the ESA has for decades been the background social, economic, and legal context within which the statute is situated. The ESA's "pit-bull" reputation has come at some cost, as the statute is often portrayed as unduly interfering with property rights, susceptible to unscientific agency biases, and riddled with irrational fiscal outcomes.

Climate change does not fit into one of the familiar policy realms, affecting the policy balance by operating from within the existing set of trade offs. Rather, climate change operates on all three realms at once, disrupting not only the contents of each, but also how the trade-off dynamics between each realm play out.

B. Focal Points for Policy Choices

No provision of the ESA addresses pollutants, emissions, or climate in any specific, regulatory sense. Far from insulating the FWS from the need to test the range of its discretion, however, the general nature of the ESA will thrust the FWS into six key policy quagmires.

Identifying Climate-Threatened Species. As no regulatory authorities of the ESA operate until a species is listed as endangered or threatened under §4 of the ESA, the initial pressure point is how the FWS uses available science to determine the effects of climate change on particular species.

Regulating Greenhouse Gas Emissions. If the FWS identifies climate change as a basis for designating a species for protection under the ESA, it inevitably will face the question whether federal actions that cause, fund, or authorize greenhouse gas emissions jeopardize the species under §7, and whether any person emitting greenhouse gases is taking the species in violation of §9.

Regulating Non-Climate Effects to Protect Climate-Threatened Species. Regardless of how aggressively the FWS attempts to regulate greenhouse gas emissions to protect a climate-threatened species, it inevitably will face the problem of how aggressively to regulate other actions that injure the species but which do not contribute to climate change, such as habitat conversion, water diversion, and pollution.

Designing Conservation and Recovery Initiatives. As the FWS regulates more activities associated with climate-threatened species, it inevitably will face the need to design conservation measures as conditions for approval of incidental take under §§7 and 10, as well as the need to formulate recovery measures for the species under §4.

Species Trade Offs. As noted above, the ESA depends on an overriding purpose of "provid[ing] a means whereby the ecosystems upon which endangered species and threatened species depend may be conserved."⁴⁷ Yet the reshuffling of species under climate change conditions will make it difficult to identify "the ecosystems" to be conserved and is likely to pit species against species in a manner unprecedented in nature and under the ESA.⁴⁸

Dealing with the Doomed. Perhaps the most confounding question for the FWS will be how to respond with respect to species that appear doomed because of lack of migratory and adaptive capacity to withstand climate change effects in their natural habitat range.

IV. Fitting Agency Discretion With Climate Change

The six policy choices outlined above should guide the extent of the agency's discretion in the listing programs found in §4 of the statute, in the three regulatory programs—the take prohibition, the jeopardy consultation program, and the HCP permit program—and under the statute's pervasive "best scientific data available" standard for decision making.

A. Section 4: Listing, Critical Habitat, and Recovery Plans

Section 4 establishes a package of programs aimed at identifying imperiled species: (1) the listing function, through which such species are identified as endangered or threatened; (2) the designation of critical habitat essential for the survival of such species; and (3) a planning function designed to identify the steps needed for their recovery. Each program presents the FWS with junctures of narrow and broad discretion with respect to climate change.

I. Identifying Species

Section 4(a)(1)⁴⁹ of the ESA provides a definitive mandate to the FWS to consider the effects of greenhouse gas emissions and climate change on species. Like the EPA under the Clean Air Act, the FWS seems stuck with the challenge of identifying which species are endangered or threatened partly or primarily because of climate change. The FWS likely has considerable play in terms of matching different climate change threat scenarios with the ESA's endangered-threatened-not threatened matrix. Some species may present such compel-

for habitat and food, or conflict as predator and prey. There are also a number of examples in which conservation measures taken to benefit a species protected under the ESA pose adverse effects for other species protected under the ESA or for other species generally. See William W. Kinsey, *Zalaphus (Sea Lion) and Oncorhynchus (Salmon/Steelhead): Protected Predator Versus Protected Prey*, 22 NAT. RESOURCES & ENV'T 36 (Fall 2007) (providing a detailed case study of such a conflict in its legal context).

49. Requiring the agency to "determine whether any species is an endangered species or a threatened species because of any of the following factors:
(A) the present or threatened destruction, modification, or curtailment of its habitat or range;
(B) overutilization for commercial, recreational, scientific, or educational purposes;
(C) disease or predation;
(D) the inadequacy of existing regulatory mechanisms;
(E) other natural or manmade factors affecting its continued existence."

16 U.S.C. §1533(a)(1), ELR STAT. ESA §4(a)(1). The statute also requires that the FWS "shall make determinations required by subsection (a)(1) of this section solely on the basis of the best scientific and commercial data available to him after conducting a review of the status of the species." *Id.* §1533(b)(1)(a). For a discussion of the "best scientific data available" standard, see *infra* Part IV.E.

47. *Id.* §1531(b).

48. NATIONAL RESEARCH COUNCIL, SCIENCE AND THE ENDANGERED SPECIES ACT 111-23 (1995). Obviously, species naturally compete with one another, such as

ling cases of climate change threat that even aggressive use of discretion could not support a decision not to list, but many will present more ambiguous scenarios.

Another source of discretion in the listing function rests in §4(d).⁵⁰ When animal species are listed as endangered, the “take” prohibition of §9 applies automatically and fully, leaving less discretion to the FWS as to how to regulate activities that might cause take of the species. By contrast, under §4(d) the FWS has the discretion to prescribe the level of take protection afforded species listed as threatened.⁵¹ This option may allow the FWS to identify and regulate the specific effects of human adaptation to climate change that pose significant obstacles to the survival and recovery of a species, whereas broad, dispersed actions such as greenhouse gas emissions could be entirely excluded from regulation. Of course, the success of this strategy depends on a scientifically credible basis for designating the species as threatened.

2. Designating Critical Habitat

Section 4(a) of the ESA also requires that, “to the maximum extent prudent and determinable [the FWS] shall, concurrently with making a determination under paragraph (1) that a species is an endangered species or a threatened species, designate any habitat of such species which is then considered to be critical habitat.”⁵² To the extent downscale models can predict with reasonable certainty where a species might successfully migrate to adapt to changes brought about by climate change, a credible interpretation of the critical habitat provisions would allow the agency to “reserve” those areas through critical habitat designations. This would provide an effective tool to force human adaptation measures to minimize effects in such areas, thus securing a greater chance for the species to withstand climate change transitions and establish a viable population in its new ecological home.

On the other hand, several provisions also open the door to a more passive approach. For example, the agency could justifiably conclude that designation of critical habitat for species doomed by climate change fails to meet the “prudent” standard, as the designation will provide no benefit.⁵³ Indeed,

50. “Whenever any species is listed as a threatened species pursuant to subsection (c) of this section, the Secretary shall issue such regulations as he deems necessary and advisable to provide for the conservation of such species. The Secretary may by regulation prohibit with respect to any threatened species any act prohibited under §1538(a)(1) of this title, in the case of fish or wildlife, or §1538(a)(2) of this title, in the case of plants, with respect to endangered species . . .” 16 U.S.C. §1533(d), ELR STAT. ESA §4(d).

51. See Madeline June Kass, *Threatened Extinction of Plain Vanilla 4(d) Rules*, 16 NAT. RESOURCES & ENV'T 78, 79-81.

52. 16 U.S.C. §1533(a)(3)(A), ELR STAT. ESA §4(a)(3)(A). The statute defines critical habitat as:

- (i) the specific areas within the geographical area occupied by the species, at the time it is listed in accordance with the provisions of section 1533 of this title, on which are found those physical or biological features (I) essential to the conservation of the species and (II) which may require special management considerations or protection; and
- (ii) specific areas outside the geographical area occupied by the species at the time it is listed in accordance with the provisions of section 1533 of this title, upon a determination by the [FWS] that such areas are essential for the conservation of the species. *Id.* §1532(5)(A).

53. The statute does not define “prudent.” According to FWS regulations, designation of critical habitat is not prudent if it “would not be beneficial to the

for a doomed species arguably there is no habitat “essential to the conservation of the species,” as conservation of the species is not possible.

3. Formulating Recovery Plans

Section 4(f) of the ESA requires the FWS to “develop and implement plans (. . . ‘recovery plans’) for the conservation and survival of endangered species and threatened species listed pursuant to this section, unless [FWS] finds that such a plan will not promote the conservation of the species.”⁵⁴ The agency must also “give priority to those endangered species or threatened species, without regard to taxonomic classification, that are most likely to benefit from such plans, particularly those species that are, or may be, in conflict with construction, development projects, or other forms of economic activity.”⁵⁵ Arguably, this prioritization mandate speaks directly to climate-threatened species which, perhaps only with the help of the ESA, could survive the transition to stabilized climate regimes. On the other hand, one striking aspect of the recovery plan program is that it specifically relieves the FWS of any duty to prepare a plan if the agency finds that “a plan will not promote the conservation of the species.”⁵⁶ For a species essentially doomed by climate change through stranding or other extreme effects, the FWS could justifiably reach such a finding and avoid expending agency resources developing a plan for the species. For other species, recovery plans can help motivate and guide state, local, and private collaborative efforts to respond to the effects of climate change on those species.⁵⁷ Through recovery plans, the FWS may also be able to influence how climate change effects are viewed for species in the regulatory programs of the ESA—the take prohibition, the jeopardy consultation program, and the HCP permit program.

B. Section 9: The Take Prohibition

Section 9(a)(1) of the ESA instructs that, except as provided elsewhere in the ESA,⁵⁸ “with respect to any endangered species of fish or wildlife . . . it is unlawful for any person subject to the jurisdiction of the United States to . . . take any such species within the United States or the territorial sea of the United States.”⁵⁹ The prohibition applies “within the United States,” on public and private lands alike. And it applies to acts that “harass, harm, pursue, hunt, shoot, wound, kill,

species.” 50 C.F.R. §424.12(a)(1)(ii) (2006). No phenomenon operating on the scale of climate change has been the subject of agency decision under this standard.

54. 16 U.S.C. §1533(f)(1), ELR STAT. ESA §4(f)(1).

55. *Id.* §1533(f)(1)(A).

56. *Id.* §1533(f)(1).

57. See, e.g., Proposed Recovery Plan for the Evolutionarily Significant Unit (ESU) of the Puget Sound Chinook Salmon, 70 Fed. Reg. 76445, 76447 (proposed Dec. 27, 2005) (stating that integration of climate change effects in the recovery plan can “support recovery actions to protect and restore local habitat conditions as a buffer against larger-scale changes”).

58. The incidental take permitting program is one such exception. See *infra* Part IV.D.1.

59. 16 U.S.C. §1538(a)(1), (a)(1)(B), ELR STAT. ESA §9(a)(1), (a)(1)(B).

trap, capture, or collect” the protected species.⁶⁰ Enforcement of the take prohibition in discrete, identifiable actions that make it less likely a climate-threatened species will survive through the climate change transition could help ensure that human adaptation measures do not disregard the interests of imperiled species.

C. Section 7: Jeopardy Consultations

Section 7(a)(2) of the ESA provides for jeopardy consultations.⁶¹ The statute builds an elaborate procedure for carrying out these consultations under which the agency proposing the action must “consult” with the FWS through a series of steps designed to predict the impact of the action on listed species, with the ultimate product being a “biological opinion” from the FWS “setting forth the [FWS] opinion, and a summary of the information on which the opinion is based, detailing how the agency action affects the species or its critical habitat.”⁶² FWS has issued no official guidance on climate change with respect to the §7 jeopardy consultation program, but in *Natural Resources Defense Council v. Kempthorne*,⁶³ the court evidenced little tolerance⁶⁴ for the FWS’ failure to consider climate change in a consultation report.⁶⁵ The effect of *Kempthorne* is to require that where downscale modeling and field observations indicate it is “reasonably certain” that climate change will lead to changes in ecological conditions to the detriment of a protected species, the FWS *must* engage in a consultation to determine whether the project, taking those changes into account as cumulative effects, is “reasonably expected” to jeopardize the species. The FWS may in many cases point to the difficulty of downscaling climate change

effects to support a no jeopardy finding, but that does not absolve it of the duty to conduct the analysis.

D. Section 10: Incidental Take Permits and Experimental Populations

I. Adaptive Management Provisions of Incidental Take Permits

Section 10(a) of the ESA establishes a procedure under which the FWS may approve take of listed species otherwise prohibited under §9 for actions that are incidental to otherwise lawful actions and not subject to the §7 jeopardy consultation process.⁶⁶ To seek approval, an applicant must submit a habitat conservation plan (HCP), describing the project and its impact on the species.⁶⁷ The agency must then find that the HCP ensures that “the applicant will, to the maximum extent practicable, minimize and mitigate the impacts of such taking” and that “the taking will not appreciably reduce the likelihood of the survival and recovery of the species in the wild.”⁶⁸ If the FWS took the great leap of characterizing greenhouse gas emissions as causing take of climate-threatened species under §9, the agency could assert that applicants must reduce or offset greenhouse gas emissions to satisfy this demand, using the “maximum extent practicable” standard to moderate what is expected.

Another wrinkle of the HCP program arises under the so-called No Surprises policy for HCP permits. Under this controversial process, a permittee is relieved of the need to address “unforeseen circumstances” but must agree to manage and respond to the effects of “changed circumstances” identified in the permit documents.⁶⁹ To the extent such changed circumstances are provided for in the HCP’s operating conservation program, the permittee must implement the appropriate measures in response to the changed circumstances.⁷⁰

The FWS has not directly addressed the issue of how climate change and greenhouse gas emissions play out under the unforeseen circumstances/changed circumstances

60. *Id.* §1532(19).

61. “Each Federal agency shall, in consultation with and with the assistance of the Secretary, insure that any action authorized, funded, or carried out by such agency (‘agency action’) is not likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of habitat of such species which is determined . . . to be critical . . .” *Id.* §1536(a)(2). The provision also requires that “[i]n fulfilling the requirements of this paragraph each agency shall use the best scientific and commercial data available.” *Id.* For discussion of the “best scientific data available” standard, see *infra* Part IV.E.

62. *Id.* §1536(b)(3)(A).

63. 506 F. Supp. 2d 322 (E.D. Cal. 2007).

64. *Id.* at 369-70.

[T]he climate change issue was not meaningfully discussed in the biological opinion, making it impossible to determine whether the information was rationally discounted because of its inconclusive nature, or arbitrarily ignored The BiOp does not gauge the potential effect of various climate change scenarios on Delta hydrology. Assuming, *arguendo*, a lawful adaptive management approach, there is no discussion when and how climate change impacts will be addressed, whether existing take limits will remain, and the probable impacts on CVP-SWP operations. FWS acted arbitrarily and capriciously by failing to address the issue of climate change in the BiOp.

65. Reminiscent of EPA’s position in *Massachusetts v. EPA*, the FWS attempted to defend its failure to consider climate change at all, as the court summarized:

Defendants and Defendant-Intervenors respond by arguing (1) that the evidence before FWS at the time the BiOp was issued was inconclusive about the impacts of climate change; and (2) that, far from ignoring climate change, the issue is built into the BiOp’s analysis through the use of [saline water condition data] as a proxy for the location and distribution of Delta smelt.

Id. at 369.

66. See generally Robert D. Thornton, *Habitat Conservation Plans: Frayed Safety Nets or Creative Partnerships?*, 16 NAT. RESOURCES & ENV’T 94 (2001) (providing a concise, comprehensive overview of the structure, history, and policy of the HCP program). Actions that must track through the jeopardy consultation process can receive incidental take authorization in connection with the consultation pursuant to “reasonable and prudent measures that [FWS] considers necessary and appropriate to minimize such impact.” See 16 U.S.C. §1536(b)(4)(ii), ELR STAT. ESA §7(b)(4)(ii).

67. 16 U.S.C. §1539(a)(2)(A), ELR STAT. ESA §10(a)(2)(A).

68. *Id.* §1539(a)(2)(B)(ii), (iv).

69. See Habitat Conservation Plan Assurances (“No Surprises”) Rule, 63 Fed. Reg. 8859 (Feb. 23, 1998) (codified at 50 C.F.R. §§17.22, 17.32 (2006)). Under No Surprises, the FWS provides participants in an approved, properly implemented HCP the assurance that the Service will not impose additional mitigation requirements in the event that unforeseen circumstances occur over time that negatively impact the species. Unforeseen circumstances means changes in circumstances affecting a species or geographic area covered by an HCP that could not reasonably have been anticipated by plan developers and the Service at the time of the plan’s negotiation and development, and that result in a substantial and adverse change in the status of the covered species. See 50 C.F.R. §17.22(b)(5)(iii); see 50 C.F.R. §17.3.

70. 50 C.F.R. §17.22(b)(5)(i).

dichotomy. In the preamble to the rule as adopted in 1998, however, FWS responded to comments raising the topic.⁷¹ By incorporating a “reasonably foreseeable” standard, the FWS opened the door to the same kind of framework the *Kempthorne* court adopted for consultations under §7(a)(2): the FWS *must* consider climate change when evaluating an HCP, and from there any reasonably foreseeable ecological effects should be taken into account under the changed circumstances category, not the unforeseen circumstances category.

2. Assisted Migration Through Experimental Populations

The agency appears to have the authority to engage in assisted migration: Section 10(j) of the ESA allows the FWS to transport and release members of an endangered or threatened species to areas outside its current range as an “experimental population,” if the agency “determines that such release will further the conservation of such species.”⁷² A species losing habitat within its current and historic range because of climate change effects, but which at the same time is gaining habitat outside its historic range because of climate change, appears to fit these conditions, though there is no instance in which the FWS (or the National Marine Fisheries Service (NMFS)) has exercised this option with respect to a species listed under the ESA because of threats resulting from climate change.

E. The Ubiquitous “Best Science” Standard

The ESA’s answer to its necessary dependence on scientific information is the so-called best scientific data available standard, which permeates several of the statute’s major programs. Although the ESA leaves this “best scientific data available” standard of evidentiary quality undefined,⁷³ the standard acknowledges that the FWS is the expert science agency when it comes to defining threats to species and

71. Arguing that “only reasonably foreseeable changes in circumstances need to be addressed in an HCP. Moreover, these circumstances are likely to vary from HCP to HCP given the ever changing mix of species and affected habitats covered by a given plan . . . [U]nforeseen circumstances will only include events that could not reasonably have been anticipated. *All reasonably foreseeable circumstances, including natural catastrophes that normally occur in the area, should be addressed in the HCP.*” Habitat Conservation Plan Assurances (“No Surprises”) Rule, 63 Fed. Reg. 8859, 8863 (Feb. 23, 1998) (codified at 50 C.F.R. §§17.22, 17.32 (2006)).

72. 16 U.S.C. §1539(j)(2)(A), ELR STAT. ESA §10(j)(2)(A). Authorization for agency or organization relocating the population is obtained under §10(a)(1)(A) of the ESA, which provides for the FWS to grant permits “to enhance the propagation or survival of the affected species, including, but not limited to, acts necessary for the establishment and maintenance of experimental populations.” *Id.* §1539(a)(1)(A). The “but not limited to” language of this permitting provision suggests other potential applications may arise in connection with enhancing the survival of climate-threatened species.

73. Although several other environmental statutes use the phrase or something close to it, all leave it undefined. See Michael J. Brennan et al., *Square Pegs and Round Holes: Application of the “Best Scientific Data Available” Standard in the Endangered Species Act*, 16 TUL. ENVTL. L.J. 387, 402 n.81 (2003) (collecting statutes); Holly Doremus, *Listing Decisions Under the Endangered Species Act: Why Better Science Isn’t Always Better Policy*, 75 WASH. U. L.Q. 1029, 1034 n.9 (1997) (collecting statutes).

the measures needed for conservation of species.⁷⁴ Hence, while the FWS is not the nation’s expert science agency on the physical causes and consequences of climate change, it should be responsible for being the repository of knowledge and research on the biological effects of climate change on species. After *Massachusetts v. EPA*, the FWS, like any other regulatory agency, would be hard-pressed to hide behind “scientific uncertainty” to take the position that species are not threatened by climate change and thus the ESA triggers no agency responsibilities.

IV. Using the ESA to Carry Species to the No-Analog Future

The ESA will be best served if the FWS adopts a cautious optimism that recognizes the limits of the ESA but keeps it relevant. The job of the ESA is to help as many species as is reasonably possible get there with us—to serve as their bridge across the climate change transition into the no-analog future. Going for the jugular by regulating greenhouse gas emissions is *not* where the ESA can be of most help to imperiled species. There is little to be gained for the FWS or for climate-threatened species by having the agency go down this road. The agency has no explicit authority to do so, does not have the expertise to do so, and would risk undermining the political viability of the ESA by doing so. Rather, the FWS can provide expert assistance to the agencies more appropriately charged with regulating greenhouse gas emissions, such as the EPA, by advising them about the effects of climate change on species.⁷⁵

This brings us to the six policy choice pressure points raised in Part III. To implement the proposed bridge policy, I suggest the FWS approach the policy choices as follows:

Identifying Climate-Threatened Species. The agency’s objective should be to use the ESA to define and monitor the ecological reshuffling effects of climate change. The agency should aggressively identify species threatened by climate change. Early identification of species threatened by climate change and of the critical habitat they require for survival through climate change transition will help in defining the extent of ecological reshuffling and guide human adaptation programs. Early identification also will provide the basis for listing species as threatened, which provides more flexibility in terms of regulatory effects and recovery efforts.

Regulating Greenhouse Gas Emissions. The agency’s objective should be to not squander agency resources in a futile effort for which the ESA is simply not equipped; specifically, the FWS should not attempt to use its §7 and §9 regulatory programs in an effort to regulate greenhouse gas emissions.

74. See, e.g., *Loggerhead Turtle v. County Council*, 120 F. Supp. 2d 1005, 1023, 30 ELR 20621 (M.D. Fla. 2000) (“Where there is a substantial volume of research, data, and comments, the agency exercises its expertise to make a reasonable decision based on all of the data and information”).

75. For example, federal agencies required to prepare environmental impact statements under the National Environmental Policy Act in connection with projects they carry out, fund, or authorize must “[o]btain the comments of any Federal agency which has . . . special expertise with respect to any environmental impact involved.” 40 C.F.R. §1503.1(a)(1) (2007).

As for the take prohibition, listing species as threatened early will allow the agency to remove greenhouse gas emissions from consideration under §9 while keeping the take prohibition active with respect to other contributing threats. If an animal species is in endangered status—meaning §9 necessarily applies in full force—difficulties in establishing the burden of proof would support the exercise of prosecutorial discretion not to attempt to regulate greenhouse gas emissions. Under the §7 consultation program, project-specific jeopardy analyses should promote other federal agencies to consider ways of reducing greenhouse gas emissions, but should not lead to jeopardy findings.

Regulating Non-Climate Effects to Protect Climate-Threatened Species. The agency's objective should be to support the bridge function of the ESA and reduce the adverse impacts on species from human adaptation to climate change. Where a species weakened by climate change is also threatened by other anthropogenic sources, such as loss of habitat, and where the agency reasonably believes addressing the non-climate threats will help carry the species through the climate change transition, the agency should use §7 and §9 regulatory powers to the extent necessary. In particular, where human adaptation to climate change exacerbates threats to a species, the agency should aggressively employ its regulatory presence through §7 consultations and enforcement of the §9 take prohibition. The agency also must monitor the impacts of human adaptation on species that face no direct or secondary ecological threat from climate change and employ §7 and §9 powers accordingly. Clearly, however, innovative approaches will be needed, such as market-based incentives and regional planning efforts, to facilitate human adaptation measures as much as species can tolerate.

Designing Conservation and Recovery Initiatives. The agency's objective should be to get as many species with a long-term chance at survival and recovery through the transition to the other side of climate change as is realistically possible. The agency must initially differentiate between species that are unlikely to survive climate change under any circumstances and those that are likely to benefit from assistance in their home ecosystems. Agency resources should not be wasted in developing recovery plans or other conservation measures for non-recoverable species. For species that appear likely to withstand climate change under the ESA's protection, recovery plans should identify the expected intensity of assistance required to manage or respond to primary and secondary ecological effects. Conservation measures for species that require intensive assistance, particularly in §10 HCPs, should be designed around adaptive management techniques that involve ample monitoring and considerable room for adjustment of management actions in order to account for the possibility that continuing climate change will alter the effectiveness of those actions.

Species Trade Offs. The agency's objective should be to not contribute to ecological reshuffling through its species management efforts. Where the measures described above are complicated by species trade offs—when helping one may harm another—the agency should adopt an ecosystem-based

management approach modeled on promoting long-term species diversity and ecosystem multifunctionality.⁷⁶ When ecological models do not point to a particular management action to serve those goals, general default priorities, such as assisting top-level predators and resisting induced invasions, may help mediate between species in conflict.

Dealing With the Doomed. The agency's objective should be to avoid accelerating the decline of species who stand no chance of surviving climate change, but not to take measures on their behalf which could pose threats to other species. Under this standard, assisted migration should be employed for a such a species only if the FWS has assembled conclusive evidence of the extinction threat, a quantitative model showing the likely success of assisted migration for the species with de minimis anticipated effects on other species, and an assisted migration management plan including long-term monitoring and active adaptive management.⁷⁷ Human adaptation measures that could accelerate the extinction of the species, which could cascade to affect other species, should be regulated under §7 and §9 as for any other listed species.

V. Conclusion

The “pit-bull” has met its match, but sometimes old dogs can learn new tricks. It is sobering to find that ecological reshuffling is inevitable and to realize that the ESA can't do anything about it. Yet this is precisely what leads me to my proposal that the statute be employed in a more focused manner in the decades leading to our no-analog future. The statute provides the flexibility to proactively identify the threat of climate change and focus on helping those species that can be helped.

My proposal is unlikely to satisfy strong supporters of the ESA or its strong critics. The former are likely to believe the “pit bull” has found its ultimate calling in climate change. If there is any statute that can wrestle greenhouse gas emissions to the ground (i.e., to 1990 levels), they might think, it is the ESA and its unrelenting biocentric mission, whereas my proposal keeps the statute at bay. The latter will object to my proposal's aggressive call for species listings, which is based on wholesale adoption of the premise of human-induced climate change, and to its continued use of the statute as a regulatory weapon against habitat loss and other non-climate threats to climate-threatened species.

Both views doom the ESA. Of course, that may be the intent and hope of the statute's critics, with or without climate change. But adopting the strong version of the ESA in the climate change era, in which the FWS charges hard after greenhouse gas emissions, would play right into the critics'

76. Maximizing biodiversity will assist the ecosystems of the future, whatever pattern they assume, in establishing and maintaining resilience. See Andy Hector & Robert Bagchi, *Biodiversity and Ecosystem Multifunctionality*, 448 NATURE 188, 188 (2007).

77. This approach is what Jason McLachlan et al. refer to as “constrained assisted migration,” as opposed to aggressive use of assisted migration at one extreme and total prohibition of the practice at the other extreme. Jason S. McLachlan et al., *A Framework for Debate of Assisted Migration in an Era of Climate Change*, 21 CONSERVATION BIOLOGY 297, 299 (2007).

hands—the statute is neither designed to regulate something so ubiquitous as greenhouse gas emissions nor so sacrosanct as to survive the political battle attempting to do so would ignite. Support for the ESA, therefore, must be tempered by practical and political reality if the ESA itself is to survive climate change. The trade off I propose—standing back from greenhouse gas emissions but staying fully engaged in regulating non-climate threats, particularly those stemming from human adaptation to climate change—is the plan the ESA needs in order to build the bridge for species into the no-analog future.

VI. Epilogue

In May 2008, after the original version of this article was published in the *Boston University Law Review*, the FWS promulgated a final rule listing the polar bear as threatened based on factors that included the impacts of climate change on Arctic sea ice.⁷⁸ Secretary of the Interior Dirk Kempthorne stressed at the time that the listing would not provide a basis for using the ESA to regulate greenhouse gas (GHG) emission sources.⁷⁹ The FWS also issued interim and final §4(d) rules for the polar bear, exempting from §9 take prohibitions any activity already exempt or authorized under the Marine Mammal Protection Act and, for any activity outside of Alaska, also exempting all takes incidental to a lawful purpose.⁸⁰ The unspoken purpose of the latter approach undoubtedly was to cut off claims that GHG emissions sources outside of Alaska are causing unauthorized take of the polar bear. In tandem with that, the Department of the Interior also issued a memorandum explaining it will not consider GHG emissions in consultations about the polar bear or other species listed due to climate threats.⁸¹

The FWS and NMFS later followed up on that position by promulgating new §7(a)(2) consultation regulations designed to, among other things, preclude consideration of greenhouse emissions in consultations. Culminating one of the most controversial rulemakings in the history of ESA implementation, in December 2008, the FWS and NMFS promulgated final rules revising various features of the §7 consultation regulations. The changes, too extensive to cover and assess in detail here, fall into three categories: (1) revised and new definitions for the causation and effects analyses; (2) revisions to applicability designed to preclude consideration of GHG emissions in consultations; and (3) streamlined consultations through a shift in decision authority to action agencies. Some of the changes merely codify existing conditions, such as a new

provision limiting consultations to discretionary actions. But some have the potential to radically alter consultation practice. Some significant changes include:

- Indirect effects are limited to those effects that occur later in time for which the proposed action is an “essential cause.”⁸²
- If an effect will occur whether or not the proposed action takes place, it is not an indirect effect.⁸³
- Indirect effects must be reasonably likely to occur based on “clear and substantial information.”⁸⁴
- For actions not anticipated to cause take, no consultation is necessary if the effects are manifested through “global processes” that cannot be reliably predicted or measured, have an insignificant impact, or pose only a remote risk.⁸⁵
- For actions not anticipated to cause take, no consultation is necessary if the effects are not capable of being measured in a way that permits “meaningful evaluation.”⁸⁶
- Action agencies will determine for themselves whether, under these new standards, formal consultation is necessary.

The rule attracted considerable controversy: tens of thousands of comments were filed on the proposal, and litigation was filed immediately to challenge the final regulations. Many environmental strategists outlined ways the Obama Administration could, through executive action or in concert with Congress, swiftly nullify the rule. In March 2009 President Obama ordered FWS and NMFS to review the rules and authorized other federal agencies “to follow the prior longstanding consultation and concurrence practices.”⁸⁷ Soon thereafter Congress passed legislation allowing the agencies to withdraw the polar bear §4(d) rule and the consultation rule with no notice and comment procedures,⁸⁸ which the agencies did for the consultation rule effective May 4, 2009.⁸⁹

Other than raise a fuss about the Bush Administration consultation rule, however, neither Congress nor the Obama Administration has shown any interest in dragging the ESA into the war on greenhouse gas emissions. Nothing in the legislation allowing the agencies to overturn the rules or in the agencies’ statement accompanying the decision to overturn the consultation rule so much as mentions climate change or greenhouse gas emissions. Indeed, the only indications suggest environmental groups will not like the

78. See 73 Fed. Reg. 28212 (May 15, 2008).

79. U.S. Dept. of the Interior, News Release, Secretary Kempthorne Announces Decision to Protect Polar Bears Under Endangered Species Act (May 14, 2008).

80. See 73 Fed. Reg. 28306 (May 15, 2008) (interim rule); 73 Fed. Reg. 76249 (Dec. 16, 2008) (final rule).

81. See Solicitor, U.S. Dept. of the Interior, Guidance on the Applicability of the Endangered Species Act’s Consultation Requirements to Proposed Actions Involving the Emission of Greenhouse Gases (Oct. 3, 2008); U.S. Geological Survey, The Challenges of Linking Carbon Emissions, Atmospheric Greenhouse Gas Emissions, Global Warming, and Consequential Impacts (May 14, 2008).

82. 50 C.F.R. §402.02 (2002).

83. *Id.*

84. *Id.*

85. *Id.* §402.03(b)(2).

86. *Id.* §402.03(b)(3)(i).

87. See Office of the Press Secretary, The White House, Memorandum for the Heads of Executive Departments and Agencies Re: The Endangered Species Act (Mar. 3, 2009).

88. 2009 Omnibus Appropriations Act, Pub. L. No. 111-8, Division E, Title IV, §429 (2009).

89. See Interagency Cooperation Under the Endangered Species Act, 74 Fed. Reg. 20421 (May 4, 2009).

Obama Administration's position much more than the Bush Administration's: David Hayes, recently confirmed Deputy Secretary of the Department of the Interior, told senators during his confirmation hearing that the endangered species law is ill-suited for addressing greenhouse gas emissions; Tom Strickland, the new Assistant Secretary for Fish, Wildlife and Parks overseeing the ESA, said the same at his hearing; and, more directly to the point, FWS spokesman Josh Winchell said in February 2009 that "we have zero legislative authority to regulate carbon emissions. That's just not what we do. With the polar bear, the science definitely pointed to climate change, but that doesn't all of a sudden give us the authority to address the underlying cause, which is carbon emissions."⁹⁰ Putting those words into action, on May 8, 2009, Interior Secretary Salazar announced the agency's decision *not* to rescind the polar bear §4(d) rule, proclaiming that "the Endangered Species Act is not the proper mechanism for controlling our nation's carbon emissions."⁹¹

On the other hand, the FWS and NMFS may be reversing course from the Bush Administration on identifying climate change as a basis for listing other species. Indeed, in the most fitting update for this article, on February 12, 2009, the Center for Biological Diversity (represented by Earthjustice) and the FWS settled litigation over the pika so as to require the agency to assess whether the pika may warrant protection under the ESA by May 2009 and, if so, determine whether the pika will be designated as an endangered species nine months later.⁹² On May 7, 2009, the agency provided notice that it had determined listing of the pika may be warranted and that it will initiate a status review to determine whether the species should be listed.⁹³ Perhaps the pika is not toast after all.

90. Greenwire, *Endangered Species: Some See EPA's Climate Proposal Prodding Interior on ESA* (Apr. 23, 2009), available at <http://www.eenews.net/public/Greenwire/print/2009/04/23/4>; see also Alan Kovski, *Deputy Secretary, Nominee Hayes Agrees Endangered Species Act Poor Vehicle for Controlling GHG Emissions at Confirmation Hearing*, 40 *Env't Rep.* (BNA) 622 (2009).

91. News Release, U.S. Fish & Wildlife Service, *Salazar Retains Conservation Rule for Polar Bears, Underlines Need for Comprehensive Energy and Climate Legislation* (May 8, 2009), available at <http://www.fws.gov/news/NewsReleases/showNews.cfm?newsId=20FB90B6-A188-DB01-04788E0892D91701>.

92. See Center for Biological Diversity, *Press Release, Federal Agency Agrees to Consider Endangered Species Protection for American Pika: Global Warming Driving Alpine Rock Rabbit Toward Extinction* (Feb. 12, 2009), available at http://www.biologicaldiversity.org/news/press_releases/2009/pika-02-12-2009.html (last visited May 18, 2009).

93. See *Endangered and Threatened Wildlife and Plants; 90-Day Finding on a Petition to List the American Pika as Threatened or Endangered With Critical Habitat*, 74 *Fed. Reg.* 21301 (May 7, 2009).

Comment on Climate Change and the Endangered Species Act: Building Bridges to the No-Analog Future

by Donald C. Baur

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Over the 35 years of its existence, the Endangered Species Act (ESA)¹ has given rise to a unique lexicon of buzzwords, catch-phrases, and terms-of-art. The depth and creativity of this vocabulary is not surprising, given the complex nature of the ESA's requirements and the pervasive effect they have had on wildlife conservation and the management and use of natural resources throughout the world.

The ESA, we have heard time and time again, is "the pit bull of environmental laws." Depending on the commentator's perspective, the "pit bull" needs to be either "defanged" and sent to "obedience school" or "unleashed" and trained to go for the "jugular vein" of resource development activities. The ESA is regarded by some as a "safety net" for species in the "intensive care unit" and by others as a place where species go to "check in but never check out." Nonfederal landowners entering into contractual habitat conservation plans are entitled to "no surprises" commitments from the federal government, just as landowners seeking to do good things for listed species without fear of regulatory penalties can obtain "safe harbor." Secretary Babbitt had his "five-point plan" for landowner incentives, while Secretary Norton sought to advance "the four C's", and Secretary Kempthorne lauded the "cooperative conservation" approach to ESA implementation.

In his article *Climate Change and the Endangered Species Act: Building Bridges to the No-Analog Future*, Prof. J.B. Ruhl has added another entry to the ESA edition of *Words and Phrases*. Ruhl begins his excellent and timely article about the effects of global warming on listed species and how the

ESA does, and does not, address the problem by informing the reader: "The pika is toast."²

The pika, Ruhl explains, is a "tiny rabbit-like species [that] has the unfortunate trait of being remarkably well-adapted to the cold, high-altitude, montane habitat of the Sierra Nevada and Rocky Mountain ranges in the North American Great Basin."³ The pika is confronting a threat to its survival because global warming is reducing its available habitat. The species has, as a result, become symbolic of the fate of many other species potentially affected by global warming caused by greenhouse gas emissions (GHG). If the pika is "toast" because of climate change, so are many other species.⁴

As Ruhl describes the dilemma, many species already are experiencing, or will soon encounter, three levels of adverse effects related to climate change. The most significant threat is from primary ecological effects:

[T]he ecological conditions it [the pika and other species dependent on colder climate habitat] needs for survival do not exist below a particular temperature regime. They do not have the option of relocating once the temperature regime lifts above the peaks [or alters the habitat of other species] which they now call home. Rather, the pika and other species with specific ecological needs and limited migration capacity are likely to face significant threats from this kind of first order change in ecological conditions. Threats in this

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1. 16 U.S.C. §§1531-1544, ELR STAT. ESA §§2-18.

2. J.B. Ruhl, *Climate Change and the Endangered Species Act: Building Bridges to the No Analog Future*, 39 ELR (ENVTL. L. & POL'Y ANN. REV.) 10735 (Aug. 2009) (a longer version of this Article was originally published at 88 B.U. L. REV. 1 (2008)).

3. *Id.*

4. The other species most frequently mentioned as being potentially at risk from climate change are: arctic fox, Ashy storm petrel, bearded seal, bowhead whale, Cook Inlet beluga whale, Caribbean coral, Kittlitz's murrelet, Pacific walrus, penguins, polar bear, ribbon seal, ringed seal, spectacled eider, spotted seal, Steller's eider, and yellow-billed loon. The Center for Biological Diversity, a strong proponent of ESA listing of climate change-affected species, states: "Very few species will escape the burn of climate change. A landmark study surveying 20 percent of the Earth's land area offered a stark prediction: 35 percent of the species will be committed to extinction by the year 2050 if greenhouse gas emission trends continue." Center for Biological Diversity, Climate Law Institute, at http://www.biologicaldiversity.org/programs/climate-law_institute/index.html (last visited Feb. 2, 2009).

category will come from stranding, life-stage habitat loss, and altered biological events.⁵

Added to these first order threats are the secondary ecological effects of increased stress, successful adaptive migration, and opportunistic invasion, all of which add to the cumulative effect of “ecological disruption and species reshuffling.”⁶ Finally, the survival of these species will be further complicated by a third category of effects: human adaptation to an increasingly warmer planet, such as direct habitat conversion, degraded ecological conditions, and induced invasion.⁷

These problems create a clear need to bring climate-threatened species under “the protective wings” of the ESA,⁸ but the challenge is that the ESA has taken a species-specific approach that is effective only when dealing with straightforward causal connections between human-caused threats and species threats. What can the ESA do for the pika and similarly situated species, Ruhl asks, when the threat to survival comes from “all anthropogenic sources of greenhouse gases throughout the planet, from a small farm to a sprawling refinery” in ways that are “gradual and largely invisible to human perception.”⁹

Recognizing this problem inherent in the ESA, Ruhl provides a much-needed dissection of what the ESA can, and cannot, be expected to do. He effectively breaks the Act down into its key components, and looks at each through the lens of climate change effects on wildlife. For this purpose, Ruhl uses six key “policy choice pressure points” and relates ESA requirements to each one. In taking on this task, he correctly acknowledges that his proposal “is unlikely to satisfy strong supporters of the ESA” (because he disclaims any realistic ability of the Act to control GHG) “or its strong critics” (who will oppose Ruhl’s recommendation for extensive listings and use of the law to regulate habitat loss). As is often the case, by potentially alienating both ends of the ESA advocacy spectrum, Ruhl has come up with a commonsense, pragmatic prescription for deploying the action-forcing provisions of the ESA to their most effective use in assisting listed species in surviving the effects of climate change.

The first policy choice is for *identifying and listing climate-threatened species*. Ruhl calls for aggressive and early identification of species threatened by climate change, which brings the ESA’s listing and critical habitat designation requirements of §4 into play.¹⁰

It is hard to argue with this objective. Indeed, the listing process is already immersed in numerous petitions and law-

suits for the failure of the Services to list species affected by climate change, the most prominent of which was the May 14, 2008, decision to list the polar bear as a threatened species.¹¹ Pursuing Ruhl’s prescription of an aggressive listing program should not equate, however, with lowered standards or more permissive standards, merely because there may be a climate change-connection with a species’ status. The Services need to develop standardized guidelines and principles for reviewing listing prospects when climate change is a factor, instead of the largely ad hoc approach currently utilized. With such guiding principles in place, the Services should give priority to these species and make the appropriate decisions.¹²

The second policy choice involves *whether the ESA should be used to regulate GHG*. Ruhl is again correct in concluding that the agencies “should not attempt to use [their] §7 and §9 regulatory programs in an effort to regulate greenhouse gas emissions.” Section 7 sets forth the prohibition on jeopardizing the future existence of listed species or adversely modifying critical habitat as determined through consultation between the appropriate Service and the federal action agency,¹³ while section 9 prohibits the taking (i.e., killing, injuring, harassing or harming—causing death or injury by habitat modification) of endangered species.¹⁴ Other legal experts on the ESA agree with Ruhl in this regard. As John Kostyack and Dan Rohlf have observed, such a use of the ESA is difficult to square with any legal doctrine and is beyond the current scientific capability of the Services.¹⁵ A full-blown section 7 review of anything but a tiny subset of the federal actions implicated in such emissions would divert agency resources or require a vast expansion of budgets. Regulating GHG, Ruhl, Kostyack, and Rohlf agree, should be the task of other laws, including hoped-for new legislation.

On the subject of section 7 applicability, a word needs to be said about controversial recent amendments to the ESA regulations published in the waning days of the Bush

5. Ruhl, *supra* note 2, at 10738.

6. *Id.*

7. *Id.*

8. *Id.* at 10736.

9. *Id.* at 10736.

10. 16 U.S.C. §1533. ESA implementation is vested in two agencies. Terrestrial species are under the jurisdiction of the U.S. Fish and Wildlife Service (FWS) in the Department of the Interior while marine species are under the authority of the National Marine Fisheries Service (NMFS) in the Department of Commerce.

11. Determination of Threatened Status for the Polar Bear (*Ursus maritimus*) Throughout Its Range: Final Rule, 73 Fed. Reg. 28211, 28212 (May 15, 2008) (to be codified at 50 C.F.R. pt. 17). The listing decision was accompanied by an interim final rule published under §4(d) of the ESA to declare that the listing would not lead to any regulation of GHG and that the provisions of the Marine Mammal Protection Act were, according to FWS, more stringent than the ESA and would supersede the latter. Determination of Threatened Status for the Polar Bear, 73 Fed. Reg. at 28306.

12. On January 16, 2009, Interior Solicitor David Bernhardt issued a formal legal opinion that sets guiding legal principles for determining when a species may be threatened with extinction in “the foreseeable future,” which is a requirement for listing in §4(a)(1) of the Act. Memorandum from Interior Solicitor to Acting Director, FWS, Opinion M-37021 (Jan. 16, 2009).

13. 16 U.S.C. §1536(a)(2), ELR STAT. ESA §7.

14. *Id.* at §1538(a)(1) (extended by regulation to most threatened species).

15. John Kostyack & Dan Rohlf, *Conserving Endangered Species in an Era of Global Warming—A Conservative Perspective*, in DONALD C. BAUR & WILLIAM R. IRVIN, *ENDANGERED SPECIES ACT: LAW, POLICY, AND PERSPECTIVES* (2002) (2d ed. forthcoming). See also John Kostyack & Dan Rohlf, *Conserving Endangered Species in an Era of Global Warming*, 38 ELR 10203 (Apr. 2008), a set of detailed recommendations for implementation by the ESA to address climate change effects.

Administration.¹⁶ One feature of these regulations is to exempt impacts related to global processes, such as climate change, from section 7 consultation and the jeopardy/adverse modification prohibition. Along the same lines, the regulations exempt impacts that are “not capable of being measured or detected in a manner that permits meaningful evaluation.”¹⁷ Both of these changes are aimed at precluding the review of GHG and the effects of climate change on listed species from section 7 consultation. It is the case that virtually all such sources of GHG and related effects will not raise to a level that *triggers section 7 consultation*.¹⁸ Nonetheless, the legal validity and efficacy of precluding all consultation through an across-the-board rule change is questionable. Not surprisingly, environmental groups, as well as the state of California, challenged the rule as soon as it was published. A more appropriate approach to applying section 7 to GHG would be to extend the best available science under the pre-existing ESA rules to pending federal actions for purposes of determining whether a “may affect” situation exists. This use of the best available science would lead, before long, to established scientific precedent supporting fact-based determinations that GHG are not the basis for § 7(a)(2) application.

The third ESA policy area Ruhl identifies is *regulation of non-climate effects to protect climate-threatened species*. In this case, Ruhl urges aggressive use of section 7 and section 9 when doing so “will help carry the species through the climate change transition.”¹⁹ Under Ruhl’s strategy, this is the area where the regulatory consequences of climate change under the ESA are most likely to be felt by development activities. The reach of the ESA in this regard is currently being felt in the California Bay-Delta where reduced water supply arguably caused by climate change is, for example, creating an even greater threat for the already endangered Delta smelt, leading to severe section 7 limitations on California’s water supply systems.²⁰

Ruhl correctly observes that this policy area calls for “innovative approaches . . . such as market-based incentives and regional planning efforts. . . .”²¹ Finding creative ways to apply the ESA is especially important in this policy area because there often will be no relationship between the cause of underlying climate-related threats (e.g., these activities are not the source of GHG or the carbon fuel resources that generate them) and the development activity that will bear the regulatory burden. In the Delta smelt situation, for example, reduced flows attributed to climate change are not caused by water supply entities, yet they are the parties being affected by tough ESA restrictions on their water transfer activities in

effort to keep more water available for the fish. This absence of a direct cause and effect relationship makes enforcement more difficult, as a legal matter, and more subject to abuse. With no other ESA regulatory targets available, there may be a temptation to place too much of the burden on the parties whose activities impact the climate-change threatened species. Ruhl anticipates this problem by recognizing that, again, “innovative approaches will be needed, such as market-based incentives and regional planning efforts, to facilitate human adaptation measures as much as species can tolerate.”²² As the Delta smelt situation demonstrates, thus far it has been litigation, not creative and cooperative management response, that is driving the ESA response to climate change in this policy area.

The fourth policy area listed by Ruhl, *designing conservation and recovery initiatives*, falls within one of the most underused aspects of the ESA. Ruhl suggests that little time should be devoted to species that are unlikely to survive climate change; instead, such efforts ought to be focused on species that have a chance for survival. While this proposition has surface appeal, and may at some point in the future be a realistic avenue to pursue, right now and for the foreseeable future it is highly speculative to differentiate among climate change-threatened species in this manner. All species currently considered climate change-affected deserve meaningful recovery plans and conservation programs, and they should be developed on a priority basis.

Ruhl’s final two policy areas—*species trade offs* and *dealing with the doomed*—also anticipate continuing climate deterioration that will give rise to calamitous situations where some species will not survive and in which federal officials will have to make choices over which species to conserve when promoting the well-being of one cannot be achieved without harming the other. Ruhl argues for a utilitarian approach in these cases, trying to avoid the conflicts wherever possible, but when it is not, applying “default priorities, such as assisting top-level predators.”

Ruhl is correct to offer ideas on how to deal with these situations. The likelihood of them arising with frequency is, however, uncertain. Should these situations arise, they will present some of the hardest choices ever made under the ESA. Such a judgment call entails a deliberate decision by the federal government to allow a particular species to blink out. Such a decision is unlikely to be addressed by applying the preconceived or standardized default judgments. As a legal matter, coming to a conclusion about whether and how to allow a species to become extinct will almost certainly be the grist for intensive public debate, legal dispute, and possible application of the exemption process under the Endangered Species Committee.²³

The prescriptions for adapting ESA implementation to the climate change era offered by Ruhl make considerable sense, but are they practical and achievable? Is it possible to drag

16. Interagency Cooperation Under the Endangered Species Act, 73 Fed. Reg. 76272 (Dec. 1, 2008) (to be codified at 50 C.F.R. pt. 402.03(b)(3)).

17. *Id.*

18. Section 7 consultation is triggered by a “may affect” finding. 50 C.F.R. §402.14. Individual sources of GHG will be such small, incremental, and untraceable contributors to global warming as in impacting a particular species that it will be almost impossible for those effects of the federal action leading to those emissions to meet this threshold finding.

19. Ruhl, *supra* note 2, at 10743.

20. National Resources Defense Council v. Kempthorne, No. 1:05-CV-01207, 2008 WL 5054115 (E.D. Cal. 2009).

21. Ruhl, *supra* note 2, at 10743.

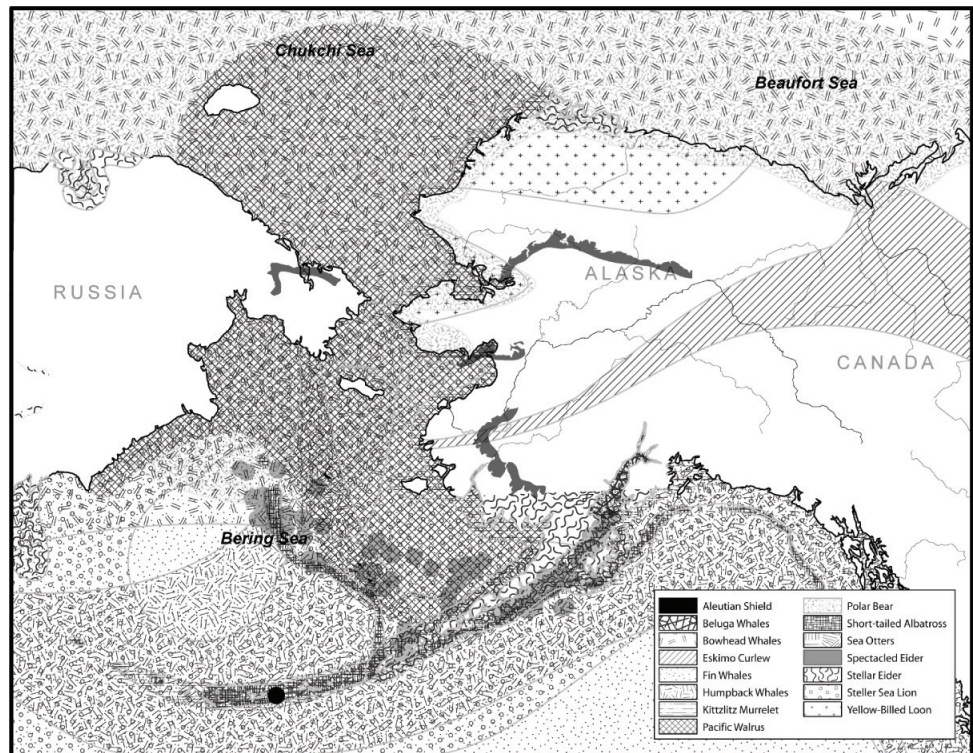
22. Ruhl, *supra* note 2, at 10743.

23. Section 7(e) establishes the Endangered Species Committee, often called the “God Squad,” to make determinations of when federal actions causing jeopardy should proceed despite their consequences for the listed species. 16 U.S.C. §1536(e), ELR STAT. ESA §7(e).

the massive federal bureaucracies charged with administering the ESA across Ruhl's "bridge to the no analog future"? Even if the agencies are willing and able to make this journey, will they do so when confronted by the shortage of funds and the unrelenting challenge of an extensive litigation docket, much of which is driven by time-consuming, staff-intensive violations of listing and critical habitat designation duties?

In *No Analog Future*, Ruhl lays out very helpful general guidelines for making climate change-related decisions under the ESA. The next step is to identify the specific administrative steps necessary to carry them out. The initial challenge is to reorient the thinking within the Services away from single-species approaches. Even in areas where a host of climate change ESA issues are already occurring, such as Alaska, the two Services continue to address listing, critical habitat designation, recovery planning, and action agency decisionmaking on a species-by-species basis. This pattern continues despite the overlapping habitat ranges and common global warming-caused threats that link many of the affected species together. As a map showing the ranges of species in Alaska that are listed, proposed for listing, candidates for listing, or subject to listing petitions demonstrates,²⁴ the entire offshore and coastal zone of Alaska is habitat for these species.

Because climate change effects on listed species will often be similar in nature and apply to identifiable geographical areas—the arctic, cold and high-altitude mountain ranges, watersheds in arid states, low-lying coastal areas subject to sea-level rise, etc.—the priority effort by the Services should be to apply ecosystem-based approaches to Ruhl's policy areas for: (1) listing; (2) recovery; and (3) regulation of non-climate effects, especially by means of the application of innovative measures. Precedent already exists for ecosystem-based listing from October 21, 2008, when the Bush Administration proposed to list simultaneously 48 species (mostly plants) in a specific location in Hawaii based on common habitat threats. The proposal also would designate 27,600 acres of critical habitat.²⁵ Ecosystem approaches also have been used to regulate activities in specific areas under combined legal authorities such as the ESA and Marine Mammal Protection Act: speedboat zones for manatee protection



in Florida,²⁶ and cruise ship restrictions in Alaska to protect humpback whales.²⁷ Clearly, the legal authority to undertake such approaches exists. The challenges for the Services, in the era of climate change and under new political leadership, are to take the initiative to use these legal authorities proactively and, in doing so, construct and cross the bridge Ruhl envisions.

24. Map prepared by R. Brezenoff & T. Robertson, Perkins Coie LLP, for presentations at *Permitting Strategies in Alaska*, sponsored by The Seminar Group (Jan. 17, 2008) and *Alaska Resources 2009*, sponsored by the Resource Development Council (Nov. 20, 2008).

25. Listing 48 Species on Kauai as Endangered and Designating Critical Habitat, 73 Fed. Reg. 62592 (Oct. 21, 2008) (to be codified at 50 C.F.R. pt. 17).

26. 50 C.F.R. §17.100–.108 (2008).

27. 36 C.F.R. §§13.1150–.1160 (2008).

Comment on Climate Change and the Endangered Species Act: Building Bridges to the No-Analog Future

by Wm. Robert Irvin

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With one of the more memorable opening lines in the annals of legal scholarship,¹ J.B. Ruhl has skillfully set forth the promise and perils of addressing global warming's impact on imperiled species under the Endangered Species Act (ESA).² But while the pika may indeed be toast, other species affected by climate change have a better chance of survival and, as Ruhl notes, the ESA can play a critical role in ensuring it.

A recent study has found that the effects of climate change already underway will be with us for a millennium or longer.³ With this grim forecast, the need to reduce greenhouse gas emissions, known as mitigation, is even more acute, in order to stave off even worse irreversible impacts of climate change. At the same time, the need to focus additional attention on adaptation—taking measures to assist wildlife survival in the face of climate change—is also greater, since the effects of climate change will be with us much longer than previously thought.

The ESA can be usefully employed to address both mitigation and adaptation. Starting with the determination whether to list a species as threatened or endangered, the ESA can generate and focus attention on the impacts of climate change on wildlife. While the pika may not garner much public attention, the prospect of polar bears becoming extinct due to melting of their sea ice habitat has brought widespread attention to the impacts of climate change and the need to reduce greenhouse gas pollution. As the list of species threatened by climate change inevitably grows, the imperative to address the causes of climate change, as well as to implement measures to help threatened wildlife survive, will grow concomitantly.

1. J.B. Ruhl, *Climate Change and the Endangered Species Act: Building Bridges to the No-Analog Future*, 39 ELR (ENVTL. L. & POL'Y ANN. REV.) 10735 (Aug. 2009) (a longer version of this Article was originally published at 88 B.U. L. REV. 1 (2008)).
2. 16 U.S.C. §§1531-1544, ELR STAT. ESA §§2-18.
3. Susan Solomon et al., *Irreversible Climate Change Due to Carbon Dioxide Emissions*, 106 PROC. NAT'L ACAD. SCI. 1704, 1704-05 (Feb. 10, 2009), available at <http://www.pnas.org/content/106/6/1704.full.pdf+html> (last visited May 18, 2009).

In addition to focusing attention on the problem of climate change, the ESA can also address climate change impacts on species and habitats. Ruhl argues, correctly, that the ESA can be usefully employed to address other threats to species imperiled by climate change. This principle, building resilience by reducing other stressors, is one of the key steps in helping wildlife survive climate change,⁴ or, as Ruhl puts it, to help wildlife successfully cross the bridge to the no-analog future, a world in which ecosystems have been reshuffled as a result of climate change. For example, using the ESA's prohibition of take under §9⁵ or interagency consultation provisions under §7⁶ to limit habitat destruction from causes other than climate change, particularly in areas that may be necessary for species migration in response to climate change, might be a key strategy for assisting wildlife adaptation to climate change.

Although Ruhl counsels against doing so, the ESA can also be used to address the impacts of new sources of greenhouse gas pollution. While there may be political or prudential concerns with using the ESA this way, there is no statutory bar to such considerations. Indeed, the absence of any such statutory limits led the Bush Administration, on its way out of office, to promulgate regulations pursuant to §4(d) of the ESA⁷ excluding emitters of greenhouse gas pollution outside the current range of polar bears from being considered as causing prohibited take of polar bears.⁸ Similarly, the Bush Administration promulgated regulations largely

4. Lara J. Hansen & Jennifer L. Biringer, *Building Resistance and Resilience to Climate Change*, in *BUYING TIME: A USER'S MANUAL FOR BUILDING RESISTANCE AND RESILIENCE TO CLIMATE CHANGE IN NATURAL SYSTEMS* 9-13 (Lara J. Hansen et al., eds., WWF 2003) available at http://assets.panda.org/downloads/buyingtime_unfe.pdf (last visited May 18, 2009).
5. 16 U.S.C. §1538(a)(1), ELR STAT. ESA §9(a)(1).
6. *Id.* §1536(a)(2).
7. *Id.* §1533(d).
8. Endangered and Threatened Wildlife and Plants; Special Rule for the Polar Bear, 73 Fed. Reg. 76249 (Dec. 16, 2008). President Obama's Interior Secretary, Ken Salazar, subsequently announced he was retaining this rule. See News Release, U.S. Department of the Interior, Salazar Retains Conservation Rule for Polar Bears (May 8, 2009) available at http://www.doi.gov/news/09_News_Releases/050809b.html.

barring consideration of greenhouse gas pollution through §7 consultation.⁹

Ruhl's admonition that the ESA may not be able to bear the political weight of being used to regulate greenhouse gas pollution should not be ignored. As so often happens, the ESA is in the position of being the final safety net, the law to be employed when all others have failed. If, for example, we had taken action sooner under the Clean Air Act¹⁰ to regulate greenhouse gas pollution, we may have mitigated the severity of climate change and reduced the likelihood that species would be listed and the ESA brought into play. Regrettably, that did not happen and once again the ESA is poised to be the scapegoat for other failures of political will.

While there is political risk to the ESA itself in using it to address greenhouse gas pollution, that alone should not preclude its use for that purpose. Though often characterized as a giant red light that halts development, the ESA is better described as a yellow caution light, compelling us to think about the consequences of our actions for imperiled species before proceeding. As such, the ESA can often lead to creative solutions that allow a project to go forward while also protecting species and habitat. To arbitrarily decide that the ESA should not be used to consider the impacts of greenhouse gas pollution on polar bears or other species imperiled by climate change is to ignore the law's potential to stimulate creative solutions to seemingly intractable problems. Moreover, just because today we may lack the scientific precision to identify a particular source of greenhouse gas pollution as jeopardizing the continued existence of a particular species, that may not be the case in the future. Accordingly, the ESA should be employed, albeit prudently, to address the causes and impacts of climate change. For example, barring its use for these purposes, as the Bush Administration regulations attempted to do, is to deprive ourselves of a valuable tool in the all-out effort needed to deal with climate change.

Striking one other note of caution, Ruhl suggests that scarce agency resources should not be wasted on developing recovery plans for species, like the pika, that are doomed by climate change. Similarly, he argues that extraordinary measures, such as assisted migration, for such species should be sparingly used, if at all. Clearly, if the ESA is an emergency room for imperiled species, a system of triage is necessary. Not every species can be saved. But the determination of which species are in fact doomed may change over time, as our knowledge of their needs and our efforts to address the threats to the species expand. Thus, in addition to Ruhl's admonition that we should not do anything to accelerate the decline of species, we should not be too quick to write off species as hopeless cases.

Ruhl is correct to argue that the ESA be used to identify the threat of climate change to species and habitats and to concentrate its resources on those species that can best be helped, in order to assist as many species as possible to pass through the long bottleneck of imperilment from climate change. His call for judicious use of the ESA should not, however, be misconstrued as an excuse for inaction. To the contrary, Ruhl has recognized the important role the ESA can and should play in addressing the greatest threat yet to biological diversity. Using the ESA to combat climate change certainly poses some risk to the continued viability of the ESA itself, but failing to use the ESA in this manner, when every tool available is needed to combat climate change, carries an even greater risk to the viability of our planet.

9. Interagency Cooperation Under the Endangered Species Act, 73 Fed. Reg. 76272 (Dec. 16, 2008). Defenders of Wildlife and other conservation organizations sued to overturn this regulation and the polar bear regulation noted above. Cf. Press Release, Defenders of Wildlife, Bush Administration Takes Parting Shot at Endangered Wildlife (Dec. 11, 2008) *available at* http://www.defenders.org/newsroom/press_releases_folder/2008/12_11_2008_bush_administration_takes_parting_shot_at_endangered_wildlife.php (describing Bush Administration ESA regulations and Defenders of Wildlife's intent to take legal action against the regulations). The Obama Administration withdrew the Bush Administration's §7 regulations. See Interagency Cooperation Under the Endangered Species Act, 74 Fed. Reg. 20421 (May 4, 2009).

10. 42 U.S.C. §§7401-7671q, ELR STAT. CAA §§101-618.

A R T I C L E

Addressing Climate Change With a Comprehensive U.S. Cap-and-Trade System

by Robert N. Stavins

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I. Introduction

The impetus for a meaningful U.S. climate policy is growing. Scientific evidence has increased (Intergovernmental Panel on Climate Change, 2007a, b), public concern has been magnified, and many people perceive what they believe to be evidence of climate change in progress. Such concern is reinforced by the aggressive positions of key advocacy groups, which are no longer limited on this issue to the usual environmental interest groups; religious lobbies, for example, have also been vocal. This has been reflected in greatly heightened attention by the news media. The overall result is that a large and growing share of the U.S. population now believes that government action is warranted (Bannon et al., 2007).

In the absence of federal policy, regions, states, and even cities have moved forward with their own proposals for policies intended to reduce the emissions of carbon dioxide (CO₂) and other greenhouse gases. Partly in response to fears of a fractured set of regional policies, an increasing number of large corporations, sometimes acting individually, and at other times in coalitions—together with environmental advocacy groups—have announced their support for serious national action. Building upon this is the April 2007 U.S. Supreme Court decision that the Administration has the legislative authority to regulate CO₂ emissions,¹ as well as ongoing pressure from European and other nations for the United States to re-establish its international credibility in this realm by enacting a meaningful domestic climate policy.

Thus, momentum is clearly building towards the enactment of a domestic climate-change policy. But there should be no mistake about it—meaningful action to address global climate change will be costly. This is a key “inconvenient truth” that must be recognized when policymakers construct and

evaluate proposals, because a policy’s specific design will greatly affect its ability to achieve its environmental goals, its costs, and the distribution of those costs.

There is general consensus among economists and policy analysts that a market-based policy instrument targeting CO₂ emissions—and potentially some non-CO₂ greenhouse-gas (GHG) emissions—should be a central element of any domestic climate policy. This is reflected in international assessments of national policy instruments, as well (Intergovernmental Panel on Climate Change, 2007c). While there are trade offs between two alternative market-based instruments—a cap-and-trade system and a carbon tax—the best and most likely approach for the short to medium term in the United States is a cap-and-trade system.

It is critical to identify the most effective, lowest-cost, and most equitable policy design at the outset, because any policy design once in place can be difficult to change (Repetto, 2007). The environmental integrity of a domestic cap-and-trade system for climate change can be maximized and its costs and risks minimized by: targeting all fossil-fuel-related CO₂ emissions through an upstream, economywide cap; setting a trajectory of caps over time that begins modestly and gradually becomes more stringent, establishing a long-run price signal to encourage investment; adopting mechanisms to protect against cost uncertainty; and including linkages with the climate-policy actions of other countries. Importantly, by providing the option to mitigate economic impacts through the distribution of emission allowances, this approach can establish consensus for a policy that achieves meaningful emission reductions.

It is for these reasons and others that cap-and-trade systems have been used increasingly in the United States to address an array of environmental problems, including the phase-out of leaded gasoline in the 1980s, the reduction of sulphur dioxide (SO₂) and nitrogen oxide (NO_x) emissions from power plants beginning in 1995, and the phase-out of chlorofluorocarbons (CFCs) (Stavins, 2003).

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1. Massachusetts et al. v. Environmental Protection Agency et al., No. 05-1120, argued November 29, 2006, decided Apr. 2, 2007.

A well-designed cap-and-trade system will minimize the costs of achieving any given emissions target. While firms have flexibility regarding precisely how much they emit, because they have to surrender an allowance for each ton of their emissions they will undertake all emission reductions that are less costly than the market price of an allowance. Through trading, this allowance price adjusts until emissions are brought down to the level of the cap. Firms' ability to trade emission allowances creates a market in which allowances migrate towards their highest-valued use, covering those emissions that are the most costly to reduce. Conversely, as a result of trading, the emission reductions undertaken to meet the cap are those that are least costly to achieve.

The cost of achieving significant emission reductions in future years will depend critically on the availability and cost of low- or non-emitting technologies. A cap-and-trade system that establishes caps extending decades into the future provides important price signals and hence incentives for firms to invest in the development and deployment of such technologies, thereby lowering the future costs of achieving emission reductions.

Even a credible long-run cap-and-trade system may provide insufficient incentives for investment in technology development because it would not address certain well-known factors (market failures) that discourage such investment, such as those associated with the public-good nature of the knowledge that comes from research and development efforts (Jaffe et al., 2005; Newell, 2007). Thus, a cap-and-trade system alone will not encourage the socially desirable level of investment in research, development, and deployment of new technologies that could reduce future emission-reduction costs. To achieve this desired level of investment, additional policies may be necessary to provide additional government funding or to increase incentives for private funding of such research activities.

A. *Previous Use of Cap-and-Trade Systems*

Over the past two decades tradable permit systems have been adopted for pollution control with increasing frequency in the United States (Tietenberg, 1997), as well as other parts of the world. The first important example of a trading program in the United States was the leaded gasoline phase-down that occurred in the 1980s. Although not strictly a cap-and-trade system, the phase-down included features, such as trading and banking of environmental credits, that brought it closer than other credit programs to the cap-and-trade model and resulted in significant cost savings. The lead program was successful in meeting its environmental targets, and the system was cost-effective, with estimated cost savings of about \$250 m per year (Nichols, 1997). Also, the program pro-

vided measurable incentives for cost-saving technology diffusion (Kerr and Newell, 2000).

A cap-and-trade system was also used in the United States to help comply with the Montreal Protocol, an international agreement aimed at slowing the rate of stratospheric ozone depletion. The Protocol called for reductions in the use of CFCs and halons, the primary chemical groups thought to lead to depletion. The timetable for the phase-out of CFCs was accelerated, and the system appears to have been relatively cost-effective.

The most important application made in the United States of a market-based instrument for environmental protection is arguably the cap-and-trade system that regulates SO₂ emissions, the primary precursor of acid rain, established under the U.S. Clean Air Act Amendments of 1990 (Ellerman et al., 2000). The program is intended to reduce SO₂ and nitrogen-oxide (NO_x) emissions by 10 m tons and 2 m tons, respectively, from 1980 levels (Burtraw et al., 1998). A robust market of SO₂ allowance trading emerged from the program, resulting in cost savings of the order of \$1 billion annually, compared with the costs under some command-and-control regulatory alternatives (Carlson et al., 2000). The program has also had a significant environmental impact: SO₂ emissions from the power sector decreased from 15.7 m tons in 1990 to 10.2 m tons in 2005 (U.S. Environmental Protection Agency, 2005).

In 1994, California's South Coast Air Quality Management District launched a cap-and trade program to reduce nitrogen-oxide and SO₂ emissions in the Los Angeles area (Harrison, 2003). This Regional Clean Air Incentives Market (RECLAIM) program set an aggregate cap on NO_x and SO₂ emissions for all significant sources, with an ambitious goal of reducing aggregate emissions by 70 percent by 2003. Trading under the RECLAIM program was restricted in several ways, with positive and negative consequences. But despite problems, RECLAIM has generated environmental benefits, with NO_x emissions in the regulated area falling by 60 percent and sulphurous oxide (SO_x) emissions by 50 percent. Furthermore, the program has reduced compliance costs for regulated facilities, with the best available analysis suggesting 42 percent cost savings, amounting to \$58 m annually (Anderson, 1997).

Finally, in 1999, under U.S. Environmental Protection Agency guidance, 12 northeastern states and the District of Columbia implemented a regional NO_x cap-and-trade system to reduce compliance costs associated with the Ozone Transport Commission (OTC) regulations of the 1990 Amendments to the Clean Air Act. Emissions caps for two zones from 1999 to 2003 were 35 and 45 percent of 1990 emissions, respectively. Compliance cost savings of 40-47 percent have been estimated for the period 1999-2003, com-

pared to a base case of continued command-and-control regulation without trading or banking (Farrell et al., 1999).

B. CO₂ and Greenhouse Gas Cap-and-Trade Systems

Although cap-and-trade has proven to be a cost-effective means to control conventional air pollutants, it has a very limited history as a method of reducing CO₂ emissions. Several ambitious programs are in the planning stages or have been launched. First, the Kyoto Protocol, the international agreement that was signed in Japan in 1997, includes a provision for an international cap-and-trade system among countries, as well as two systems of project-level offsets. The Protocol's provisions have set the stage for the member states of the European Union to address their commitments using a regional cap-and-trade system.

By far the largest existing active cap-and-trade program in the world is the European Union Emissions Trading Scheme (EU ETS) for CO₂ allowances, which has operated for the past 2 years with considerable success, despite some initial—and predictable—problems (Ellerman and Buchner, 2007). The 11,500 emitters regulated by the downstream program include large sources such as oil refineries, combustion installations, coke ovens, cement factories, ferrous metal production, glass and ceramics production, and pulp and paper production, but the program does not cover sources in the transportation, commercial, or residential sectors. Although the first phase, a pilot program from 2005 to 2007, allows trading only in CO₂, the second phase, from 2008 to 2012, potentially broadens the program to include other GHGs. In its first 2 years of operation, the EU ETS has produced a functioning CO₂ market, with weekly trading volumes ranging between 5 m and 15 m tons, with spikes in trading activity occurring along with major price changes. Apart from some problems with the program's design and early implementation, it is much too soon to provide a definitive assessment of the system's performance.

A frequently discussed U.S. CO₂ cap-and-trade system that has not yet been implemented is the Regional Greenhouse Gas Initiative (RGGI), a program among 10 northeastern states that will be implemented in 2009 and begin to cut emissions in 2015. RGGI is a downstream cap-and-trade program intended to limit CO₂ emissions from power-sector sources. Beginning in 2015, the emissions cap will decrease by 2.5 percent each year until it reaches an ultimate level 10 percent below current emissions in 2019. This goal will require a reduction that is approximately 35 percent below business-as-usual, or, equivalently, 13 percent below 1990 emissions levels. RGGI only limits emissions from the power sector, and so incremental monitoring costs are low, because U.S. power plants are already required to report their hourly CO₂ emissions to the federal government (under provisions for continuous emissions monitoring as part of the SO₂ allowance trading program). The program requires participating states to auction at least 25 percent of their allowances; the remaining 75 percent of allowances may be auctioned or distributed freely. Given that the system will not come into

effect until 2009, at the earliest, it is obviously not possible to assess its performance.

Finally, California's Greenhouse Gas Solutions Act (Assembly Bill 32) was signed into law in 2006, is intended to begin in 2012 to reduce emissions to their 1990 levels by 2020, and may employ a cap-and-trade approach. Although the Global Warming Solutions Act does not require the use of market-based instruments, it does allow for their use, albeit with restrictions that they must not result in increased emissions of conventional, local air pollutants or toxics, that they must maximize environmental and economic benefits in California, and that they must account for localized economic and environmental justice concerns. This mixed set of objectives potentially interferes with the development of a sound policy mechanism. The Governor's Market Advisory Committee (2007) has recommended the implementation of a cap-and-trade program, with a gradual phase-in of caps covering most sectors of the economy, and an allowance distribution system that uses both free distribution and auctions of allowances, with a shift towards more auctions in later years.

C. Organization of Subsequent Sections

Section II of the article describes a comprehensive U.S. CO₂ cap-and-trade system, including a description of its key elements: a gradual trajectory of emissions reductions; tradable allowances; upstream regulation with economywide effects; mechanisms to reduce cost uncertainty; allowance allocations that combine auctions with free distribution, with auctions becoming more important over time; availability of offsets for underground and biological carbon sequestration; supremacy over state and regional systems; and linkage with international emission-reduction credit and cap-and-trade systems and climate policies in other countries. Section III provides an economic assessment of the cap-and-trade system. Section IV compares the system with alternative approaches to the same policy goal. Finally, Section V concludes.

II. The System

The United States can launch a scientifically sound, economically rational, and politically feasible approach to reducing its contributions to the increase in atmospheric concentrations of greenhouse gases by adopting an upstream, economywide CO₂ cap-and-trade system which implements a gradual trajectory of emissions reductions over time, and includes mechanisms to reduce cost uncertainty, such as multi-year compliance periods, provisions for banking and borrowing, and possibly a cost-containment mechanism to protect against any extreme price volatility.

The permits in the system should be allocated through a combination of free distribution and open auction, in order to balance, on the one hand, legitimate concerns by some sectors and individuals who will be particularly burdened by this (or any) climate policy, with, on the other hand, the opportunity to achieve important public purposes with gen-

erated funds. The share of allowances freely allocated should decrease over time, as the private sector is able to adjust to the carbon constraints, with all allowances being auctioned after 25 years.²

In addition, it is important that offsets be made available both for underground and biological carbon sequestration, to provide for both short-term cost-effectiveness and long-term incentives for appropriate technological change. The federal cap-and-trade system can provide for supremacy over U.S. regional, state, and local systems, to avoid duplication, double counting, and conflicting requirements. At the same time, it is also important to provide for harmonization over time with selective emission-reduction credit and cap-and-trade systems in other nations, as well as related international systems.

A. *Major Though Not Exclusive Focus on CO₂*

Fossil-fuel-related CO₂ emissions, which accounted for nearly 85 percent of the 7,147m metric tons of U.S. GHG emissions in 2005, where tons are measured in CO₂-equivalent. Carbon-dioxide emissions arise from a broad range of activities involving the use of different fuels in many different economic sectors. In addition, biological sequestration and reductions in non-CO₂ GHG emissions can contribute substantially to minimizing the cost of limiting GHG concentrations (Reilly et al., 2003; Stavins and Richards, 2005). Some non-CO₂ GHG emissions might be addressed under the same framework as CO₂ in a multi-gas cap-and-trade system.

B. *A Gradually Increasing Trajectory of Emissions Reductions Over Time*

The long-term nature of the climate problem offers significant flexibility regarding when emission reductions actually occur. Policies taking advantage of this “when flexibility” by setting annual emission targets that gradually increase in stringency can avoid many costs associated with taking stringent action too quickly, without sacrificing environmental benefits (Wigley et al., 1996). Premature retirement of existing capital stock and production and siting bottlenecks that can arise in the context of rapid capital stock transitions can be avoided. In addition, gradually phased-in targets provide time to incorporate advanced technologies into long-lived investments (Jaffe et al., 1999; Goulder, 2004). Thus, for any given cumulative emission target or associated atmospheric GHG concentration objective, a climate policy’s cost can be reduced by gradually phasing in efforts to reduce emissions.

Because of the long-term nature of the climate problem and because of the need for technological change to bring about lower-cost emissions reductions, it is essential that the caps constitute a long-term trajectory. The development and eventual adoption of new low carbon and other relevant technologies will depend on the predictabil-

ity of future carbon prices, themselves brought about by the cap’s constraints. Therefore, the cap-and-trade policy should incorporate medium-term to long-term targets, not just short-term targets.

For illustrative purposes in the cost assessment, I adopt and assess a pair of trajectories for the period 2012–50 to establish a reasonable range of possibilities. The less ambitious trajectory involves stabilizing CO₂ emissions at their 2008 level over the period 2012–50. This trajectory, in terms of its cumulative cap, lies within the range defined by the 2004 and 2007 recommendations of the National Commission on Energy Policy (2004, 2007). The more ambitious trajectory—again defined over the years 2012–50—involves reducing CO₂ emissions from their 2008 level to 50 percent below their 1990 level by 2050. This trajectory—defined by its cumulative cap—is consistent with the lower end of the range proposed by the U.S. Climate Action Partnership (2007). This range of trajectories is consistent with the frequently cited global goal of stabilizing atmospheric concentrations of CO₂ at between 450 parts per million (ppm) and 550 ppm if all nations were to take commensurate action.³

C. *Upstream Point of Regulation and Economywide Scope of Coverage*

In order to create economywide coverage, an upstream point of regulation should be employed, whereby allowances are surrendered based on the carbon content of fuels at the point of fossil-fuel extraction, import, processing, or distribution. This can be thought of as a system where regulation is at the mine-mouth, well-head, and point of import. First sellers of fossil fuels could be required to hold allowances: for coal, at the mine shipping terminus; for petroleum, at the refinery gate; for natural gas, at the first distribution point; and for imports, at the point of importation. Such a cap will effectively cover all sources of CO₂ emissions throughout the economy.

The upstream program should include a credit mechanism to address the small portion of fossil fuels that are not combusted and to address the use of post-combustion emission reduction technologies, such as carbon capture and sequestration (CCS). In addition, upstream regulation should include a credit-based program for fossil-fuel exports so that they are not at a competitive disadvantage relative to supply from other countries that do not face any allowance requirements.

An economywide cap provides the greatest certainty that national emission targets will be achieved. Limiting the scope of coverage to a subset of emission sources leads to emissions uncertainty through two channels. First, changes in emissions from unregulated sources can cause national emissions to deviate from expected levels. Second, a limited scope of coverage can cause “leakage,” in which market adjustments resulting from a regulation lead to increased emissions from

2. For a timely discussion of relevant auction design issues in carbon markets, see Burtraw et al. (2007).

3. “Commensurate action” is defined as other countries taking action that is globally cost-effective, for example by employing cap-and-trade systems with the same allowance price or equivalent carbon taxes.

unregulated sources outside the cap that partially offset reductions under the cap.

An emission cap with broad coverage of emission sources reduces the cost of achieving a particular national emissions target. Three factors contribute to lower costs. First, a broader cap expands the pool of low-cost emission-reduction opportunities that can contribute to meeting a national target. Second, an economywide cap provides important flexibility to achieve emission targets given uncertainties in emission-reduction costs across sectors. Third, an economywide cap creates incentives for innovation in all sectors of the economy.

The point of regulation decision is a primary determinant of a cap-and-trade system's administrative costs through its effect on the number of sources that must be regulated. As the number of regulated sources increases, the administrative costs to regulators and firms rise. The upstream point of regulation makes an economywide cap-and-trade system administratively feasible, making it possible to cap nearly all U.S. CO₂ emissions through regulation of just 2,000 upstream entities (Bluestein, 2005). A key advantage of an upstream program is that it eliminates the regulatory need for facility-level GHG emissions inventories, which would be essential for monitoring and enforcing a cap-and-trade system that is implemented downstream at the point of emissions.

D. Elements That Reduce Cost Uncertainty

Concern about cost uncertainty in the context of cap-and-trade systems derives from the possibility of unexpected, significant cost increases. The experience with the southern California RECLAIM cap-and-trade system for NO_x emissions is the frequently cited example. RECLAIM had no automatic mechanism to relax emission caps in the face of unexpectedly high costs and, in 2000, allowance prices spiked to more than 20 times their historical levels (Pizer, 2005). Cost uncertainty may increase the long-run cost of emission caps, because uncertainty about future allowance prices may deter firms from undertaking socially desirable, capital-intensive emission-reduction investments, forcing greater reliance on less capital-intensive, but more costly measures.

Allowance banking and borrowing can mitigate some of the undesirable consequences of cost uncertainty by giving firms the flexibility to shift the timing of emission reductions in the face of unexpectedly high or low costs. If the cost of achieving targets is unexpectedly and temporarily high, firms can use banked or borrowed allowances instead of undertaking costly reductions. Thus, banking and borrowing mitigate undesirable year-to-year variation in costs. Banking of allowances—undertaking extra emission reductions earlier, so that more allowances are available for use later—has added greatly to the cost effectiveness of previous cap-and-trade systems (Stavins, 2003), but banking provides little protection when costs remain high over extended periods, which could eventually lead to exhaustion of banked allowances. This problem may be particularly acute in a cap's early years, when relatively few allowances have been banked. There-

fore, borrowing of allowances from future years' allocations can be a particularly useful form of cost protection in these early years. Of course, credible mechanisms need to be established to ensure that the use of borrowed allowances is offset through future emission reductions.

Banking and borrowing can be exceptionally important in reducing long-term cost uncertainty, but the possibility of dramatic short-term allowance-price volatility may call for the inclusion of a sensible cost-containment mechanism. Such a mechanism could allow capped sources to purchase additional allowances at a predetermined price, set sufficiently high to make it unlikely to have any effect unless allowance prices exhibited truly drastic spikes, and the revenues from the fee dedicated exclusively to financing emissions reductions by uncapped sources, such as of non-CO₂ greenhouse gases, or to buying back allowances in future years. This is very different from standard proposals for a "safety valve," both because environmental integrity (the cap) is maintained by using the fees exclusively to finance additional emissions reductions or buy back allowances in future years, and because the pre-determined price is set at a high level so that it has no effect unless there are drastic price spikes.

The pre-determined fee places a ceiling on allowance prices and hence on abatement costs, because no firms would undertake emission reductions more costly than the trigger price (Jacoby and Ellerman, 2002). To be used as an insurance mechanism, the fee should be set at the maximum incremental emission-reduction cost that society is willing to bear. At this level, the mechanism would be triggered only when costs are unexpectedly and unacceptably high.

E. Allocation of Allowances

While all allocation decisions have significant distributional consequences, whether allowances are auctioned or freely distributed can affect the program's overall cost. Generally speaking, the choice between auctioning and freely allocating allowances does not influence firms' production and emission-reduction decisions. Firms face the same emissions cost regardless of the allocation method. Even when using an allowance that was received for free, a firm loses the opportunity to sell that allowance, and thereby recognizes this "opportunity cost" in deciding whether to use an allowance. Consequently, in many respects, this allocation choice will not influence a cap's overall costs. But there are two ways that the choice to distribute allowances freely can affect a cap's cost.

First, auction revenue may be used in ways that reduce the costs of the existing tax system or fund other socially beneficial policies. Free allocations forgo such opportunities. Second, free allocations may affect electricity prices in regulated cost-of-service electricity markets, and thereby affect the extent to which reduced electricity demand contributes to limiting emissions cost-effectively.

In discussions about whether to auction or freely distribute allowances, much attention has been given to the opportunity to use auction revenue to reduce existing distortionary

taxes on labour and capital. Use of auction revenue to reduce these taxes can stimulate economic activity, offsetting some of a cap's costs. Studies indicate that "recycling" auction revenue by reducing personal income tax rates could offset 40–50 percent of the economywide social costs that a cap would impose if allowances were freely distributed (Bovenberg and Goulder, 2003).

Achieving such gains may be difficult in practice, because climate policy would need to be tied to particular types of tax reform. The estimated cost-reductions are for policies in which auction revenue is used to reduce marginal tax rates that diminish incentives to work and invest. If, instead, auction revenue funded deductions or fixed tax credits, such tax reform would have a lesser effect (and perhaps no effect) on incentives to work and invest.

In general, auctioning generates revenue that can be put towards innumerable uses. Use of auction revenue to reduce tax rates is just one example. Other socially valuable uses of revenue could include reduction of the federal debt (including offsetting a cap's potentially adverse fiscal impacts), or funding desirable spending programs (for example, research and development). On the other hand, some government uses of auction revenue may generate less economic value than could be realized by private-sector use of those funds. Thus, the opportunity to reduce the aggregate cost of a climate policy through auctioning, rather than freely distributing allowances, depends fundamentally on the use to which auction revenues are ultimately put.

While auctioning has the potential to reduce a climate policy's economywide costs, depending on how auction revenues are used, free distribution of allowances provides an opportunity to address the distribution of a climate policy's economic impacts. Free distribution of allowances can be used to redistribute a cap's economic burdens in ways that mitigate impacts on the most affected entities, and a sensible principle for allocation would be to try to compensate the most burdened sectors and individuals. Such redistribution of impacts may help establish consensus on a climate policy that achieves meaningful emission reductions.

Because free allocations may increase a cap's overall cost, it is important to consider what share of allowances need to be freely distributed to meet specific compensation objectives. A permanent allocation of all allowances to affected firms would, in aggregate, significantly overcompensate them for their financial losses (Goulder, 2000; Smith et al., 2002; Bovenberg and Goulder, 2003). This is the case because much of the cost that a cap-and-trade system initially imposes on firms will be passed on to consumers in the form of higher prices. In effect, before any free allocation, firms are already partially compensated by changes in prices that result from the cap. Thus, freely allocating all allowances in perpetuity to affected firms would both overcompensate them in aggregate, and use up resources that could otherwise be put towards other uses.

Faced with important differences in the implications of free allocation and an auction, the best alternative is to begin with a hybrid approach, wherein half of the allowances are

initially auctioned and half are freely distributed to entities that are burdened by the policy, including suppliers of primary fuels, electric power producers, energy-intensive manufacturers, and particularly trade-sensitive sectors. The share of allowances that are freely distributed should decline over time, until there is no free allocation 25 years into the program. This is because over time the private sector will have an opportunity to adjust to the carbon constraints, including industries with long-lived capital assets. Thus, the justification for free distribution diminishes over time.⁴ In the short term, however, free distribution provides flexibility to address distributional concerns that might otherwise impede initial agreement on a policy.

The half that are initially auctioned will generate revenue that can be used for public purposes, including compensation for program impacts on low-income consumers, public spending for related research and development, reduction of the federal deficit, and reduction of distortionary taxes.

Why this particular pattern of beginning with a 50–50 auction-free allocation, moving to 100 percent auction over 25 years? This time-path of the numerical division between the share of allowances that is freely allocated and the share that is auctioned is consistent with analyses which have been carried out of the share of allowances that would need to be distributed freely to compensate firms for equity losses. In a series of analyses that considered the share of allowances that would be required in perpetuity for full compensation, Bovenberg and Goulder (2003) found that 13 percent would be sufficient for compensation of the fossil fuel-extraction sectors, and in a scenario consistent with the Bovenberg and Goulder study, Smith et al. (2002) found that 21 percent would be needed to compensate primary energy producers and electricity generators.

The time-path recommended here for an economywide program—50 percent of allowances initially distributed freely, with this share declining steadily (linearly) to zero after 25 years—is equivalent in terms of present discounted value to perpetual allocations (as those previously analysed) of 15, 19, and 22 percent, at real interest rates of 3, 4, and 5 percent, respectively. Hence, the recommended allocation is consistent with the principle of targeting free allocations to burdened sectors in proportion to their relative burdens. It is also pragmatic to be more generous with the allocation in the early years of the program.

F. Credits (Offsets) for Specified Activities

The upstream program should include selective use of the credit mechanism. First, credits should be issued for major non-combustion uses of fossil fuels, such as in some petrochemical feed stocks, as well as fuel exports. Second, credits should be issued for carbon capture and storage (CCS). Emission reductions from CCS technologies can be readily measured, and because there is no incentive to install CCS equipment absent a climate policy, emission reductions

4. For discussion of the temporal dimension of climate policy, see Helm et al. (2005).

achieved by CCS are clearly additional. As CCS technologies may play a significant role in achieving long-run emission reduction goals (U.S. Energy Information Administration, 2007; Deutch and Moniz, 2007), this credit mechanism is an essential component of the upstream cap.

Third, a program of credits for selected cases of biological sequestration through land use changes should be included. A cost-effective portfolio of climate technologies in the United States would include a substantial amount of biological carbon sequestration through afforestation and retarded deforestation (Stavins, 1999; Stavins and Richards, 2005; Lubowski et al., 2006). Translating this into practical policy will be a considerable challenge, however, because of concerns about monitoring and enforcement, additionality, and permanence (Plantinga, 2007).

Fourth, provision should be made to provide coverage over time of non-CO₂ greenhouse gases. Although CO₂ is by far the most important anthropogenic greenhouse gas (84 percent of radiative forcing linked with emissions in 2005), it is by no means the only greenhouse gas of concern. Carbon dioxide, methane (CH₄), nitrous oxide (N₂O), and three groups of fluorinated gases—sulphur hexafluoride (SF₆), hydrofluorocarbons (HFCs), and perfluorinated compounds PFCs—are the major greenhouse gases and the focus of the Kyoto Protocol.

The non-CO₂ GHGs are significant in terms of their cumulative impact on climate change, representing about 16 percent of radiative forcing in 2005. And because some emission reductions could be achieved at relatively low cost, their inclusion in a program would be attractive in principle (Paltsev et al., 2007a).

The sources of some of these gases are large in number and highly dispersed, making their inclusion in a cap-and-trade program problematic. The answer may be to phase in regulation selectively over time with credit (offset) mechanisms, being careful to grant credits in CO₂-equivalent terms only for well-documented reductions. Over time, such approaches could be developed for industrial emissions of methane and NO₂ and for the manufacture of key industrial gases in the case of refrigerants (HFCs), circuits (PFCs), and transformers (SF₆). Thus, cap-and-trade of non-CO₂ GHGs would likely combine upstream and downstream points of regulation.

G. *Linkage With Other Cap-and-Trade Systems and Other Nations' Policies*

Three distinct linkage issues are important. These are: the relationship of the national cap and-trade system with existing state and regional systems in the United States; the linkage of the cap-and-trade system with other such systems in other parts of the world; and—more broadly—the relationship between the cap-and-trade system and other nations' climate policies.

First, there is the reality of various state and regional cap-and-trade systems for greenhouse gases in the United States. In the absence of a national climate policy, ten north-eastern states have developed a downstream cap-and-trade program

among electricity generators in their RGGI, and California is considering implementing a cap-and-trade program at the state level. The economywide, national, upstream cap-and-trade system could take the place of any regional, state, and local systems to avoid duplication, double counting, and conflicting requirements (Stavins, 2007). It is likely that a decision will be reached on a national cap-and-trade system before any of the regional or state programs have actually been implemented.

In the long run, linking of the U.S. cap-and-trade system with such systems in other countries or regions, such as the EU ETS, will clearly be desirable to reduce the overall cost of reducing GHG emissions and achieving any global GHG concentration targets (Jaffe and Stavins, 2007). But there is a question of what level and type of linkage is desirable in the early years of the development of a U.S. cap-and-trade system. In the short term, it may be best for the United States to focus on linkage with emission reduction credit (ERC) programs, such as the Kyoto Protocol's Clean Development Mechanism (CDM), particularly if the CDM can be improved along the lines discussed at the 13th Conference of the Parties of the Framework Convention on Climate Change, in Bali, Indonesia, in December, 2007, namely to give greater emphasis to program- and policy-based opportunities, as opposed to project-based opportunities, as a means to decrease the prevalence of additionality concerns.

First, by tapping low-cost emission-reduction opportunities in developing countries, linkage of the U.S. system with CDM has a greater potential to achieve significant cost savings for the United States than does linkage with cap-and-trade systems in other industrialized countries (where abatement costs are more similar to those in the United States). Second, linkage with an ERC system such as CDM can only have the effect of decreasing domestic allowance prices, since transactions are uni-directional, i.e. U.S. purchases of (low-cost) CDM credits.

Third, the United States may have to choose between adopting a cost-containment mechanism and linking with cap-and-trade systems in other countries. It appears unlikely that the European Union would agree to linking its Emissions Trading Scheme with a U.S. system that employed a safety valve or other such cost-containment measure. On the other hand, the United States could link with ERC systems, such as the CDM, even with a cost-containment measure in place.

Fourth, given that other cap-and-trade systems, such as that of the European Union, will likely be linked with CDM, linking the U.S. system with CDM will have the effect of indirectly linking the U.S. system with those other cap-and-trade systems, but in ways that avoid the short-term problems identified above. Fifth, such indirect linkage should reduce concerns about additionality normally associated with linking with CDM. If another country or region (for example, the European Union) has already linked with CDM, many of the credits that the U.S. system would ultimately purchase would be used by other linked cap-and-trade systems if the United States did not link with CDM. Hence, for these credits, there is no incremental additionality concern regarding

the U.S. decision to link with CDM. Any U.S. use of these credits would result in emission reductions in the other linked cap-and-trade systems that would otherwise have used the credits. Sixth, the indirect linkage created by a U.S. link with CDM can achieve some and perhaps many of the cost savings that would arise from direct linkage with other cap-and-trade systems. This is because CDM credits can be sold on the secondary market, and so will ultimately go to the linked cap-and-trade system with the highest allowance price, pushing the allowance prices of the various cap-and-trade systems towards the convergence that would be achieved by direct linkage among cap-and-trade systems.

The fact that climate change is a global-commons phenomenon means that it can be sensible to condition the goals and operations of the U.S. cap-and-trade program on the GHG emissions reductions efforts that other countries are employing. One approach is to include a provision for the overall U.S. emissions cap to be tightened when and if the President or the Congress determine that other major CO₂-emitting nations have taken specific climate policy actions. Such “issue linkage”—making the cap contingent upon the actions of other key countries—can make sense, particularly absent U.S. participation in a binding international agreement. This links the goals of the U.S. system with other countries’ actions.

In addition, the operation of the cap-and-trade system should be linked with the actions of other key nations. As part of the cap-and-trade program, imports of specific highly carbon intensive goods (in terms of their emissions generated during manufacture) from countries which have not taken climate-policy actions comparable to those in the United States should be required to hold appropriate quantities of allowances (mirroring the allowance requirements on U.S. sources). These allowances can be purchased from any participants in the domestic cap and-trade system. This mechanism, if properly designed and implemented, can help establish a level playing-field in the market for domestically produced and imported products, and thereby can serve to reduce emissions leakage and induce key developing countries to join an international agreement (Morris and Hill, 2007).

There are some understandable concerns with such a mechanism. First, there is the economist’s natural resistance to tampering with free international trade in order to achieve other ends. Second, there is the difficulty of making the needed calculations of appropriate quantities of allowances on imports of manufactured goods. Third, there is the inescapable irony that the United States might adopt a mechanism for use with other countries, which had recently been proposed by Europeans for use against the United States (although with a border tax) because of U.S. non-ratification of the Kyoto Protocol. More broadly, there is the risk that this mechanism would be abused and inappropriately applied as a protectionist measure.

These concerns can be addressed by properly constraining the mechanism to apply only to primary highly energy-intensive commodities—such as iron and steel, aluminium, cement, bulk glass, paper, and, for that matter, fossil fuels. The requirement would not apply to countries that are tak-

ing comparable actions to reduce their GHG emissions, and exemptions could be provided for countries with very low levels of GHG emissions and the lowest levels of economic development.

In order to be compatible with World Trade Organization rules, it is key that the burden imposed on imported and domestic goods be roughly comparable, and that there not be discrimination among nations with similar conditions (Frankel, 2005; Pauwelyn, 2007). Also, this requirement should become binding only after 5–10 years, to allow time for an international climate agreement to be negotiated that includes all key countries in meaningful ways and thereby obviates the need for the mechanism (Aldy and Stavins, 2007).

H. *Associated Climate Policies*

The price signals generated by a well-functioning upstream cap-and-trade system will be insufficient for their purpose if there are remaining market failures that render those price signals ineffective. For example, there may be market failures other than the environmental externality of global climate change associated with energy-efficiency investments. If the magnitude of these non-environmental market failures is large enough and the cost of correcting them small enough to warrant policy intervention, then an argument can be made to attack these other market failures directly (Jaffe et al., 1999).

Examples of such relevant market failures include information problems that lead consumers to under-value expected energy-cost savings when purchasing energy-consuming durable goods. Likewise, there is the principal-agent problem of landlords who may under invest in energy-efficient appliances, because electricity costs are paid by tenants. Perhaps most important is the public-good nature of research and development, which leads to underinvestment in R&D because knowledge generated may not be exclusive and so economic returns cannot be fully captured. To achieve the desired levels of investment, additional public policies—of various kinds, beyond the price signals generated by the cap-and-trade system—may be necessary (National Commission on Energy Policy, 2004, 2007).

III. **Economic Assessment**

A considerable number of analytical models have been employed over the past several years to estimate the aggregate costs (and in some cases, the distributional impacts) of a cost-effective set of emissions-reduction actions to achieve various national CO₂ and GHG targets. Two models have had a distinctly U.S. focus, and have been used to give particular attention to the costs associated with domestic cap-and-trade systems: the National Energy Modeling System (NEMS) of the U.S. Department of Energy (U.S. Energy Information Administration, 2007), and the Emissions Prediction and Policy Analysis (EPPA) model of the Massachusetts Institute of Technology’s Joint Program on the Science and Policy of Global Change (Paltsev et al., 2007a, b).

Table 1: Anticipated CO₂ emissions reductions under two illustrative caps (million metric tons)

Scenario(a)	2005	2010	2015	2020	2025	2030	2035	2040	2045	2050
BAU Emissions	5,984	6,517	6,995	7,357	7,915	8,518	9,283	10,013	10,871	11,656
Stabilize Emissions	5,984	6,517	6,328	6,287	6,132	6,290	7,265	7,605	7,126	7,175
Reduction ^b	0	0	-667	-1,070	-1,783	-2,228	-2,018	-2,408	-3,745	-4,481
% reduction ^c	0	0	-10	-15	-23	-26	-22	-24	-34	-38
50% b/1990 Emissions	5,984	6,517	5,740	5,443	4,914	4,085	5,169	4,650	3,588	2,945
Reduction	0	0	-1,255	-1,914	-3,001	-4,433	-4,114	-5,363	-7,283	-8,711
% reduction	0	0	-18	-26	-38	-52	-44	-54	-67	-75

Notes: a 'BAU' (business as usual) is the reference case from Paltsev et al. (2007a, b); 'Stabilize' is based on the 287 cumulative carbon-dioxide-equivalent billion metric ton (CO₂-e bmt) case from Paltsev et al. (2007a, b); and '50% b/1990' refers to 2050 emissions capped at 50 per cent below the 1990 level, and is based on the 203 cumulative CO₂-e bmt case from Paltsev et al. (2007a, b). b Compared with BAU emissions in the same year. c Compared with BAU emissions in the same year. Source: Paltsev et al. (2007b, pp. 1, 2, 3).

Table 2: Predicted CO₂ and fossil fuel prices^a under two illustrative caps

Scenario(b)		2005	2010	2015	2020	2025	2030	2035	2040	2045	2050
CO ₂ price ^c	BAU	0	0	0	0	0	0	0	0		0
	Stabilize	0	0	18	22	26	32	39	47	57	70
	50% ^b /1990	0	0	41	50	61	74	90	109	133	161
Petroleum product	BAU	1.0	1.2	1.3	1.5	1.7	1.9	2.0	2.1	2.2	2.3
	Stabilize	1.0	1.2	1.3	1.5	1.6	1.7	1.4	1.4	1.5	1.5
	50% ^b /1990	1.0	1.2	1.3	1.5	1.5	1.6	1.3	1.4	1.3	1.2
Natural gas	BAU	1.0	1.1	1.3	1.5	1.7	2.0	2.3	2.7	3.1	3.6
	Stabilize	1.0	1.1	1.2	1.5	1.9	2.4	2.5	2.8	2.8	2.8
	50% ^b /1990	1.0	1.1	1.2	1.4	1.8	2.1	2.1	2.2	2.2	2.0
Coal	BAU	1.0	1.0	1.1	1.1	1.1	1.2	1.2	1.2	1.3	1.3
	Stabilize	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.1	1.1	1.2
	50% ^b /1990	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.1	1.1	1.2

Notes: a All fossil fuel prices are price indices, with 2005 set equal to 1. Note that the price indices do not include the cost of allowances, but do include the effects of changes in fossil-fuel supply and demand (induced by impacts of allowance prices on downstream users of respective fossil fuels). b 'BAU' (business as usual) is the reference case from Paltsev et al. (2007a, b); 'Stabilize' is based on the 287 cumulative CO₂-e bmt case from Paltsev et al. (2007a, b); and '50% b/1990' refers to 2050 emissions capped at 50 per cent below the 1990 level, and is based on the 203 cumulative CO₂-e bmt case from Paltsev et al. (2007a, b). c Year 2005 dollars per ton of CO₂-equivalent. Source: Paltsev et al. (2007b, pp. 1, 2, 3).

Table 3: Relationship between CO₂ allowance prices and recent fuel prices

Fuel	Average base price ^(a) 2002-6	Added fuel cost for various allowance prices ^(b)		
		\$25	\$50	\$100
Crude oil (\$/bbl)	\$40.00	\$11.30	\$22.60	\$45.20
		28%	57%	113%
Gasoline (\$/gallon)	\$1.82	\$0.24	\$0.48	\$0.96
		13%	26%	53%
Heating oil (\$/gallon)	\$1.36	\$0.27	\$0.54	\$1.08
		20%	40%	80%
Wellhead natural gas (\$/mcf)	\$5.40	\$1.38	\$2.76	\$5.52
		26%	51%	102%
Residential natural gas (\$/mcf)	\$11.05	\$1.39	\$2.78	\$5.56
		13%	25%	50%
Utility coal (\$/short ton)	\$26.70	\$51.20	\$102.40	\$204.80
		192%	384%	767%

Notes: a 2005 dollars. b Added cost does not include adjustment for the effects of respective cap-and-trade policies on producer prices. Source: For base prices, Paltsev et al. (2007a); added fuel costs are from author's calculations, drawing upon Table 5, p. 53, in the same source.

Table 4: Predicted aggregate costs: GDP impacts under two illustrative caps

Scenario ^a		2005	2010	2015	2020	2025	2030	2035	2040	2045	2050
BAU ^b	GDP	11,981	14,339	16,921	19,773	22,846	26,459	30,534	34,929	39,530	4,210
%change GDP											
from BAU	Stabilize	0	0	-0.22	-0.38	-0.55	-0.68	-0.33	-0.29	-0.36	-0.28
	50% b/1990	0	0	-0.51	-0.79	-0.67	-0.56	-1.18	-1.00	-0.61	-0.48

Notes: a 'BAU' (business as usual) is the reference case from Paltsev et al. (2007a, b); 'Stabilize' is based on the 287 cumulative CO₂-e bmt case from Paltsev et al. (2007a, b); and '50% b/1990' refers to 2050 emissions capped at 50 per cent below the 1990 level, and is based on the 203 cumulative CO₂-e bmt case from Paltsev et al. (2007a, b). b Billions of year 2005 dollars.

Source: Paltsev et al. (2007b, pp. 1, 2, 3).

To provide illustrative empirical cost estimates, I draw upon recent results from MIT's EPPA model, both because of the recent vintage of the analysis and because the model was applied by its authors (Paltsev et al., 2007a, b) to examining an upstream cap-and-trade system that is—in its stylized form—close to what is described here.

The first illustrative trajectory involves stabilizing CO₂ emissions at their 2008 level over the period from 2012 to 2050. This trajectory, in terms of its cumulative cap, lies within the range defined by the 2004 and 2007 recommendations of the National Commission on Energy Policy (2004, 2007). The second illustrative trajectory—also defined over the years 2012–50—involves reducing CO₂ emissions from their 2008 level to 50 percent below their 1990 level by 2050. This trajectory—defined by its cumulative cap—is consistent with the lower end of the range proposed by the U.S. Climate Action Partnership (2007).

The tradable CO₂ allowances have value because of their scarcity, and it is their market determined price that provides incentives for cost-effective emissions reductions and investments that bring down abatement costs over time. As the required emissions reductions (relative to "business as usual" (BAU)) increase over time under both cap trajectories (Table 1), the market prices of the allowances also increase, rising from \$18/ton of CO₂ in 2015 to \$70/ton of CO₂ in 2050 for the less aggressive policy, and rising from \$41/ton of CO₂ in 2015 to \$161/ton of CO₂ in 2050 for the more aggressive policy (Table 2).

Fossil-fuel prices are also predicted to change as a result of the cap-and-trade system, because of effects on the supply and demand for those fuels in various markets. As Table 2 indicates, the net effect of both caps on coal and petroleum prices is to depress those prices relative to what they would be in the absence of climate policy, because of reduced fuel demand. It is important to note, however, that although these prices include the effects of allowance prices on fossil-fuel supply and demand, they do not include the cost of allowances per se.

As indicated above, the cap-and-trade system has the effect of reducing demand for fossil fuels relative to BAU conditions and hence reducing fossil-fuel prices relative to what those prices would be in the absence of policy. There is an important distinction, however, between the price of fuels themselves (Table 2) and the cost of using those fuels, which is illustrated in Table 3. For sample allowance prices of \$25, \$50, and \$100/ton of CO₂, the added cost is estimated for major fuels,

including crude oil, gasoline, heating oil, wellhead natural gas, residential natural gas, and utility coal. These added costs of allowances to fuel users (which do not include the adjustment for the effects of the cap-and-trade policies on producer prices from Table 2) are compared with the average price of the respective fuels over a recent period of time.

The cap-and-trade system, like any regulatory initiative, affects the behaviour of individuals and firms, causing reallocation of resources, and thereby causing economic output to grow more slowly than it would in the absence of the policy. Impacts on gross domestic product (GDP) are measured relative to no policy (BAU), and so reductions in GDP do not indicate that output would be lower than current levels, but rather that output would be lower than it would otherwise be expected to be (Table 4).

Consistent with findings from other studies, the analysis indicates significant but affordable impacts on GDP, generally reductions below BAU of less than one-half of 1 percent in each year of the program for the less aggressive cap trajectory and ranging up to 1 percent below BAU each year for the more aggressive policy (Table 4). These impacts on GDP by 2050 are equivalent to average annual GDP growth in the BAU case of 2.901 percent, and average annual GDP growth of 2.895 and 2.891 percent, respectively, under the two cap trajectories.

Despite the fact that aggregate impacts on economic output (GDP) are relatively small, there can be very substantial impacts on particular sectors or groups of people. Regardless of how allowances are distributed, most of the cost of the program will be borne by consumers, facing higher prices of products, including electricity and gasoline—impacts that will continue as long as the program is in place. Also, workers and investors in the energy sectors and energy-intensive industries will experience losses in the form of lower wages, job losses, or reduced stock values. Such impacts are temporary, and workers or investors who enter an industry after the policy takes effect typically do not experience such losses (Dinan, 2007). The fact that the policy is phased in gradually provides more time for firms and people to adapt.

The cost impacts can be regressive, because lower-income households spend a larger share of their income than wealthier households, and energy products account for a larger share of spending by low-income households than wealthier households. But the distributional impacts will depend greatly on

the specifics of policy design, including how allowances are allocated and how auction revenues are used.

Certain sectors and firms will be particularly affected, including fossil-fuel producers, the electricity sector, and energy-intensive industries. Coal production will be the most affected because coal is the most carbon-intensive fuel and opportunities exist for electricity generators and some industrial consumers to switch to less carbon-intensive fuels. Petroleum sector output will be less affected, partly because demand for gasoline and other petroleum products is fairly insensitive to increased prices, at least in the short term. And it is uncertain whether a cap would benefit or adversely affect output and profitability of natural gas producers (U.S. Energy Information Administration, 2003, 2006).

Among firms that consume fossil fuels and electricity, impacts will likely be most pronounced in energy- and emissions-intensive industries (Jorgenson et al., 2000; Smith et al., 2002; Bovenberg and Goulder, 2003; U.S. Energy Information Administration, 2003). For example, some of the most affected industries will be petroleum refiners and manufacturers of chemicals, primary metals, and paper. Refiners experience both increased production costs for their production-related emissions and reduced demand as consumers seek to limit emissions from the use of petroleum products. Among industries experiencing similar increases in their costs, impacts will be greatest in globally competitive industries that are least able to pass through higher costs without experiencing reduced demand for their output.

Industry-level impacts may obscure significant variation in firm-level impacts within an industry. The electricity sector offers an important example of this point. Regional variation in electricity-sector impacts will be greater than in many other sectors because of regional differences in the composition of power plants (including fuel type), physical limits on interregional electricity trading, and state regulation of electricity markets. Increases in the cost of electricity generation depend on the carbon-intensity of a region's generation, which varies widely across the country.

While attention often focuses on a cap's impacts on particular industries, the ultimate burden will be borne by households, primarily in the form of increased expenditures on energy and other goods and services, but also through changes in labour income (including job losses) and investment income (i.e. stock and mutual fund returns) that arise from impacts on firms. Higher fuel prices will likely have a regressive effect on households, although the degree of regressivity may not be very great (Dinan, 2007). Further, this regressivity may be counterbalanced by the fact that adverse impacts on investment returns resulting from a cap's effect on the profitability of firms will fall most heavily on high-income households.

There are also distributional implications of the allowance allocation, and the aggregate value of allowances will be much greater than the total cost burden to the economy. The value of allowances will be two to four times greater than the total cost of the program in most years under either

of the cap trajectories. Therefore, even a partial free distribution of allowances provides an opportunity to address the distributional cost burdens of the policy by using allowances to compensate the most burdened sectors and individuals.

IV. Comparison With Alternative Approaches

The alternatives to the cap-and-trade approach most frequently considered by policy-makers for the purpose of reducing CO₂ and other GHG emissions are standards-based policies. In addition, among economists and some policy analysts, there has been discussion about the possible use of carbon taxes.

A. Standards-Based Policies

Technology or performance standards are a commonly proposed means of achieving emission reductions. Examples include efficiency standards for appliances, vehicle fuel-economy standards, and comprehensive U.S. cap-and-trade system standards, best-available control technology standards, and renewable portfolio standards for electricity generators.

Because of practical limitations, most standards to address CO₂ emissions would target energy use or emission rates from new capital equipment, such as appliances, cars, or electricity generators. The fact that standards would affect new, but not existing equipment limits the opportunity for near-term emission reductions. It also makes the level and timing of those reductions dependent on the rate of capital stock turnover, and thereby difficult to predict. Moreover, by increasing the cost of new capital stock without affecting the cost of using the existing capital stock, standards on new sources have the perverse effect of creating incentives to delay replacement of existing capital stock, which can significantly delay the achievement of emission reductions (Stavins, 2006).

When considered as an alternative to a well-designed cap-and-trade system, standards based approaches are less cost-effective. Administrative limitations constrain the scope of sources that can be covered by a standards-based approach, compared with an upstream, broad-based cap-and-trade system, and standards may not target all determinants of emissions from covered sources. Consequently, they may not bring about many types of potentially cost-effective emission reductions. Also, standards often impose uniform requirements, even though the cost of emission reductions achieved by such standards may vary widely across regulated entities (Newell and Stavins, 2003).

Standards have also been proposed as complements to market-based policies. On the one hand, standards may needlessly restrict the flexibility that allows market-based policies to minimize the cost of achieving emission targets. If standards are applied within the umbrella of an economy-wide CO₂ cap-and-trade system, the standards will offer no additional CO₂ benefits, as long as the cap-and-trade system is binding, but depending upon the nature of the standard and its associated costs, its placement can drive up aggregate costs. On the other hand, as emphasized above, some mar-

ket failures affecting the development and adoption of less emissions-intensive technologies may not be addressed by a cap-and-trade (or carbon tax) policy. Simply increasing the cost of emitting GHGs will not address the core sources of such market failures.

B. Carbon Taxes

Both a carbon tax and a cap-and-trade system create a carbon price signal, but there is a fundamental difference in the way in which the level of that carbon price signal is determined. A carbon tax fixes the price of CO₂ emissions, and allows the quantity of emissions to adjust, whereas a cap-and-trade system fixes the quantity of aggregate emissions, and allows the price of CO₂ emissions to adjust.

A carbon tax (if implemented upstream and economy-wide) would appear to have some advantages over an equivalent upstream cap-and-trade system. First, is the simplicity of the carbon tax system, in which firms would not need to manage and trade allowances, and the government would not need to track allowance transactions and ownership. Experience with previous cap-and-trade systems, however, indicates that the costs of trading institutions are not significant. Whether a policy as significant as a meaningful national carbon tax would turn out to be simple in its implementation is an open question. Second, the tax approach avoids the political difficulties related to making allowance allocations among economic sectors, but would—on the other hand—create pressures for tax exemptions.

Third, a carbon tax would raise revenues that can be used for beneficial public purposes. Of course, an auction mechanism under a cap-and-trade system can do the same. Fourth, a tax approach eliminates the potential for price volatility that can exist under a cap-and-trade system. Some emissions-trading markets have exhibited significant volatility in their early years, including: the U.S. NO_x Budget program (where prices increased in the presence of uncertainty about whether Maryland, a net supplier, would enter the program on time); the RECLAIM program in southern California (where price spikes were linked with flawed design and problems with electricity deregulation); and the EU ETS (where a dramatic price crash occurred when data revealed that the overall allocation had been above the BAU level). From an economic perspective, it makes sense to allow emissions to vary from year to year with economic conditions that affect aggregate abatement costs; and this happens automatically with a carbon tax. With a cap-and-trade system, this temporal flexibility needs to be built in through provisions for banking and borrowing, as described above.

There is also a set of apparent disadvantages of carbon taxes, relative to a cap-and-trade regime, that merits consideration. First among these is the over-riding resistance to new taxes in the current political climate. Second, in their simplest respective forms (a carbon tax without revenue recycling, and a cap-and-trade system without auctions), a carbon tax is more costly than a cap-and-trade system to the regulated sector, because with the former firms incur both

abatement costs and the cost of tax payments to the government. In the case of the simplest cap-and-trade system, the regulated sector experiences only abatement costs, since the transfers associated with allowance purchase and sale remain within the private sector.

Third, cap-and-trade approaches leave distributional issues up to politicians, and provide a straightforward means to compensate burdened sectors. Of course, the compensation associated with free distribution of allowances based on historical activities can be mimicked under a tax regime, but it is legislatively more complex. The cap-and-trade approach avoids likely battles over tax exemptions among vulnerable industries and sectors that would drive up the costs of the program, as more and more sources (emission-reduction opportunities) are exempted from the program, thereby simultaneously compromising environmental integrity. Instead, a cap-and-trade system leads to battles over the allowance allocation, but these do not raise the overall cost of the program nor affect its climate impacts. Some observers seem to worry about the political process's propensity under a cap-and-trade system to compensate sectors that effectively claim burdens (through free allowance allocations). A carbon tax is sensitive to the same pressures, and may be expected to succumb to them in ways that are ultimately much more harmful. This is the crucial political-economy distinction between the two approaches.

Fourth, a carbon tax provides much less certainty over emissions levels (in exchange for greater certainty over costs). Most climate policy proposals are for progressively greater cuts in emissions over time. Cap-and-trade is fundamentally well suited to this because it is a quantity-based approach. Progress under a carbon tax will be uncertain, mainly owing to variations in economic conditions.

Fifth and finally, a cap-and-trade system is much easier to harmonize with other countries' carbon mitigation programs, which are more likely to employ cap-and-trade than tax approaches. Cap-and-trade systems generate a natural unit of exchange for harmonization: allowances denominated in units of carbon content of fossil fuels (or CO₂ emissions). In addition, cap-and-trade provides a convenient means—allowances traded between firms—to transfer resources for emissions reductions in developing countries. A carbon tax raises funds for the government that could likewise be used for this purpose, but such transfers would need to be between governments, and such transfers would be larger in magnitude than individual trades between sources under a cap-and-trade system, thereby reducing greatly the political feasibility of such arrangements.

Despite the differences between carbon taxes and cap-and-trade systems in specific implementations, the two approaches have much in common. Differences between the two approaches can begin to fade when various specific implementations of either program are carried out. Hybrid schemes that include features of taxes and cap-and-trade systems blur the distinctions between the two (Parry and Pizer, 2007). In terms of the allocation mechanism, the government can auction allowances in a cap-and-trade system, thereby reproducing many of the properties of a tax approach. Mechanisms

that deal with uncertainty in a cap-and-trade system also bring it close to a tax approach, including a cost-containment mechanism that places a cap on allowance prices, banking that creates a floor under prices, and borrowing that provides flexibility similar to a tax. To some degree, the dichotomous choice between taxes and permits can turn out to be a choice of design elements along a policy continuum.

In the meantime, debate continues among economists regarding cap-and-trade and carbon taxes. In a recent comparison of these two approaches, the Hamilton Project staff at the Brookings Institution concluded that a well-designed carbon tax and a well-designed cap-and-trade system would have similar economic effects (Furman et al., 2007). Hence, they concluded, the two primary questions that should be used to decide between these two policy approaches are: (i) which is more politically feasible; and (ii) which is more likely to be well designed? In the context of the United States (and many other countries, for that matter), the answer to the first question is obvious. For the political-economy reasons I described above, the answer to the second question also favours cap-and-trade. In other words, it is important to identify and design policies that will be “optimal in Washington,” not just from the perspective of Cambridge, New Haven, or Berkeley.

V. Summary and Conclusions

The need for a domestic U.S. policy that seriously addresses climate change is increasingly apparent. A cap-and-trade system is the best and most likely approach for the United States in the short to medium term. Besides providing greater certainty about emissions levels, cap-and-trade offers an easy means (partial free distribution of allowances) of compensating for the inevitably unequal burdens imposed by climate policy; it is straightforward to harmonize with other countries' climate policies; it avoids the current political aversion in the United States to taxes; and it has a history of successful adoption.

The system outline in this article has several key features. It imposes an upstream cap on CO₂ emissions (carbon content measured at the point of fuel extraction, refining, distribution, or importation), with gradual inclusion of other greenhouse gases, to ensure economywide coverage while limiting the number of entities to be monitored. It sets a gradual downward trajectory of emissions ceilings over time, to minimize disruption and allow firms and households time to adapt. It also includes mechanisms to reduce cost uncertainty; these include provisions for banking and borrowing of allowances, and possibly a cost-containment mechanism (such as the sale of additional allowances during severe price spikes, with the revenues dedicated to bringing about additional emissions reductions) to protect against price volatility.

Initially, half of the program's allowances would be allocated through auctioning and half through free distribution, primarily to those entities most burdened by the policy. This arrangement should help limit potential inequities while bolstering political support. The share distributed for free would phase out gradually over 25 years. The auctioned allowanc-

es would generate revenue that could be used for a variety of worthwhile public purposes. To increase the program's short-term cost-effectiveness and create long-term incentives for technological development, entities that successfully implement carbon sequestration (biological or underground) would be eligible for offsets.

The system would operate at the federal level, eventually asserting supremacy over all regional, state, and local systems, while building on any institutions already developed at those levels. The system would also provide for linkage with international emissions-reduction credit arrangements, harmonization over time with effective cap-and-trade systems in other countries, and appropriate linkage with other actions taken abroad to maintain a level playing field between imports and import-competing domestic products. To address potential market failures that might render the system's price signals ineffective, certain complementary policies should be implemented, for example in the areas of consumer information and research and development.

Like other market-based emissions-reduction schemes, the one described here reduces compliance costs by offering regulated entities: rather than mandate specific measures on all sources, it allows emissions to be reduced however, wherever, and, to a great extent, whenever they are least costly. To illustrate the potential cost savings, this article has reported empirical cost estimates for two hypothetical time trajectories for emissions caps. The first stabilizes CO₂ emissions at their 2008 level by 2050, whereas the second reduces emissions from their 2008 level to 50 percent below the 1990 level by 2050. Both are consistent with the often-cited global goal of stabilizing CO₂ atmospheric concentrations at between 450 and 550 ppm, provided all countries take commensurate action. The analysis found significant but affordable impacts on GDP under both trajectories: generally below 0.5 percent a year for the less aggressive trajectory, and ranging up to 1 percent a year for the more aggressive one.

We also explored the distributional implications of the program. Illustrative estimates—which do not account for the offsetting effects of possible free allocation of allowances or redistribution of auction revenues—indicate a relatively small burden on fossil-fuel producers (about 4 percent of the total), because most of the costs would be passed on to customers. Fossil-fuel-fired electricity generators also would bear a relatively small share, about 7 percent, for analogous reasons. Business and industry would bear nearly 30 percent of the total cost burden through their primary energy use, and about 25 percent through their electricity use, for a total of about 55 percent. The remaining roughly 35 percent of costs would be borne by households.

The impact of any U.S. policy will ultimately depend on the actions of other nations around the world. Without an effective global climate agreement, each country's optimal strategy is to free-ride on the actions of others. But if all countries do this, nothing will be accomplished, and the result will be the infamous tragedy of the commons. A cooperative solution—one that is scientifically sound, economically rational, and politically pragmatic—must remain the ulti-

mate goal. Given these realities, a major strategic consideration in initiating a U.S. climate policy should be to establish international credibility. The cap-and-trade system described and assessed in this article offers a way for the United States to demonstrate its commitment to an international solution while making its own real contribution to addressing climate change.

References

- Aldy, J.E., and Stavins, R.N. (eds) (2007), *Architectures for Agreement: Addressing Global Climate Change in the Post-Kyoto World*. Cambridge, Cambridge University Press.
- Anderson, R. (1997), *The U.S. Experience With Economic Incentives in Environmental Pollution Control Policy*. Washington, D.C., Environmental Law Institute.
- Bannon, B., DeBell, M., Krosnick, J., Kopp, R., and Aldhous, P. (2007), "Americans' Evaluations of Policies to Reduce Greenhouse Gas Emissions," Working Paper, June.
- Bluestein, J. (2005), "Upstream Regulation of CO₂," Presentation to the National Commission on Energy Policy Workshop, Washington, D.C., 16 September.
- Bovenberg, L.A., and Goulder, L.H. (2003), "Confronting Industry-Distributional Concerns in U.S. Climate Change Policy," Discussion Paper (Les Séminaires de l'IDDRI no. 6), Institute on the Economics on the Environment and Sustainability.
- Burtraw, D., Goeree, J., Holt, C., Palmer, K., and Shobe, W. (2007), "Auction Design for Selling CO₂ Emission Allowances Under the Regional Greenhouse Gas Initiative," Final Report produced for RGGI, October.
- Burtraw, D., Krupnick, A., Mansur, E., Austin, D., and Farrell, D. (1998), "The Costs and Benefits of Reducing Air Pollution Related to Acid Rain," *Contemporary Economic Policy*, 16: 379–400.
- Carlson, C., Burtraw, D., Cropper, M., and Palmer, K. (2000), "Sulfur Dioxide Control by Electric Utilities: What Are the Gains From Trade?," Discussion Paper No. 98-44-REV, Washington, D.C., Resources for the Future.
- Deutch, J., and Moniz, E.J. (co-chairs) (2007), *The Future of Coal: Options for a Carbon-Constrained World*. Cambridge, Mass., Massachusetts Institute of Technology.
- Dinan, T. (2007), *Trade Offs in Allocating Allowances for CO₂ Emissions*, Economic and Budget Issue Brief, Washington, D.C., U.S. Congressional Budget Office, 25 April.
- Ellerman, D., and Buchner, B. (2007), "The European Union Emissions Trading Scheme: Origins, Allocation, and Early Results," *Review of Environmental Economics and Policy*, 1: 66–87.
- Ellerman, D., Joskow, P., Schmalensee, R., Montero, J.-P., and Bailey, E. (2000), *Markets for Clean Air: The U.S. Acid Rain Program*, New York, Cambridge University Press.
- Farrell, A., Carter, R., and Rauber, R. (1999), "The NO_x Budget: Market-Based Control of Tropospheric Ozone in the Northeastern United States," *Resource and Energy Economics*, 21:103–24.
- Frankel, J. (2005), "Climate and Trade: Links Between the Kyoto Protocol and WTO," *Environment*, 47(7): 8–19, September.
- Furman, J., Bordoff, J.E., Deshpande, M., and Noel, P.J. (2007), "An Economic Strategy to Address Climate Change and Promote Energy Security," The Hamilton Project, Strategy Paper, Washington, D.C., The Brookings Institution, October.
- Goulder, L.H. (2000), "Confronting the Adverse Industry Impacts of CO₂ Abatement Policies: What Does It Cost?," Climate Issues Brief No. 23, Washington, D.C., Resources for the Future.
- Goulder, L.H. (2004), "Induced Technological Change and Climate Policy," Arlington, Va., Pew Center on Global Climate Change.
- Harrison, D. Jr. (2003), "Ex Post Evaluation of the RECLAIM Emission Trading Program for the Los Angeles Air Basin," presented at Workshop on Ex Post Evaluation of Tradeable Permits: Methodological and Policy Issues, Paris, OECD Environment Directorate.
- Helm, D., Hepburn, C., and Mash, R. (2005), "Credible Carbon Policy," in D. R. Helm (ed.), *Climate-Change Policy*, Oxford, Oxford University Press, 305–21.
- Intergovernmental Panel on Climate Change (2007a), *Climate Change 2007—The Physical Science Basis: Working Group I Contribution to the Fourth Assessment Report of the IPCC*, Cambridge, Cambridge University Press.
- Intergovernmental Panel on Climate Change (2007b), *Climate Change 2007—Impacts, Adaptation, and Vulnerability: Working Group II Contribution to the Fourth Assessment Report of the IPCC*. Cambridge, Cambridge University Press.
- Intergovernmental Panel on Climate Change (2007c), *Climate Change 2007—Mitigation of Climate Change: Working Group III Contribution to the Fourth Assessment Report of the IPCC*, Cambridge, Cambridge University Press.
- Jacoby, H.D., and Ellerman, A.D. (2002), "The Safety Valve and Climate Policy," MIT Joint Program on the Science and Policy of Global Change, Report No. 83, Cambridge, Mass.
- Jaffe, A.B., Newell, R.G., and Stavins, R.N. (1999), "Energy-Efficient Technologies and Climate Change Policies: Issues and Evidence," Climate Issues Brief No. 19, Washington, D.C., Resources for the Future.
- Jaffe, A.B., (2005), "A Tale of Two Market Failures: Technology and Environmental Policy," *Ecological Economics*, 54: 164–74.
- Jaffe, J., and Stavins, R.N. (2007), "Linking Emissions Trading Systems," paper prepared for the International Emissions Trading Association, forthcoming.
- Jorgenson, D.W., Goettle, R.J., Wilcoxon, P.J., and Ho, M.S. (2000), *The Role of Substitution in Understanding the Costs of Climate Change Policy*, Arlington, Va., Pew Center on Global Climate Change.
- Kerr, S., and Newell, R. (2000), "Policy-Induced Technology Adoption: Evidence From the U.S. Lead Phasedown," Washington, D.C., Resources for the Future, draft manuscript.
- Lubowski, R.N., Plantinga, A.J., and Stavins, R.N. (2006), "Land-Use Change and Carbon Sinks: Econometric Estimation of the Carbon Sequestration Supply Function," *Journal of Environmental Economics and Management*, 51: 135–52.
- Market Advisory Committee to the California Air Resources Board (2007), "Recommendations for Designing a Greenhouse Gas Cap-and-Trade System for California," 30 June.
- Morris, M.G., and Hill, E.D. (2007), "Trade Is the Key to Climate Change," *The Energy Daily*, 35(33): 20 February.
- National Commission on Energy Policy (2004), *Ending the Energy Stalemate: A Bipartisan Strategy to Meet America's Energy Challenges*, Washington, D.C., December.
- National Commission on Energy Policy (2007), *Energy Policy Recommendations to the President and the 110th Congress*, Washington, D.C., April.

- Newell, R.G. (2007), "Climate Technology Policy," Resources for the Future Climate Backgrounder, Washington, D.C.
- Newell, R.G., and Stavins, R.N. (2003), "Cost Heterogeneity and the Potential Savings From Market-Based Policies," *Journal of Regulatory Economics*, 23: 43–59.
- Nichols, A. (1997), "Lead in Gasoline," in R. Morgenstern (ed.), *Economic Analyses at EPA: Assessing Regulatory Impact*, Washington, D.C., Resources for the Future, 49–86.
- Paltsev, S., Reilly, J.M., Jacoby, H.D., Gurgel, A.C., Metcalf, G.E., Sokolov, A.P., and Holak, J.F. (2007a), "Assessment of U.S. Cap-and-Trade Proposals," Working Paper 13176, Cambridge, MA, National Bureau of Economic Research, June.
- Paltsev, S., Gurgel, A.C., Metcalf, G.E., Sokolov, A.P., and Holak, J.F. (2007b), "Appendix C—Assessment of U.S. Cap-and-Trade Proposals: Details of Simulation Results," Cambridge, Mass., National Bureau of Economic Research, June.
- Parry, I.W.H., and Pizer, W.A. (2007), "Emissions Trading Versus CO₂ Taxes," mimeo.
- Pauwelyn, J. (2007), "U.S. Federal Climate Policy and Competitiveness Concerns: The Limits and Options of International Trade Law," Working Paper 07-02, Nicholas Institute, Duke University, N.C.
- Pizer, W. (2005), "Climate Policy Design Under Uncertainty," Discussion Paper No. 05–44, Resources for the Future, Washington, D.C.
- Plantinga, A.J. (2007), "Land-Use Change and Biological Carbon Sequestration," presentation at Workshop on Carbon Sequestration in Agriculture and Forestry, Thessaloniki, 27 June.
- Reilly, J., Jacoby, H., and Prinn, R. (2003), "Multi-Gas Contributors to Global Climate Change: Climate Impacts and Mitigation Costs of Non-CO₂ Gases," Arlington, Va., Pew Center on Global Climate Change.
- Repetto, R. (2007), "National Climate Policy: Choosing the Right Architecture," Yale School of Forestry and Environmental Studies, June.
- Smith, A., Ross, M., and Montgomery, D. (2002), "Implications of Trading Implementation Design for Equity–Efficiency Trade Offs in Carbon Permit Allocations," Working Paper, Charles River Associates, Washington, D.C.
- Stavins, R.N. (1999), "The Costs of Carbon Sequestration: A Revealed-Preference Approach," *American Economic Review*, 89(4): 994–1009.
- Stavins, R.N. (2003), "Experience With Market-Based Environmental Policy Instruments," ch. 9 in K.-G. Mäler and J. Vincent (eds), *Handbook of Environmental Economics*, vol. I, Amsterdam, Elsevier Science, 355–435.
- Stavins, R.N. (2006), "Vintage-Differentiated Environmental Regulation," *Stanford Environmental Law Journal*, 25(1): 29–63.
- Stavins, R.N. (2007), "A U.S. Cap-and-Trade System to Address Global Climate Change," The Hamilton Project Discussion Paper 2007–13. Washington, D.C., The Brookings Institution, October.
- Stavins, R.N. and Richards, K.R. (2005), *The Cost of U.S. Forest-Based Carbon Sequestration*, Arlington, Va., Pew Center on Global Climate Change, January.
- Tietenberg, T. (1997), "Tradeable Permits and the Control of Air Pollution in the United States," paper prepared for the 10th Anniversary Jubilee edition of *Zeitschrift Für angewandte Umweltforschung*.
- U.S. Climate Action Partnership (2007), *A Call for Action—Consensus Principles and Recommendations From the U.S. Climate Action Partnership: A Business and NGO Partnership*, Washington, D.C., 22 January.
- U.S. Energy Information Administration (2003), *Analysis of S. 139, the Climate Stewardship Act of 2003*, Washington, D.C., U.S. Department of Energy.
- U.S. Energy Information Administration (2006), *Energy Market Impacts of Alternative Greenhouse Gas Intensity Reduction Goals*, Washington, D.C., U.S. Department of Energy, March.
- U.S. Energy Information Administration (2007), *Energy Market and Economic Impacts of a Proposal to Reduce Greenhouse Gas Intensity With a Cap-and-Trade System*, Washington, D.C., U.S. Department of Energy, January.
- U.S. Environmental Protection Agency (2005), *Acid Rain Program: 2005 Progress Report*, Washington, D.C., U.S. EPA, Office of Air and Radiation, Clean Air Markets Division.
- Wigley, T., Richels, R., and Edmonds, J. (1996), "Economic and Environmental Choices in the Stabilization of Atmospheric CO₂ Concentrations," *Nature*, 379(18): 240–43.

Comment on Addressing Climate Change With a Comprehensive U.S. Cap-and-Trade System

by Richard E. Ayres

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Robert Stavins has performed a great and valuable public service by his role in moving cap-and-trade from an academic idea to real-world policy. Since the 1980s Stavins has tirelessly promoted the idea that the nation could have cleaner air at less cost if national policymakers would establish gradually shrinking emissions caps on pollutants and allow emitters to make their own decisions about how to adjust to this change in their market environment. Stavins' recent article *Addressing Climate Change With a Comprehensive U.S. Cap-and-Trade System*¹ makes the case for cap-and-trade as the means to address global warming.

Having spent a great deal of my professional time in the 1980s working to shape a cap-and-trade program to control acid rain and convince Congress to adopt it, I agree with much of Stavins' argument. I take issue only where it seems to me that Stavins stakes too grand a claim for cap-and-trade as a response to global warming.

I. The Chimera of a "Simple Tax on Carbon"

Like Stavins, I prefer a cap-and-trade program to what proponents insist on calling a "simple tax on carbon." At the most basic level, a tax exchanges greater certainty of cost for greater certainty of achieving the emission reductions required to protect our planet from unacceptable climate change. Those in Congress currently advocating a tax either have forgotten Americans' resistance to new taxes, or are disingenuously seeking to torpedo adoption of climate legislation.

I would emphasize that it is not appropriate to compare a program that has begun the process of political compromise, such as last year's Lieberman-Warner cap-and-trade bill, with an abstraction. No one who has ever done his income tax would believe for a minute that a real carbon tax bill would be "simple." A real carbon tax bill would be subject to the same pulling and hauling of the same interests that had their

impact on the Lieberman-Warner bill and will have their effect on this year's proposed legislation. Further, because a tax bill would be written by the tax committees of Congress rather than the environment committees, it would almost certainly be tilted more towards economic interests than environmental protection.

Stavins is right that the two systems have a great deal in common in concept, and his article neatly describes the conceptual and practical differences. I agree with him that the real issue is "which is more politically feasible" as well as "which is more likely to be well designed."² In my view, the answer to both is cap-and-trade.

II. Gradual Imposition of Auction

I agree also that the auction of allowances should be phased in gradually over a period of years in order to allow adjustment to the increase in costs faced by industries heavily dependent on fossil fuels and by those products (such as hydrofluorocarbons) with high global warming potential. In order to allow the economy to adjust to these changes, Stavins suggests a 25-year period for phasing in a full auction of carbon allowances. It may be possible to move more quickly, especially if a generous offset policy is adopted such as that urged by the United States Climate Action Partnership.

III. No Statement of Cost of Not Acting

Opponents of global warming legislation often point to the costs of curtailing greenhouse gas emissions as if the alternative carried no costs. I fear Stavins' concentration on the costs of reducing emissions of greenhouse gases may play into the hands of these opponents.³ I understand he is making the point that it is important to pick an efficient program architecture. But responsible analyses suggest that the societal costs of reducing our carbon footprint may be minimal. That is the implication of the famous McKinsey table,

1. Robert N. Stavins, *Addressing Climate Change With a Comprehensive U.S. Cap-and-Trade System*, 39 ELR (ENVTL. L. & POL'Y ANN. REV.) 10752 (Aug. 2009) [hereinafter Stavins 1]. This review also benefited from a review of a longer paper by Stavins for The Hamilton Project of the Brookings Institution, *A U.S. Cap-and-Trade System to Address Global Climate Change*, (Oct. 2007) [hereinafter Stavins 2].

2. Stavins 1 at 10764.

3. Stavins 1 at 10752 ("there should be no mistake about it—meaningful action to address global climate change will be costly").

which charts the cost of reducing emissions by 3.1 gigatons per year.⁴

Moreover, the cost of not acting cannot be overemphasized. Admittedly rough estimates suggest that costs of business as usual could be as high as 5% to 20% of global GDP by the end of the century,⁵ while the cost of substantially curtailing greenhouse gas emissions, if undertaken now, falls in the 1% to 5% range by 2050.⁶

IV. Safety Valve

As Stavins points out, a cap differs from a tax in that the environmental goal, rather than the cost, is specified. But the potential cost, and potential variation in allowance prices in response to market pressures, bothers many. Those who are troubled have proposed many variations on the notion that there should be a “safety valve” which prevents allowance prices from rising “too high.”

Typically the safety valve idea involves setting a price at which the government will issue as many additional allowances, above and beyond the cap, as needed to satisfy demand. At the conceptual level, the problem with this notion is that essentially converts the cap into a tax system, with a fixed price per ton. Last year’s Warner-Lieberman bill adopted several mechanisms to manage price pressure on the system, but rejected the idea of a safety valve price.

Stavins says the safety valve price should be 2-10 times the expected level, rather than 10-20% above the expected level, as some have suggested.⁷ Second, he suggests that the proceeds from the sale of “safety valve” allowances be used either to finance additional emissions reductions or buy allowances in future years when prices are more stable.⁸

Stavins’ proposal responds to concerns about market manipulation. My fear is that once the safety valve idea is accepted, it will soon be altered to address the concerns of those who simply think the secular trend in allowance prices will be above what they would like to pay. Thus Stavins’ “2-10 times” seems likely to rapidly become the 10-20% he opposes. And once the notion of “expected price” replaces the actual price in the market, baseline manipulation could easily contribute to transforming the cap into little more than a rather compromised tax.

V. Overemphasis on Cap-and-Trade

I disagree seriously with Stavins in only one respect—the suggestion implicit in his article that cap-and-trade is sufficient to solve the climate problem. I have always viewed cap-and-trade as a valuable tool for controlling greenhouse gases from the industrial sector. But in my view reducing emissions of greenhouse gases from motor vehicles, increasing American buildings’ energy efficiency, and increasing the

share of energy generated with renewable energy resources requires the use of regulation.

Stavins’ view, as I infer it from two of his articles, is that a cap placed far enough upstream in the economy will address all these problems. Requiring oil refineries, for example, to spend allowances in order to make and sell liquid fossil fuels, would raise the cost of such fuels paid by anyone driving or using a motor vehicle. The increased fuel cost would, in theory, provide incentives for people to drive less and/or buy more fuel-efficient vehicles, which would lower greenhouse gas emissions.

Likewise, if coalmines must surrender allowances for each ton of coal they sell, the cost of coal will increase. Utilities that burn coal will face increased operating costs, which will be reflected in the cost of electricity to the consumer. As the increased cost of electricity drives the cost of heating and lighting buildings up, building owners will find it makes economic sense to take actions to reduce their costs—whether increasing the energy efficiency of their buildings, or buying “green” power that does not carry the cost of greenhouse allowances.

The most recent oil crisis, which briefly raised gasoline costs to over \$4.00/gallon, is often cited as an example. As gasoline prices rose, mass transit ridership grew and, for the first time since such figures have been kept, Americans actually drove fewer miles for a time. If a cap-and-trade program kept gasoline prices high, so the reasoning goes, Americans’ past flirtations with fuel-efficient vehicles and public transportation would become ingrained in the national psyche.

The gasoline crisis is a powerful example, but I remain convinced that regulation will be needed. It will take more than increasing energy prices to overcome the strong structural obstacles to the necessary changes. For example, the effect of increased energy prices on building energy efficiency is attenuated for a variety of reasons that have been explored at length in the energy efficiency literature.⁹ Builders, who will not share the lifetime energy costs of buildings, have little incentive to adopt energy efficiency that raises the first cost of their building to a buyer—whether an owner of an office building or a new house or apartment. While landlords have every reason to reduce energy consumption, they cannot usually order tenants to turn out the lights; and tenants—including most businesses in the country—do not usually share their landlord’s incentive to save energy. Add to these the remarkable persistence of habit in the construction industry, and plain ignorance of the potential to reduce energy use, and you have a formidable set of obstacles to change, even though change could save owners and tenants significant amounts of money.

To change how buildings are constructed, lighted, and heated, increased energy prices are not enough. Over the past 30 years, California has demonstrated how to achieve impressive gains in the energy efficiency of buildings through regulation, in the form of changes in the building code of

4. See MCKINSEY & CO., *PATHWAYS TO A LOW CARBON ECONOMY* (2008).

5. NICHOLAS STERN, *STERN REVIEW: THE ECONOMICS OF CLIMATE CHANGE* xi (Cambridge Univ. Press 2006).

6. *Id.* at xiii.

7. Stavins 2 at 22.

8. Stavins 1 at 10756; Stavins 2 at 22.

9. See, e.g., DAVID B. GOLDSTEIN, *SAVING ENERGY, GROWING JOBS: HOW ENVIRONMENTAL PROTECTION PROMOTES ECONOMIC GROWTH, PROFITABILITY, INNOVATION, AND COMPETITION* (2007).

the state as well as state standards and codes specifying the performance of heating and cooling machinery and other energy-using appliances. In 1970, Californians used about the same energy per capita as Americans in the other 49 states. As a result of the concerted efforts of state regulators to increase energy efficiency, Californians now use only two-thirds the energy used by other Americans.¹⁰

Likewise, despite the episodic swoons to buying smaller cars when gasoline prices temporarily rise, there are strong structural impediments to reducing the use of oil in transportation. Over the past half century, the transportation system of the United States has been transformed. In 1950, short to medium to long range travel was almost exclusively the province of the railroads, an extremely energy efficient technology. Large percentages commuted to work by subsurface or surface mass transportation, all much more efficient than cars.

Several developments degraded the energy efficiency of this transportation system. First, President Eisenhower committed billions in federal funds to construct the interstate highway system, which created highly inefficient competition for both passenger and freight railroads. Second, the United States adopted a number of programs and tax subsidies designed to greatly increase home ownership. These subsidies stimulated the growth of new suburbs around American cities, which required travel by automobile to work and even to buy daily necessities. Within a short time, profitable private urban transit became unprofitable and in most cases was ultimately sold to the municipality to operate as a public service for those who could not afford to commute by car. Meanwhile air travel, which sucked away medium and long distance passengers from railroads, received generous subsidies in the form of government-owned or subsidized airport and highway links. Once-profitable private passenger rail companies stumbled and collapsed, again eventually ceding passenger rail to the only body that didn't need to make a profit, the U.S. government.

So in 50 years, the United States has deliberately, and at great cost, constructed an extremely inefficient transportation system. Untold billions have been invested in this system, while investment in more efficient forms of transportation has withered. This system is the result of public policy choices, not the market. Indeed, the market was deliberately subverted, in service of certain social objectives and the interests of certain large economic interests. At least in my view, it will take a new set of public policy choices and public investments (and probably subsidies), as well as a significant amount of time, to reverse these choices. I do not believe that merely increasing the price of gasoline—helpful as it might be—will accomplish the change in our transportation system that is needed to achieve necessary greenhouse gas emissions.

Thus I would urge Stavins to broaden his focus and acknowledge the degree to which conquering the climate problem requires major new regulatory initiatives, not just a cap-and-trade system. Hal Harvey, the CEO of a new \$1 billion foundation, ClimateWorks, recently identified five policies that “can help us win the energy-climate battle.”¹¹ One was putting a price on carbon, which a cap-and-trade program would do. But the other four were all regulatory: energy-efficient building codes, better vehicle fuel efficiency standards, a national renewable portfolio standard to spur investment in renewable energy, and decoupling the profit for utilities from the amount of energy they generate and sell so they will have an incentive to help homeowners save energy rather than using it.¹²

10. Steven Mufson, *In Energy Conservation, Calif. Sees Light*, WASH. POST, Feb. 17, 2007, at A0, available at <http://www.washingtonpost.com/wp-dyn/content/article/2007/02/16/AR2007021602274.html>.

11. Thomas Friedman, *Mother Nature's Dow*, N.Y. TIMES, Mar. 29, 2009, at WK9 (quoting Hal Harvey).

12. *Id.*

Comment on Addressing Climate Change With a Comprehensive U.S. Cap-and-Trade System

by Kathleen A. McGinty

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Prof. Robert Stavins has contributed greatly to the evolution of environmental policy. He's pioneered new instruments for achieving environmental progress and improved the effectiveness of traditional tools. This paper is no exception.¹ Here, Dr. Stavins offers compelling counsel on how best to structure a cap-and-trade policy to achieve reductions in greenhouse gas pollution.

Several points in Dr. Stavins' article bear further discussion however. Dr. Stavins notes that the effectiveness of his proposed policy could be influenced by factors such as the structure of electric markets and the generation mix in those markets. He also notes that policies to promote renewable energy and energy efficiency are potentially promising complements to a cap-and-trade policy.

However, these issues, noted only peripherally in Dr. Stavins' piece, really are central and should be elevated in the design of optimal climate change policy.

The first issue is market structure. Much has changed with respect to how electricity is priced and marketed since the passage of the 1990 Clean Air Act Amendments. Then, utilities were vertically integrated entities that generated electricity and delivered it to end-use customers. Rates were regulated and based on the cost to serve the customer. Today, some 17 states and more than 50% of the load in the country is served by load serving entities that no longer own generating assets and that now buy electricity on wholesale markets where prices are no longer based on the cost of providing service. In these "restructured" markets, electricity is priced at a "market-clearing price" in which the most expensive electron essentially sets the wholesale price for every electron called upon at any given time to meet demand.²

This is a key point in estimating the overall cost to society in achieving emission reductions, and in determining whether those costs will be borne equitably across the

country. Cap-and-trade programs as well as carbon tax policies impose a price on carbon, which then increases the price of electricity.

In regulated markets, the increase will be relatively straightforward such that the cost of service is increased by the new environmental compliance cost. To the extent that non-carbon-intensive energy sources like nuclear, hydro and other renewables are available in the generation mix, the overall cost to consumers will be moderated from the price increase that would occur from coal and other carbon intensive sources in the mix.

But in restructured markets, consumers will see a magnified price impact. The relatively high compliance cost for coal and other carbon-intensive sources will set a higher generation price that will be received by all sources. Even zero carbon sources with no compliance costs will receive the increased price.

The effect here is significant. Studies show that consumers in states with power restructuring could face price increases well in excess of costs faced by ratepayers in regulated states. Generation asset owners stand to gain substantially too as the increased price for electricity brings enhanced revenues to the entire generation fleet, again, even to units that have no compliance costs. Energy consultancy Synapse finds that, "Customers in deregulated markets will pay about 10 TIMES the cost of abatement,"³ and Sanford C. Bernstein & Co. utilities analyst Hugh Wynne says nuclear operators in deregulated states will see "supernormal profits" on the order of billions of dollars every year.⁴

Policy makers have begun to grapple with this latter issue. Auctions of allowances are being structured essentially to claw back some of the extra profits and revenues realized

1. Robert N. Stavins, *Addressing Climate Change With a Comprehensive U.S. Cap-and-Trade System*, 39 ELR (ENVTL. L. & POL'Y ANN. REV.) 10752 (Aug. 2009) (originally published at 24 OXFORD REV. ECON. POL'Y 298 (2008)).

2. Sometimes long-term contracts determine the price of some electricity delivered while short-term markets determine prices (as described here) for remaining electricity delivered.

3. Bruce Biewald, Synapse Energy Economics, Inc., Presentation to NASUCA 2008 Annual Meeting: Economics of Electric Sector CO₂ Emissions Reduction: Making Climate Change Policy That People Can Live With 22 (Nov. 18, 2008), available at <http://www.synapse-energy.com/Downloads/SynapsePresentation.2008-11.NASUCA.Electric-CO2-Reduction-Policy.S0053.pdf> (last visited May 18, 2009).

4. Rebecca Smith, *Carbon Caps May Give Nuclear Power a Lift*, WALL ST. J., May 19, 2008, at A4.

through auctions recycled to the benefit of consumers in direct rebates or programs that can cut electric bills.

Note that two problems persist, however. First, since non-emitting sources do not have to buy allowances, an auction will not recover monies from them and ratepayers will still be out extra billions every year. Further, and related to this point, an uneven cost burden is still carried by consumers in deregulated states relative to those in regulated states.

Would the problem be solved if allowances were given freely to generators? No. Even if obtained at no cost, allowances have a market value since they still represent the opportunity to avoid an abatement cost. The value of these allowances will be included by generators in the price they bid into the market for their power and the magnified cost problem to consumers will remain. Emission allowances given away for free in regulated states will directly benefit consumers because cost of service will be lower than otherwise, while allowances given away for free in restructured states “will be reflected in both wholesale and retail prices whether or not they are given away for free,”⁵ as electricity markets expert Paul Joskow puts it.

Perhaps it can be argued that enhanced profits to zero carbon sources is a good thing as society aims to cut greenhouse gas pollution. If so, then still another requirement is needed, namely, enhanced returns should actually be invested in projects and plants that cut emissions since paying more to existing plants is not the same thing as getting a cleaner generation built and cutting pollution further. To the extent that consumers are paying an additional price pursuant to a climate policy, climate pollution reductions should be achieved.

One potential solution to this problem is to impose the emission reduction obligation on load serving entities rather than on power generators. Power transmission and distribution is regulated in every state even if power generation is competitive. A model can be found for this approach in many state renewable portfolio standards that place the renewable energy requirement on the company delivering the power.

The second issue is the generation mix. Cost increases for electricity can reduce emissions by inducing consumers to conserve. But serious market barriers and stubborn inelasticities mean that generalized price signals only modestly affect demand. Substantial emission reductions are realized when the generating mix is switched toward lower carbon sources and, as discussed below, through targeted demand side management programs. The question then is whether carbon taxes or cap-and-trade policies are efficient or effective tools in causing a switch to non-emitting generating sources. It seems not, and fuel switching occurs only at relatively high carbon prices.

The least cost electricity is typically dispatched first. Nuclear, hydro and renewable energy sources that have low

or zero fuel costs have lower marginal costs and therefore are the first generating assets to be called to serve load. This means that, to the extent these resources exist and are available, they are already running flat out. A price signal from a carbon tax or cap-and-trade policy will not result in them running more than they already are.

But what about coal and natural gas? Will price signals cause a switch in the dispatch order such that gas will run more and displace coal?

Several things are important in considering this question. Coal generation dominates many markets. That means it is needed to serve load and the plants will be run even if the cost advantage of coal compared to natural gas is diminished or disappears altogether.

To the extent gas capacity is available to serve an increased amount of load, a switch in dispatch order only occurs at carbon costs beyond those being discussed in policy and political circles today, and gas prices must be relatively low.

The regional transmission organization PJM, for example, reports that carbon charges of some \$80/ton carbon dioxide (CO₂) are needed if combined cycle gas is to be dispatched ahead of coal on large scale when gas prices are at \$10/MMBtu. Even at a gas price of \$6.44/MMBtu, carbon costs of \$40/ton are required.⁶

The Electric Power Research Institute (EPRI) similarly found that in the coal dominant upper Midwest of the United States, “Even a CO₂ value of \$50/ton would produce only a 4% reduction in regional emissions given the current generation mix.” Moreover, EPRI reports that, even in Texas, where gas is dominant, “when gas is selling for around \$8/MMBtu, even a CO₂ value of \$40/ton produces little emissions reduction.”⁷

The cost impact on consumers of carbon prices at these levels is significant. PJM for example estimates that a \$60/ton CO₂ price increases wholesale power costs by 95.4%, and adds some \$34 per month to household electric bills.⁸

What about “complementary policies”? Policy tools like renewable portfolio standards and efficiency performance standards can help address some of the problems noted above.

It is a truism that the shortest distance between two points is a straight line. That means that, to the extent that renewable energy and energy efficiency can cut climate-destabilizing pollution quickly and cheaply, policy should aim directly at those ends.

In Pennsylvania, climate policy is being built first on the strong foundation of policies that require the use of renew-

5. Posting of Paul Joskow to The Energy Policy Blog, <http://www.energypolicyblog.com/?p=457> (Jan. 21, 2009, 22:15 EST), (last visited May 18, 2009).

6. Presentation to PJM Members Committee Meeting: Potential Effects of Proposed Climate Change Policies on PJM’s Energy Market 29 (Jan. 22, 2009), available at <http://www.pjm.com/Media/committees-groups/committees/mc/20090122-item-06-climate-change-policies.pdf> [hereinafter PJM] (last visited May 18, 2009).

7. Victor Niemeyer, *The Change in Profit Climate: How Will Carbon-Emissions Policies Affect the Generation Fleet?*, PUBLIC UTILITIES FORTNIGHTLY, May 2007, at 24.

8. PJM, *supra* note 6, at 9.

able energy and that mandate efficiency improvements. When combined with the adoption of the California tailpipe standards for greenhouse gas emissions and efforts to enhance the sequestration of carbon in soil, Pennsylvania is finding that significant reductions in emissions on the order of 25% can be achieved and in ways that can save consumers money. Our recently passed efficiency portfolio standard, Act 129, for example, will save ratepayers some \$800 million annually even as it avoids the need for 4000 MW of generating capacity and all of the associated pollution from that generation.

Various studies confirm the promise of these policies. The Regulatory Assistance Project reported last year that:

two decades of experience with utility DSM (demand side management) programs has demonstrated in practice that well-managed *efficiency programs* can deliver significant savings to the power grid, and thus can lower carbon emissions at low cost to the nation. *In fact, the power system will realize about 5 to 7 times more savings—in MWh, and thus in GHG emissions—from each dollar spent in a well-managed efficiency program, than it will through a generalized, across-the-board price increase.*⁹

PJM backs this up. PJM's analysts report that emissions are reduced by initiatives that directly reduce demand, even while price and cost increases are mitigated. Even a modest 2% load reduction cuts three to four billion dollars from business as usual wholesale costs across the PJM region and consumers get a cut in their electric bill.¹⁰

Renewables offer similar cost-minimizing reductions. This is understandable since, with zero fuel costs, renewables beat out fossil generation on the margin. The more zero fuel cost generation in the mix, the more the market clearing price can be brought down, and the cheaper overall electric service will be.

PJM analysts find, for example, that adding 15,000 MW of wind displaces carbon intensive generation and reduces emissions, while mitigating the price and cost of achieving those emission reductions. Cost savings in achieving emission reductions are estimated to be on the order of some four to four and a half billion dollars in wholesale power prices across the PJM region.¹¹

Summing up the benefits of renewables and efficiency, PJM reports that “penetration of actions that reduce consumption and wind power have mitigating effects on LMP (locational marginal pricing), wholesale power costs, and customer bills while enhancing emissions reductions.”¹²

In conclusion, cap-and-trade is a proven tool in achieving cost effective pollution reductions. Dr. Stavins' design will ensure it can play a similarly effective role in helping society meet the climate challenge. However, other policy tools offer considerable promise in achieving needed emission cuts even at a cost savings to consumers. Emphasizing these policies also mitigates some of the magnified cost and inequity issues that arise across the various electricity market designs across the country. Policies that increase use of renewable electricity and energy efficiency should be given more central stage in crafting a comprehensive climate mitigation policy.

9. *Carbon Caps and Efficiency Resources: How Climate Legislation Can Mobilize Efficiency and Lower the Cost of GHG Regulation*, 110th Cong. 8 (2008) (testimony of Richard Cowart, Director of the Regulatory Assistance Project, House Select Committee on Energy Independence and Global Warming), available at <http://globalwarming.house.gov/tools/2q08materials/files/0024.pdf> (last visited May 18, 2009).

10. PJM, *supra* note 6, at 18.

11. *Id.* at 22.

12. *Id.* at 29.

ARTICLE

Information Access—Surveying the Current Legal Landscape of Federal Right-to-Know Laws

by David C. Vladeck

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In this new age of environmental law, scholars, advocates, policy makers, journalists, and other interested members of the public can gain access to and harness information about our environment through federal right-to-know laws, including the Freedom of Information Act (FOIA).¹ The question is whether these statutes ensure that environmental information is made available to the public in a timely and dependable way.

In theory, the answer is yes. These statutes appear to provide a comprehensive right of access to information generated by the federal government or acquired by the federal government from private parties and state and local governments. In practice, however, this net of government-information statutes provides what is at best a piecemeal and not entirely satisfactory pathway to needed environmental information and is at worst the illusion of a right of access where none exists. There are many reasons why the reality does not match the expectations.

First, FOIA—by far the most important access tool—is a requester-driven statute. The government's responsibility under FOIA is to *respond* to requests for information, not to *initiate* the publication or dissemination of information. This is FOIA's Achilles' heel. The process of drafting and submitting FOIA requests and then waiting for the agency's response is a breeding ground for delay and cynicism over the Act's efficacy.

Congress sought to fine-tune FOIA in 1996 when it enacted the Electronic FOIA Amendments (EFOIA) to place affirmative obligations on agencies to compile information that is of general interest to the public and

Professor Vladeck has an active litigation practice and has handled or supervised many cases seeking access to federal records, including many cases discussed in this Article. A version of this Article was originally published in the Texas Law Review (English version only) at 86 TEX. L. REV. 1787 (2008), and is reprinted with permission.

to make it available on the Internet.² But agencies have by-and-large failed to comply with EFOIA's affirmative disclosure mandate,³ and thus FOIA remains predominantly a requester-driven statute.

Second, a perennial problem is that access-to-information statutes are subject to political manipulation by administrations that are intent on limiting public access to government-held information. When George W. Bush took office in 2001, one of the first official acts of his Attorney General John Ashcroft was to issue a directive to the heads of all federal agencies and departments notifying them that the Justice Department would defend all agency efforts to withhold information under FOIA so long as there was a plausible basis for so doing.⁴ More recently, the Environmental Protection Agency (EPA) has drastically scaled back the information made public under the Toxics Release Inventory (TRI) program of the Emergency Planning and Community Right-to-Know Act.⁵ The TRI program tracks the waste production and release of approximately 650 dangerous chemicals.⁶ Prior to EPA's rollback, facilities had to report detailed information for any amount over 500 pounds about the amount of any of those chemicals and where the chemical went.⁷ For pollution

1. 5 U.S.C. §552. FOIA was first enacted in 1966, and has been amended in 1974, 1976, 1986, 1996, 2002, and 2007.

2. Pub. L. No. 104-231, 110 Stat. 3048 (1996) (codified as amended at 5 U.S.C. §552).

3. See, e.g., *Implementation of the Electronic Freedom of Information Act Amendments of 1996: Is Access to Government Information Improving?: Hearing Before the Subcomm. on Gov't Mgmt., Info. and Tech. of the H. Comm. on Gov't Reform*, 105th Cong. 20–31 (1998) (statement of Michael E. Tankersley, Senior Staff Attorney, Public Citizen Litigation Group) (examining the implementation of EFOIA in light of reports indicating a lack of agency compliance).

4. Memorandum from John Ashcroft, Att'y Gen. of the United States, to the Heads of All Fed. Dep'ts & Agencies (Oct. 12, 2001), available at <http://www.usdoj.gov/oip/011012.htm>.

5. EPA Toxics Release Inventory Burden Reduction Final Rule, 71 Fed. Reg. 76932 (Dec. 22, 2006) (codified at 40 C.F.R. pt. 372 (2008)); see also 42 U.S.C. §11023, ELR STAT. EPCRA §313 (establishing the reporting requirements for toxic chemical releases).

6. Chemicals and Chemical Categories to Which This Part Applies, 30 C.F.R. §372.65 (2008).

7. EPA Toxics Release Inventory Burden Reduction Final Rule, 71 Fed. Reg. at 76933.

amounts less than 500 pounds, facilities only had to file a short form certifying that the chemical was under the limit.⁸ Now, for the majority of TRI chemicals, the threshold for reduced reporting is 5,000 pounds, so long as 2,000 pounds or fewer are released directly into the environment.⁹

Third, access-to-information statutes are only as effective as courts say they are, and the effectiveness of FOIA and other access-to-information statutes, such as the Federal Advisory Committee Act, have been undercut by judicial interpretation. Courts have approved lengthy agency delays in processing requests. Courts have interpreted exemptions in FOIA and other statutes for trade secrets and confidential business information quite expansively, creating a broad and widening gap in the public's ability to acquire environmental information generated by corporations.¹⁰ The Supreme Court's increasingly restrictive approach to attorney's fees has weakened the ability of prevailing plaintiffs in access-to-government-information litigation to collect their fees.¹¹ To illustrate the pitfalls in enforcing what we call, perhaps naively, FOIA's "right" of access, I use two cases I have worked on for environmental groups to show that even diligently pressed FOIA litigation takes time and effort and slows substantially the outflow of important public-health data.

Where does this leave us? In my view, there is now a significant and growing dissonance between the promises made by our federal right-to-know laws and their performance. It is time to overhaul our nation's right-to-know laws in three important ways:

First, right-to-know laws should place an affirmative duty on the government to make environmental information available to the public. The Internet and other communication tools have made obsolete the request-and-wait-for-a-response approach designed for paper records. Placing the obligation for disclosure on the government also resolves the nettlesome procedural problems that impair the effectiveness of FOIA and other requester-driven statutes.

Second, right-to-know laws should grapple with the cross-cutting problem of confidential business information, which is the most frequently invoked justification for denying public access to environmental data. Agencies are ill-equipped to deal with confidentiality claims, and they generally rubber-stamp company claims of commercial sensitivity. Only a small fraction of information asserted to be commercially sensitive is, in fact, sensitive. To handle claims of competitive injury better, procedures must be fashioned: (a) to place a significant burden of proof on the submitting company to

substantiate claims of commercial sensitivity; (b) to deter unfounded claims of likely competitive harm by punishing companies that make them; and (c) to enable agencies to evaluate claims of likely competitive injury more effectively.

Third, Congress should send a strong signal to the judiciary that access-to-information statutes should be construed to maximize public access to environmental data and to permit withholding where—but *only* where—disclosure is likely to cause an identifiable and significant harm to the government or the submitter. All too often courts defer to generalized agency claims of harm without taking into account the age of the records, the remoteness of the alleged injury, or the nature of the alleged injury. At present, none of the federal access-to-information statutes empower courts to balance the public interest in disclosure against the private interest in secrecy—a calculus that would result in the disclosure of valuable environmental information.

I. Crosscutting Federal Right-to-Know Statutes

We will focus our attention first on the Freedom of Information Act and then turn to the Federal Advisory Committee Act.

A. FOIA

1. Background

First enacted in 1966, FOIA establishes a presumption of open access to all records in the hands of the federal government. FOIA does so in three ways. First, it requires the government to publish in the *Federal Register* all "substantive rules of general applicability," "statements of general policy or interpretations of general applicability formulated and adopted by the agency," and descriptions of the agency's organization and rules regarding requests to obtain agency information.¹² FOIA also requires the government to make other information available to the public in reading rooms; EFOIA requires that this information be made available via the Internet. Most importantly, it gives members of the public a general right to ask for and be provided with virtually all government-held information.

2. FOIA §552(a)(3)(A)

The real genius of FOIA is its provision allowing "any person"¹³—including corporations, nonprofit entities, and

8. *Id.*

9. *Id.* at 76937.

10. See generally *Critical Mass Energy Project v. NRC*, 975 F.2d 871, 22 ELR 21373 (D.C. Cir. 1992) (en banc) (holding that reports submitted to the Nuclear Regulatory Commission are confidential and thus protected from disclosure).

11. See Alan B. Morrison, *Balancing Access to Government-Controlled Information*, 14 J.L. & Pol'y 115, 117 n.5 (2006) (noting that the Court's decision in *Buckhannon Board & Home Care, Inc. v. West Virginia Department of Health & Human Resources*, 532 U.S. 598 (2001), which held that a plaintiff must obtain court-ordered relief in order to collect attorney's fees, means that "in the FOIA context . . . the Government can fight for years and then 'voluntarily disclose' the requested records before a judge rules against it, and thereby avoid paying any fees").

12. 5 U.S.C. §552(a)(1)(A)–(E) (2000). The publication requirement marks an important step forward in administrative law; rules or interpretations of general applicability that are not published in the *Federal Register* are not enforceable by the agency. See, e.g., *Morton v. Ruiz*, 415 U.S. 199, 232–35 (1974); *Smith v. Nat'l Transp. Safety Bd.*, 981 F.2d 1326, 1328–29 (D.C. Cir. 1993); *Anderson v. Butz*, 550 F.2d 459, 463 (9th Cir. 1977) (all holding that, under the APA, rules and interpretations of general applicability must be published in the *Federal Register* in order to be enforceable).

13. *Id.* §552(a)(3)(A) (emphasis added).

even foreign nations¹⁴—to request *any* record from *any* federal agency or government-controlled entity on *any* subject, without saying why the record was requested or what purpose disclosure would serve.¹⁵ FOIA authorizes a disappointed requester to bring suit to compel disclosure of withheld records and places the burden of proof on the government, not the requester.¹⁶

3. A Tale of Two Cases

To illustrate the strengths and weaknesses of FOIA in practice, it is useful to briefly sketch the progression of two FOIA cases I worked on for environmental organizations.¹⁷ The first, *Natural Resources Defense Council (NRDC) v. United States Department of Defense*,¹⁸ is an ongoing effort to force the Department of Defense (DOD), EPA and the Office of Management and Budget (OMB) to release records relating to perchlorate, an ingredient in rocket fuel that contaminates groundwater in about 30 states.¹⁹

The case began the way almost all FOIA cases begin. NRDC had looked at the health effects data on perchlorate and concluded that it likely posed a significant threat to people who might be exposed to it through their drinking water.²⁰ NRDC submitted a series of FOIA requests in the spring and fall of 2003 to DOD and EPA, and later to OMB.²¹ Predictably, none of the agencies responded to NRDC's requests, so NRDC sent in additional letters urging a response and bided

its time. After waiting a full year, NRDC filed this action in March 2004 against all three agencies.²²

The agencies filed a typically uninformative answer²³ and, over the next nine months, requested successive extensions of time to enable the agencies to complete their searches for responsive documents, to process the large volume of documents identified as responsive, and to release nonexempt documents. In November 2004—over 18 months after NRDC filed its initial FOIA requests—EPA and DOD filed motions for summary judgment.²⁴ At that time, between EPA and DOD, 7,000 total records were withheld, and DOD *excluded* the Air Force from its search for responsive records.²⁵

Three obvious flaws in the Government's motions fueled my suspicion that they were filed to delay the progress of the litigation. First, DOD acknowledged that it had refused to search Air Force records, even while it claimed that it had designated the Air Force as its "lead military agency" on perchlorate years earlier.²⁶ Second, the declarations and *Vaughn*²⁷ indexes submitted by the Government were seriously deficient because EPA and DOD either provided no document-specific justifications at all, or if they did, they failed to explain why the withheld records were predecisional.²⁸ The third and final straw was that the Government withheld many records on the basis of obviously overbroad exemption claims.

While preparing its summary judgment motion, OMB decided that twenty records were nonresponsive and excluded them for that reason, and that 57 documents should be released to NRDC.²⁹ This left 243 documents, in whole or in part, at issue; all were withheld under Exemption 5.³⁰ OMB was playing a critical role in pressing EPA to set a high

14. *Id.* §551(2).

15. *Id.* §552(a)(3)(A).

16. *Id.* §552(a)(4)(B).

17. Prior to joining the faculty of Georgetown University Law Center full-time in 2002, I spent over 25 years as a staff lawyer and director of Public Citizen Litigation Group, where I handled FOIA cases for parties seeking disclosure of government-held information. I continue to represent parties in FOIA litigation. The discussion of the cases that follows is based on my participation as counsel for the plaintiffs and on the voluminous court filings and correspondence generated by each case. The assertions that follow that are not supported by a conventional citation are based on my account of the events that are reported in the text.

18. Complaint for Injunctive and Declaratory Relief, No. CV 04-2062 GAF (RZx) (C.D. Cal. Mar. 31, 2004), 2004 WL 5043625. The case has already resulted in two published decisions: *NRDC v. U.S. Dep't of Def. (NRDC I)*, 388 F. Supp. 2d 1086 (C.D. Cal. 2005) and *NRDC v. U.S. Dep't of Def. (NRDC II)*, 442 F. Supp. 2d 857 (C.D. Cal. 2006).

19. See Ross Brechner et al., *Ammonium Perchlorate Contamination of Colorado River Drinking Water Is Associated With Abnormal Thyroid Function in Newborns*, 42 J. OCCUPATIONAL & ENVTL. MED. 777, 777 (2000) (stating that ammonium perchlorate has been used "as an oxidizer in solid propellants for rockets, missiles, fireworks, and munitions; for manufacture in matches; and in analytical chemistry"); James W. Moeller, *Legal Issues Associated With Safe Drinking Water in Washington, D.C.*, 42 WM. & MARY ENVT. L. & POL'Y REV. 661, 696 (2007) ("The U.S. Government Accountability Office ('GAO') has identified almost 400 sites in thirty-five states—and in the District—with perchlorate contamination in drinking water, surface water, groundwater, and soil.").

20. Perchlorate contamination poses potential health risks to tens of millions of Americans, particularly fetuses and newborns. See, e.g., Brechner et al., *supra* note 19, at 778 (outlining the harmful effects of perchlorate).

21. Letter from David Beckman, Senior Attorney, Natural Res. Def. Council, to Freedom of Info. Officer, Dir., Freedom of Info. & Sec. Review, Dep't of Def. (Sept. 2, 2003) (on file with the Texas Law Review) (Letter I). Letter from David Beckman, Senior Attorney, Natural Res. Def. Council, to Freedom of Info. Officer, Dir., Freedom of Info. & Sec. Review, Dep't of Def. (Sept. 2, 2003) (on file with the Texas Law Review) (Letter II).

22. Complaint for Declaratory and Injunctive Relief at 1–2, *NRDC v. U.S. Dep't of Def. (NRDC I)*, 388 F. Supp. 2d 1086 (C.D. Cal. 2005) (No. CV 04-2062 GAF (RZx)), 2004 WL 5043625.

23. FOIA provides that "the defendant shall serve an answer or otherwise plead to any complaint made under this subsection within thirty days after service upon the defendant . . . unless the court otherwise directs for good cause shown." 5 U.S.C. §552(a)(4)(C).

24. Notice of Motion, and Motion for Summary Judgment by Defendant DOD, *NRDC I*, 388 F. Supp. 2d 1086 (No. CV 04-2062 GAF (RZx)), 2004 WL 5043623 [hereinafter Motion for Summary Judgment by DOD]; Memorandum of Points and Authorities in Support of EPA's Motion for Summary Judgment, *NRDC I*, 388 F. Supp. 2d 1086 (No. CV 04-2062 GAF (RZx)), 2004 WL 5043624 [hereinafter Memorandum in Support of EPA's Motion]. OMB was not yet prepared to file a motion for summary judgment because it claimed that it still needed additional time to search for and process responsive records.

25. Motion for Summary Judgment by DOD, *supra* note 24, at 3.

26. *Id.*

27. *Vaughn v. Rosen*, 484 F.2d 820, 823 (D.C. Cir. 1973).

28. See, e.g., *NRDC v. U.S. Dep't of Def. (NRDC I)*, 388 F. Supp. 2d 1086, 1096–97, 1103–04, 1106–07 (C.D. Cal. 2005) (rejecting DOD's and EPA's *Vaughn* indexes). *Vaughn* indexes play a key role in FOIA litigation by injecting a degree of adverseness into FOIA litigation, which is inherently nonadversarial. Courts require the Government to: (1) prepare a *Vaughn* index to identify each record withheld (typically by the record's date, author, recipients, title, subject matter, and length), any attachment to the record (which is frequently the case with e-mails), and the exemptions the Government claims justify withholding each segregable portion of the record; and (2) provide a detailed justification (typically in the form of a declaration) correlated to the Government's exemption claims for each segregable portion of each withheld record. See generally *Founding Church of Scientology v. Bell*, 603 F.2d 945, 947–49 (D.C. Cir. 1979) (discussing the failings of a *Vaughn* index prepared by the FBI).

29. *Id.*

30. *Id.*

threshold for perchlorate exposure, thereby minimizing the remediation costs the government and defense contractors would face. OMB had shared documents relating to potential cleanup costs with outside lobbyists working for defense contractors, including the Executive Office of the President Group,³¹ and Richard Belzer, a former OMB economist who the agency claimed was an unpaid consultant.³² OMB made the far-fetched claim that doing so was necessary to “preserv[e] the confidentiality of internal Executive Branch deliberations.”³³ Although OMB invoked Exemption 5, the agency’s *Vaughn* index did not identify the authors or recipients of many of the withheld documents, suggesting that the documents may well have been produced by, or shared with, nongovernmental parties.³⁴

In March 2006, the court denied the motions for summary judgment filed by OMB, EPA, and DOD.³⁵ Finding that OMB had engaged in “selective disclosures” to aid private industry in its fight against perchlorate regulation, the court held that OMB had to turn over records shared with outside parties, including the EOP Group, Belzer, and other “contractors.”³⁶ The court also held that DOD’s failure to identify the recipients and authors of withheld records foreclosed the agency’s reliance on Exemption 5, and accordingly ruled that those records had to be released as well.³⁷

In April 2006, the Air Force moved for summary judgment.³⁸ Having spent a full year on its search, the Air Force claimed that it had uncovered barely 400 records relating to perchlorate.³⁹ Puzzled by the small number of records the Air Force unearthed, the court thought that something was awry and granted our motion to take discovery on the adequacy of the Air Force’s search.⁴⁰ Extensive discovery showed that thousands of responsive records had not been identified and turned over.

In July 2006, NRDC and EPA entered into a settlement to establish a process for resolving their dispute over the remaining records.⁴¹ These procedures enabled the parties to resolve their differences and wind up the litigation involving

EPA. But, at the time of this writing, proceedings remain active with both DOD and OMB.

NRDC v. Department of Defense showcases some of the common procedural pitfalls that await FOIA plaintiffs. Another case, *New York Public Interest Research Group (NYP-IRG) v. EPA*⁴² spotlights the key substantive difficulty with FOIA in environmental litigation—FOIA’s exemption for confidential business information (Exemption 4).⁴³ *NYP-IRG* involved EPA’s plan to clean up the Hudson River, which had been contaminated by at least one million tons of polychlorinated biphenyls (PCBs) that had been discharged into the river by the General Electric Corporation (GE) over a thirty-year period.⁴⁴ Under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA),⁴⁵ EPA has the authority to compel a responsible party to implement a cleanup remedy chosen by the agency.⁴⁶

In December 2000, EPA published for public comment a proposed plan for dredging the upper Hudson River to eliminate PCB contaminants, at an estimated cost of over \$450 million.⁴⁷ GE argued that dredging was the wrong cleanup strategy because it would result in the resuspension of PCB that had settled to the river floor.⁴⁸ After the comment period closed on July 1, 2001, GE engaged in off-the-record meetings with EPA and OMB.⁴⁹ EPA and GE entered into a confidentiality agreement in connection with these meetings.⁵⁰ In February 2002, EPA ordered that its proposed large-scale dredging plan be implemented, and in July 2002, EPA issued an Administrative Order on Consent, in which GE agreed to pay EPA \$5 million for partial reimbursement of the agency’s past costs and up to \$2.625 million for the agency’s future costs—a small fraction of the agency’s past costs and an even smaller fraction of the agency’s estimated future costs.⁵¹

In *NYP-IRG*’s view, the settlement between GE and EPA had all of the hallmarks of a government giveaway. *NYP-IRG* filed the case against EPA and OMB on July 3, 2002 to learn what had taken place during the secret meetings between GE, EPA, and OMB.⁵² The key question was whether, under FOIA, EPA could withhold 43 records it received from GE as part of the negotiations over GE’s responsibility for cleaning up the Hudson.⁵³ The sole basis for EPA’s withholding was FOIA Exemption 4, which protects trade secrets and con-

31. OMB is part of the EOP. EOP is a lobbying group composed of former OMB staffers.

32. *NRDC II*, 442 F. Supp. 2d at 867.

33. *Id.* at 865.

34. The best discussion of this point—namely, the failure of DOD to give NRDC discrete, nonexempt portions of the records DOD was withholding—is in *NRDC II*, 442 F. Supp. 2d at 871–77.

35. *Id.* at 861.

36. *Id.* at 865–71.

37. *Id.* at 870–71.

38. The Department of Defense moved for partial summary judgment with respect to the Air Force’s withholdings on April 3, 2006. Notice of Motion, and Motion for Partial Summary Judgment by Defendant DOD, *NRDC II*, 442 F. Supp. 2d 857 (No. CV 04-2062 GAF (RZx)).

39. Memorandum of Points and Authorities Submitted in Support of DOD’s Motion for Partial Summary Judgment as to Records Held by the Department of the Air Force at 4, *NRDC II*, 442 F. Supp. 2d 857 (No. CV 04-2062 GAF (RZx)).

40. The order permitted NRDC to submit interrogatories to DOD and to take the deposition of three senior Air Force officials, and directed the Air Force to search for records in the Air Force’s Research Lab, the Air Force’s Perchlorate Study Group, and various other Air Force offices. (Proposed) Order, *NRDC II*, 442 F. Supp. 2d 857 (No. CV 04-2062 GAF (RZx)).

41. Joint Stipulation and (Proposed) Order Regarding Settlement of Claims Against Defendant EPA at 4–5, *NRDC v. U.S. Dept of Def.*, No. CV 04-2062 GAF (RZx) (C.D. Cal. July 18, 2006).

42. 249 F. Supp. 2d 327 (S.D.N.Y. 2003).

43. 5 U.S.C. §552(b)(4).

44. *NYP-IRG*, 249 F. Supp. 2d at 329.

45. 42 U.S.C. §§9601–9675, ELR STAT. CERCLA §§101-405.

46. *NYP-IRG*, 249 F. Supp. 2d at 329 (citing 42 U.S.C. §§9601, 9604, 9606–9607, 9622).

47. *Id.*; EPA, RECORD OF DECISION, HUDSON RIVER PCBs SITE, NEW YORK 114 (2002), available at <http://www.epa.gov/hudson/RecordofDecision-text.pdf> (last visited June 2, 2009).

48. Plaintiff’s Memorandum in Opposition to Defendants’ Cross-Motion for Summary Judgment and in Support of Plaintiff’s Motion for Summary Judgment at 4–5 [hereinafter Plaintiff’s Memorandum], *NYP-IRG*, 249 F. Supp. 2d 327 (No. 02 Civ. 5130), 2002 WL 32768713.

49. *Id.* at 4–5.

50. *Id.*

51. *Id.*

52. Complaint for Declaratory and Injunctive Relief, *NYP-IRG*, 249 F. Supp. 2d 327 (No. 02 Civ. 5130), 2002 WL 32768612.

53. *Id.* at 330.

fidential business information.⁵⁴ The withheld documents, many of which were entitled “Hudson River Proposal” and “Hudson River—Proposed Remedy,” set forth GE’s analyses of the costs, benefits, and environmental consequences of EPA’s proposed remedy and GE’s alternatives.⁵⁵ Many of the pages were marked “Privileged & Confidential,” and the confidentiality agreement executed by the parties contemplated that EPA would not share these submissions with nongovernmental parties.⁵⁶ GE made no effort to intervene in the litigation, nor did it submit any declarations or affidavits explaining why, in its view, the documents were privileged or confidential.⁵⁷ The question then became whether information of the kind GE provided to EPA falls within the scope of Exemption 4. EPA argued that it did because the information was commercial in nature and because it was confidential, as evidenced in part by the confidentiality agreement GE and EPA had executed. NYPIRG contended that the withheld documents had no intrinsic commercial value, and “were not prepared to aid GE in its business (unless its business is dumping hazardous materials into the Hudson River) but to advocate against the environmental remedy favored by EPA.”⁵⁸

The district court agreed with NYPIRG, but its reasoning reveals the friction points under Exemption 4. To qualify as commercial the “information itself must in some fashion be commercial or financial in nature or use.”⁵⁹ The court reasoned that although GE “clearly is a commercial entity,” the information “does not reveal anything about the nature and character of GE’s business, or its revenues, expenses or income, or anything that a commercial business would want to protect for fear of competitive injury.”⁶⁰ Rather, GE submitted the documents in order to “advocate a policy position, because it had a financial stake in the outcome of its meetings with EPA and OMB, and because it sought to convince EPA to adopt its less expensive remedy in addressing GE’s dumping of PCBs into the Hudson River.”⁶¹

The court also wrestled with EPA’s alternative claim that disclosure of the records would impair the agency’s ability to obtain necessary information in the future, and therefore that the information was “confidential” under Exemption 4.⁶² In addressing this question, the court flagged but did not resolve the question of whether *National Parks & Conservation Ass’n v. Morton* or *Critical Mass Energy Project v. NRC* provided the controlling test for impairment.⁶³ The court recognized that the confidentiality agreement was evidence that GE expected the records to remain confidential and supported the inference that, but for a promise of confidentiality,

GE would not have furnished them to EPA.⁶⁴ But the court concluded that GE’s subjective belief was not dispositive, and ordered EPA to release the records submitted by GE.⁶⁵

4. Lessons Learned?

First, the good news: FOIA remains a viable tool to pry loose environmental data if—but only if—there is no urgent need for the records and one has access to a legal team that can sustain the effort over a long haul.

FOIA also provides incentives for organizations and individuals to turn to the courts to pursue information denied to them by the agencies. Of course, not all FOIA denials lead to litigation. FOIA litigation has also proved to be a useful tool to gain insights into the government’s handling of important environmental issues. For instance, in *NRDC*, DOD claimed that the Air Force is the Department’s lead component on perchlorate and touted the lengths to which the Air Force had gone to inventory the extent of contamination, to study perchlorate’s health effects, and to devise effective remediation programs but the Department’s rhetoric did not match the evidence.⁶⁶

There is also bad news. For one thing, there is a welter of potential procedural disputes that can mire FOIA litigation and derail it altogether. For instance, five years after NRDC’s requests—and after four years of litigation, three full rounds of summary judgment briefing, and extensive discovery—the case is still pending. Even *NYPIRG*, a case that proceeded rather promptly, took over a year from filing to be resolved. Thus FOIA lays down an uncertain path for parties who need prompt access to records.

There are also serious substantive problems that limit FOIA’s effectiveness in environmental cases. Perhaps the biggest obstacle is looming presence of *Critical Mass*. Although the ruling has been adopted only by the D.C. Circuit, it is followed by every federal agency in making determinations about whether to disclose information that arguably falls within Exemption 4.⁶⁷ There are two reasons for this. One, the Department of Justice, which oversees the executive branch’s implementation of FOIA, takes the view that *Critical Mass* is controlling as a matter of law, and federal agencies follow its lead.⁶⁸ And two, unlike many of FOIA’s other exemptions, matters that fall within Exemption 4’s scope are not subject to discretionary release by the government.⁶⁹ In permitting submitters to sue to enjoin disclosures under the Act (so-called reverse-FOIA cases), the Supreme Court in *Chrysler v. Brown*⁷⁰ suggested that Exemption 4 implicates,

54. *Id.* Exemption 4 provides that FOIA does not apply to matters that are “trade secrets and commercial or financial information obtained from a person and privileged or confidential.” 5 U.S.C. §552(b)(4).

55. *NYPIRG*, 249 F. Supp. 2d at 330.

56. *Id.*

57. *Id.* at 337.

58. Plaintiff’s Memorandum, *supra* note 48, at 2–3.

59. *NYPIRG*, 249 F. Supp. 2d at 332–33.

60. *Id.* at 333.

61. *Id.* at 333–34.

62. *Id.* at 334–35.

63. *Id.* at 335–36.

64. *Id.* at 337.

65. *Id.*

66. Motion for Summary Judgment by DOD, *supra* note 24, at 3.

67. *See, e.g.*, *OSHA Data/CIH, Inc. v. U.S. Dep’t of Labor*, 220 F.3d 153, 166 n.30 (3d Cir. 2000); *In Def. of Animals v. U.S. Dep’t of Agric.*, 501 F. Supp. 2d 1, 6 (D.D.C. 2007); *Merit Energy Co. v. U.S. Dep’t of the Interior*, 180 F. Supp. 2d 1184, 1188 (D. Colo. 2001).

68. U.S. DEP’T OF JUSTICE, FREEDOM OF INFORMATION ACT GUIDE 372–74 (2007), available at http://www.usdoj.gov/oip/foia_guide07/exemption4.pdf (last visited June 2, 2009).

69. *Id.* at 465.

70. 441 U.S. 281 (1979).

and may be co-extensive with, the Trade Secrets Act, which makes it a crime for a federal employee to knowingly disclose trade secret information in the government's hands absent legal authorization to do so.⁷¹ Since then, lower courts have ruled that the Trade Secret Act's scope is "at least co-extensive with that of Exemption 4."⁷² The combination of these rulings sends an unmistakable message to agencies: disclosure of trade-secret and confidential business information is impermissible, both under FOIA and the Trade Secrets Act. For that reason, government employees are especially wary about disclosing information that might fall within Exemption 4, since doing so would violate FOIA and may be considered a crime under the Trade Secrets Act.

B. The OPEN Government Act of 2007

Congress recently enacted the first major revision to FOIA in a decade. The 2007 Amendments overhaul the procedures agencies use to track and process FOIA requests. The amendments first aim to end disputes over when the agency's time to start processing a FOIA request begins to run by providing that the clock starts on "the date on which the request is first received by the appropriate component of the agency."⁷³ The amendments further provide that agencies that fail to comply with the time limits may not assess search fees on requesters.⁷⁴

The amendments require each agency to establish a public-liaison office to "assist in the resolution of any disputes between the requester and the agency."⁷⁵ Agencies also must establish automated Internet or telephone systems to update requesters on the progress the agency is making on their requests and give estimated completion dates.⁷⁶ The amendments direct the National Archives and Records Administration to establish an Office of Government Information Services, which has government-wide oversight of FOIA.⁷⁷ The amendments also will make it easier for requesters who are forced to go to court to obtain information to recover their attorney's fees and costs if they prevail. It is too soon to tell whether these amendments will be implemented diligently by the executive branch and, if so, whether they will improve agency performance under FOIA.

C. The Federal Advisory Committee Act

The Federal Advisory Committee Act (FACA)⁷⁸ was enacted in 1972 because Congress had become convinced that there were no effective controls in place to regulate the process by which the president, the executive branch, and Congress

were eliciting advice from outsiders.⁷⁹ FACA recognizes an unfettered right of the president and the executive branch, as well as Congress, to seek advice from outsiders, subject to modest procedural requirements. The Act requires any branch of government establishing an advisory committee to follow certain guidelines.⁸⁰ Advisory committees must give advance notice of their meetings in the *Federal Register* and take other measures to ensure that interested parties are notified of upcoming meetings.⁸¹ All of the committees' papers and detailed minutes of meetings must be made available to the public.⁸²

FACA's effectiveness has been undermined by court rulings that have narrowed its scope. Two of these rulings came in high-profile cases involving advisory committees created to advise the president on controversial policy questions.

The first, *Association of American Physicians & Surgeons v. Clinton*,⁸³ involved President Clinton's Task Force on National Health Care Reform. The Task Force was composed wholly of federal employees, and thus the Task Force asserted that it was not a committee covered by FACA.⁸⁴ But the plaintiffs alleged that the Task Force's chair, First Lady Hillary Clinton, was not a federal employee, and neither were an unknown number of unpaid, outside advisers who participated actively in meetings of the Task Force and its various working groups.⁸⁵ These outsiders, the plaintiffs claimed, were de facto members of the committee, and the presence of nonfederal employees on the committee required compliance with FACA.⁸⁶ The court held that Mrs. Clinton qualified as a full-time government employee under FACA but remanded the case to determine whether the nongovernment consultants were de facto members of the committee or its working groups.⁸⁷ As the court put it, a de facto member of the committee is one who "regularly attends and fully participates in working group meetings" or in meetings of the Task Force.⁸⁸ By the time the case was remanded, the Task Force had completed its work and had been disbanded.⁸⁹ The government agreed to comply with FACA and open its records to the public.⁹⁰

79. Prior to FACA, the use of advisory committees was subject to regulation under Executive Order No. 11007, 3 C.F.R. 182 (1949 & Supp. 1962), reprinted in 5 U.S.C. §133z app. 194-95 (1964). While FACA incorporated some features of the Executive Order, it has a far broader application, especially with regard to presidential advisory committees, which were not covered by the Executive Order but are covered by FACA. Compare 5 U.S.C. app. 2 §3(4) ("The term 'presidential advisory committee' means an advisory committee which advises the president."), with Exec. Order No. 11007 §2(a), 27 Fed. Reg. 1875, 1875 (creating no special distinction for presidential advisory committees outside of the base definition of advisory committees).

80. 5 U.S.C. app. 2 §5(c).

81. *Id.* §10(a)(2).

82. *Id.* §10(b).

83. 997 F.2d 898 (D.C. Cir. 1993).

84. *Id.* at 901.

85. *Id.*

86. *Id.* at 915-16.

87. *Id.* at 911, 915-16.

88. *Id.* at 915.

89. *Id.* at 901.

90. *Ass'n of Am. Physicians & Surgeons v. Clinton*, 879 F. Supp. 106, 107 (D.D.C. 1994) (dismissing the action as moot after the government released its remaining documents).

71. *Id.* at 319 n.49. The Trade Secrets Act is codified at 18 U.S.C. §1905.

72. *McDonnell Douglas Corp. v. NASA*, 180 F.3d 303, 305 (D.C. Cir. 1999).

73. OPEN Government Act of 2007 §6(a)(1), 5 U.S.C. §552(a)(6)(A)(ii) (2008).

74. *Id.* §6(b)(1)(A), 5 U.S.C. §552(a)(4)(A)(viii).

75. *Id.* §6(b)(1)(B), 5 U.S.C. §552(a)(6)(B)(ii).

76. *Id.*, 5 U.S.C. §552(a)(7)(B).

77. *Id.* §10(a), 5 U.S.C. §552(h)(1).

78. Pub. L. No. 92-463, §15, 86 Stat. 770, 776 (1972) (codified at 5 U.S.C. app. 2 (2000)).

The de facto membership rule was short-lived because in *Cheney v. United States Dist. Court for Dist. of Columbia*,⁹¹ the D.C. Circuit announced that outsiders could be seen as de facto members of committees only where they “had a vote” or “had a veto” over the committee’s decisions.⁹² Under this reading of FACA, outsiders may play an active role in government committees so long as they do not vote or exercise formal veto authority.

Another blow to FACA was delivered earlier in *National Anti-Hunger Coalition v. Executive Committee of the President’s Private Sector Survey of Cost Control*,⁹³ which addressed whether task forces created by an advisory committee to support its work are subject to the strictures of FACA.⁹⁴ The President’s Survey on Cost Control (the Grace Commission) organized 36 task forces to “gather information, perform studies, and draft reports and recommendations,”⁹⁵ which were ultimately submitted to the Executive Committee of the Survey, an advisory committee composed of corporate executives.⁹⁶ A coalition of low-income groups and individuals sued to gain access to the records and reports prepared by these task forces.⁹⁷ The D.C. Circuit held that absent a showing that the Executive Committee was merely “rubber stamping the task forces’ recommendations,” the task forces were not covered by FACA, and thus their meetings could take place in secret with no public oversight.⁹⁸

Congress’ effort to ensure comprehensive regulation of advisory committees has been undermined, if not altogether subverted, by a series of court rulings that have narrowed FACA’s scope and given a clear road map to agencies that want to obtain advice from outsiders but avoid public accountability. Until Congress revisits FACA and plugs these gaping loopholes, FACA will be little more than an empty promise of government oversight of the advisory process.

II. Three Proposals for Reform

As I have tried to demonstrate, there is a growing gap between the promise of open access made by our federal right-to-know laws and their performance. The question, then, is what can be done to bring performance in line with reasonable expectations? I have three modest proposals for reform.

A. Place an Affirmative Duty on Government to Make Categories of Important Environmental Information Available on the Internet

The time has come to place an affirmative duty on government to use Internet technology to make environmental information accessible to the public without routinely hav-

ing to use FOIA’s request-and-wait procedures. There are two overarching reasons why this paradigm shift in information-access laws is both necessary and overdue. One is that the technology for creating, storing, and sharing information has undergone a seismic transition since FOIA was enacted. But the time when our nation’s records will be created and stored in electronic format is fast approaching, and it is time to adapt our access-to-information laws to that impending reality. The second reason is that FOIA’s file-a-request-and-wait-for-a-response approach is also an anachronism. In this age of electronic records, must government respond to every request for information by deploying armies of employees to search through vast storerooms, to process the records that they find, and then to photocopy and mail them to a single requester? The answer is plainly no. So long as there are paper records, FOIA will have its place; for the future, EFOIA charted a course away from that model, but it has been slow to take root.

My proposal bypasses EFOIA and builds on existing models that direct government to make publicly available, via the Internet, discrete categories of information that are especially important to the public. These models could easily be adapted to categories of environmental information as well.

The best and most recent example came about as a result of the Federal Funding Accountability and Transparency Act of 2006 (Transparency Act), which required the government to design and make operational by January 1, 2008, a searchable database that provides detailed information on every entity receiving federal contracts, grants, and other awards.⁹⁹ The website is now up and running. The available information includes the entity receiving the award, the amount of the award, information about the award (including the transaction type; the funding agency; the purpose of the funding; the location of the recipient; and an identification of the city, state, and congressional district where the grant will be performed), a “unique identifier” of the entity receiving the award and of the parent entity of the recipient if any, and any other relevant information.¹⁰⁰

Although the OMB website has been operational only for a brief period, it clearly has fulfilled Congress’ expectations. One can now track from agency to recipient almost every federal dollar spent, except those paid out under entitlement programs. The data available on the website has long been compiled by the government in electronic form, simplifying to some degree the process of making it available on a searchable website. The government also was able to piggyback on the work of OMB Watch, a nonprofit watchdog organization that with foundation support had already constructed a comprehensive, searchable database that is also available free

91. 542 U.S. 367, 373–74 (2004).

92. *In re Cheney*, 406 F.3d 723, 729–30 (D.C. Cir. 2005) (en banc).

93. 711 F.2d 1071 (D.C. Cir. 1983).

94. *Id.* at 1072.

95. *Nat’l Anti-Hunger Coal. v. Executive Comm. of the President’s Private Sector Survey of Cost Control*, 711 F.2d 1071, 1072 (D.C. Cir. 1983).

96. *Id.*

97. *Id.* at 1072, 1074.

98. *Id.* at 1075–76 (internal quotations omitted).

99. Pub. L. No. 109-282, §2(b), 120 Stat. 1186 (reprinted as a note to 31 U.S.C.A. §6101 (West, Westlaw through Pub. L. No. 110-198, excluding Pub. L. No. 110-181)).

100. *See id.* §2(b)(1), 120 Stat. at 1187. The website is operational, is easy to use, and contains all of the information that is called for in the Act. *See* Welcome to USApending.gov, <http://www.usaspending.gov> (last visited Feb. 16, 2009); *see also* Elizabeth Williamson, *OMB Offers an Easy Way to Follow the Money*, WASH. POST, Dec. 13, 2007, at A33 (detailing the debut of the website).

of charge to the public.¹⁰¹ As a result of the Transparency Act, it is now easy to track virtually all federal grant and contract expenditures by the recipient company, by the kind of contract, or even by congressional district. There is no reason why OMB's website cannot serve as a model for similar programs with environmental data.

Indeed, there are many examples of information of undeniable public importance that could be made available in the same way federal spending information is available to the public on USAspending.gov. One set of valuable data would be the enforcement records of EPA, the Occupational Safety and Health Administration, the environmental section of the Department of Justice, and other agencies that engage in environmental enforcement. All of these records are available under FOIA, but none are readily available on the Internet. There is no reason why Congress could not require OMB to compile this data on a searchable website and permit the public to track repeat-offender corporations in the same way the public can now track grants and contracts given to the same corporate recipients.

This is not a pie-in-the-sky suggestion. Once again, the nonprofit sector is a step ahead of government. For more than a decade, the Transactional Records Access Clearinghouse (TRAC), a nonprofit organization housed at Syracuse University, has used FOIA to compile and disseminate statistics about the enforcement activities of the Department of Justice, the Department of Homeland Security, the Federal Bureau of Investigation, the Internal Revenue Service, the Drug Enforcement Administration, and the Bureau of Alcohol, Tobacco and Firearms.¹⁰² The breadth and range of information on government activities that TRAC makes available is impressive by any measure. TRAC makes most of this information available to the public free of charge. If a single nonprofit organization funded by modest foundation grants and contributions from private citizens can create massive and useful databases of this kind, it is hard to imagine that the government could not also do so at a reasonable cost.

There are other examples as well. Although EPA recently scaled back reporting requirements for the TRI, it remains a valuable source of information for communities about toxic substances stored in their neighborhoods and releases of toxics into their air and water. Not only has EPA made TRI data available in several forms via the Internet,¹⁰³ but public interest groups have taken the TRI data and made it accessible along with other government environmental databases, making the data even more comprehensive and useful.¹⁰⁴

These examples illustrate that feasibility and cost are no longer the constraints that they once were. Nor, in my view, is political will. The difficult question ahead will be which

categories of information warrant being made available to the public in this way. Public access to information comes at a cost. The government must invest time and effort to put information in a form that can easily be transferred into a database that is useful for the public. No one would benefit if an undifferentiated mass of information were posted on the web; the cost of sifting through it would overwhelm its value. Nor is all information created equally. Some information is more useful and valuable to the public than other information, and priorities will need to be set. The question is how to do so.

In my view, the Paperwork Reduction Act (PRA)¹⁰⁵ could serve as a useful tool to identify potentially worthwhile data. Under the PRA, government agencies must secure approval from OMB before undertaking significant information-gathering activities.¹⁰⁶ The agency must justify its need for the information and identify the utility the information would have for the agency's regulatory functions.¹⁰⁷ The PRA imposes a high burden on agencies to demonstrate the importance of the information because the Act's ultimate aim is to reduce the paperwork burden government imposes on regulated industry and individuals.¹⁰⁸ And since the 1998 passage of the Government Paperwork Elimination Act,¹⁰⁹ Congress has encouraged agencies and regulated parties to furnish information to the government in electronic form in order to ease the conversion of the data into a searchable database.¹¹⁰

I propose that Congress amend the PRA to require OMB to report annually on the information-collection activities it has approved and to recommend to Congress which categories of information, if any, should be made public through a database or other electronic means. Congress would exercise final decision-making responsibility, but with prompting from OMB, such a system might considerably accelerate the creation of new government databases of information important to the general public.

B. *Impose Rigorous Substantiation Requirements on Companies Claiming That Information Submitted to the Government Is Confidential*

As noted above, one pervasive obstacle to the disclosure of environmental data is that submitting companies routinely claim that the data is confidential and that disclosure will cause them competitive harm.¹¹¹ It is time for Congress to

105. 44 U.S.C. §§3501-3520.

106. *Id.* §3507(d).

107. *Id.* §3508.

108. *Id.* §§3501(1), 3507(d).

109. Pub. L. No. 105-277, 112 Stat. 2681 (1998) (codified as amended in scattered sections of 44 U.S.C.).

110. 44 U.S.C. §3504(a)(1)(B)(vi).

111. *See, e.g.*, U.S. GOV'T ACCOUNTABILITY OFFICE, GAO-05-458, CHEMICAL REGULATION: OPTIONS EXIST TO IMPROVE EPA'S ABILITY TO ASSESS HEALTH RISKS AND MANAGE ITS CHEMICAL REVIEW PROGRAM 5 (2005) [hereinafter CHEMICAL REGULATION], available at <http://gao.gov/new.items/d05458.pdf> (noting that the Toxic Substances Control Act "authorizes chemical companies to claim data as confidential"); *id.* at 31 ("EPA is required under the act to protect trade secrets and privileged or confidential commercial or financial information against unauthorized disclosures.").

101. Williamson, *supra* note 100; see About FedSpending.org, <http://www.fed-spending.org/aboutthissite.php> (last visited Feb. 16, 2009).

102. About the Transactional Records Access Clearinghouse, <http://trac.syr.edu/aboutTRACgeneral.html> (last visited Feb. 16, 2009).

103. EPA, Get TRI Data, <http://www.epa.gov/tri/tridata/index.htm> (last updated May 15, 2009).

104. *See, e.g.*, The Right-To-Know Network, www.rtknet.org (last visited Feb. 16, 2009) (allowing users to search the TRI data along with data from a dozen or more other government databases on toxic substances).

reexamine how agencies handle these claims. Under statutes that mandate the disclosure of information, like the Toxic Substances Control Act,¹¹² agencies often accept these claims without question and keep the information secret¹¹³; those determinations are rarely if ever challenged. Under statutes like FOIA, once an agency receives a request for information submitted by a third party, the agency is then required to notify the submitter of the information and give the submitter an opportunity to object.¹¹⁴ Sophisticated submitters then inundate agencies with declarations and legal memoranda arguing that the information is confidential, and agencies almost invariably accede to these claims.

In both cases, the results are the same: the agency confronts confidentiality claims that it is ill-equipped to evaluate; the agency gains nothing from the release of the information; the agency has been provided no resources to assess these claims; and the agency faces possible reverse litigation if it decides that the information should be released. The deck is plainly stacked in favor of secrecy.

To reverse this dynamic, Congress should enact legislation that takes a number of steps. First, the legislation should require submitters to provide the agency with a detailed justification, signed by a senior corporate official under the penalty of perjury, explaining why each of the submitted records is commercially sensitive. To keep companies from reflexively contending that *every* document they submit to the federal government is confidential, this justification should be provided along with the records.

Second, to deter groundless confidentiality claims, companies should be punished—with fines or other civil penalties—for making unfounded claims. This step will further ensure that companies exercise judgment and discretion before claiming that information is commercially sensitive.

Finally, Congress should provide agencies with the resources to evaluate these claims on their own. Under current practice, the agency often has little choice but to rely on the requester to refute the company's confidentiality claims and to advocate in favor of disclosure. Ensuring that the requester is heard is important because it injects some degree of adverseness into a proceeding that would otherwise be one-sided. But the requester is at a distinct disadvantage in advocating for disclosure—the requester has not seen the records nor reviewed the company's arguments for secrecy and thus is fighting blindfolded. Agencies must be able to independently evaluate these claims, with whatever assistance the requester can muster, to ensure a fair outcome. In the long run, giving agencies the tools they need to resolve confidentiality claims may cut down on reverse-FOIA cases while increasing the disclosure of environmental information.

C. Strengthen Pro-Disclosure Mandates for Environmental Data

Congress should also recognize that, for a variety of reasons, what we call “environmental information” is different from the other information that companies submit to the government and should, almost without exception, be made public. The most important difference is that the environmental information that companies submit to the government concerns the emissions of toxic materials into our nation's air, water, or soil, or the use of potentially toxic materials in the products Americans buy. Environmental information uniquely affects the American public; it identifies the toxic substances to which we and our families are exposed. Putting aside the question of whether companies have a right to discharge or otherwise use these substances, there is no question that the government can condition that right on the public disclosure of information that shows precisely what the company is emitting, when the company is emitting it, and how much of each substance the company is emitting or using in its products. Congress has plenary authority to require the disclosure of environmental data to inform the public, so long as it also does not permit competitors to use the information for commercial purposes. Thus, there is no lurking question of the government's *power* to require the disclosure of environmental data—there is only a question of will.

Congress should take two measures to promote greater availability of environmental data. First, Congress should amend FOIA to place a higher burden of justification on the government. To be sure, FOIA already requires *de novo* judicial review and places the burden of persuasion on the government.¹¹⁵ But courts have nonetheless been deferential to agency exemption claims. In environmental cases, courts have fallen into the trap of presuming that a company will sustain competitive injury if information it submitted to the government is made public. This presumption must be reversed. The most effective way of achieving that goal is to require the government to show not just that the withheld records fall within a FOIA exemption but also that the records' disclosure would cause demonstrable harm to the government or the submitter.

Congress should also carve out a special FOIA provision that would empower courts to balance the public interest in disclosure against the private interest in secrecy—a calculus that would result in the disclosure of valuable environmental information. There is precedent for such a balancing test in FOIA already. Under FOIA's personal privacy exemption, Exemption 6, courts are directed to set aside agency decisions to withhold personal information unless the agency can show that disclosure “would constitute a clearly unwarranted invasion of personal privacy.”¹¹⁶ There is no reason why such

112. 15 U.S.C. §§2601–2692, ELR STAT. TSCA §§2-412.

113. See, e.g., CHEMICAL REGULATION, *supra* note 111, at 5 (discussing EPA's policy of treating claimed confidential information as such despite the fact that 95% of premanufacture notices for new chemicals contain some claimed confidential information).

114. Exec. Order No. 12600, 52 Fed. Reg. 23781 (June 25, 1987).

115. 5 U.S.C. §552(a)(4)(B) (directing *de novo* review and authorizing *in camera* inspection of disputed records); see *Minier v. CIA*, 88 F.3d 796, 800 (9th Cir. 1996) (stating that the agency resisting disclosure bears the burden of proof).

116. 5 U.S.C. §552(b)(6). The courts have found that this standard requires reviewing courts to engage in a balancing of interests. See *U.S. Dep't of State v. Ray*, 502 U.S. 164, 175 (1991) (explaining that the exemption requires courts to

a heightened standard could not apply to environmental data as well.

III. Conclusion

The purpose of this Article is to show that our nation has a long way to go before its right-to-know laws deliver on their promise of a comprehensive and reliable stream of environmental information to the public. At present, the net of government-information statutes is frayed and outdated. As a result, it provides a piecemeal and unreliable pathway to needed environmental regulation.

There are, however, a number of measures that the new administration can take to align the reality of these laws with their promise. The new administration can reallocate agency resources to cut agencies' FOIA backlogs and give the public a better window into what its government is doing, and the new administration can advocate in court in favor of rules that support openness and transparency instead of secrecy. These changes would be dramatic and swift.

Congress, too, will have to act. It will have to commit greater resources to support openness. It will have to replicate its success in the Transparency Act by requiring the government to open other categories of information to ready public access. And it will have to grapple with the broader question, which already looms on the horizon, of how to replace FOIA once paper records are a thing of the past.

balance an individual's privacy rights against the public policy of disclosing agency action).

Comment on *Information Access—Surveying the Current Legal Landscape of Federal Right-to-Know Laws*

by Mark A. Cohen

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Prof. David Vladeck's article, *Information Access—Surveying the Current Legal Landscape of Federal Right-to-Know Laws*,¹ provides a powerful case for strengthening existing environmental right-to-know laws such as the Freedom of Information Act (FOIA) and other enabling statutes that require firms to report—and the government to provide public access to—environmental information. He focuses on two examples where almost by default, due to procedural burdens and the ability to claim proprietary business information, the government can withhold and/or delay release of data. Instead of focusing on the legal aspects of right-to-know laws, this brief comment argues that information provides an important social value—but one that must be weighed against the potential costs of information provision. Clearly identifying these costs and benefits helps to shed light on the appropriate legal thresholds for disclosure.

The costs of disclosure are well articulated by both firms and government regulators. From a company's perspective, there is both the physical cost of disclosure (e.g. filling out Toxics Release Inventory reports) and the potential cost of losing proprietary information. The first cost is not particularly relevant to Vladeck's article, since he focuses primarily on data that has already been provided to the government or information that the government itself has either collected or generated. Certainly, the issue of firm proprietary data needs to be taken seriously—but it is also one that can be dealt with through judicial oversight without much difficulty. Courts know how to weigh the private interest of proprietary information against the public interest of disclosure. Even if there is a legitimate concern about proprietary data being released, if the potential social benefit is high enough that disclosure is warranted, adequate safeguards can often be provided so that the data can be selectively disclosed without fear disclosure to a competitor.

The costs to the government of disclosure are threefold. First, there are the physical costs of disclosure, which can be substantial when records must be searched and carefully reviewed for legitimate concerns of non-disclosure. Second, concerns have been raised that disclosure might stifle the free flow of internal deliberations that come with transparency. Of course, many people would argue that government should be transparent in its deliberations, and the latter argument is not valid, even if the matter involves settlement negotiations with a defendant. The extent to which more transparency on these deliberations would reduce settlements is an empirical issue to assess. Thus, there might need to be clear legal rules that attempt to protect the settlement process but otherwise allow for government transparency. Third, there have been calls for less disclosure due to national security concerns, especially following 9/11. While potentially a serious cost, there is also evidence that immediately following 9/11, this provided cover for significant reductions in public data provision that provided little or no such threat.²

The benefits of increased transparency accrue to both private parties and to society at large. Individuals who are harmed by chemical releases, for example, might require access to government data in order to both establish liability and to estimate damages. The potential benefits from this information disclosure are significant, and since this is largely compensation for harm caused by one party against another, this compensation is not a social cost at all. Instead, it is a classic instance of internalizing externalities and thus provides a net positive social benefit.

Not all requests for information disclosure are for purposes of litigation. Even if this information is not to be used for litigation, it could provide local residents with important knowledge about the risks they face, and prompt them to alter their behavior in ways that will improve their welfare—whether it be to keep children from playing in certain areas, pressuring local agency regulators to enforce existing laws, lobbying political leaders to tighten environmental laws, or

1. David C. Vladeck, *Information Access—Surveying the Current Legal Landscape of Federal Right-to-Know Laws*, 39 ELR (ENVTL. L. & POL'Y ANN. REV.) 10773 (Aug. 2009) (a longer version of this Article was originally published at 86 TEX. L. REV. 1787 (2008)).

2. See Mark A. Cohen, *Transparency After 9/11: Balancing the "Right-to-Know" With the Need for Security*, 9 CORP. ENVTL. STRATEGY 368, 368-74 (2002).

pressuring companies directly to voluntarily reduce pollution. Instead, information disclosure has been shown to be a powerful mechanism that may affect firm behavior and reduce potential social harms that are not otherwise regulated.

Information disclosure programs have been characterized as the third wave of environmental regulation, following the original regulatory approach and the subsequent introduction of market-based incentives.³ Perhaps the best-known example of the third wave is the Toxic Release Inventory (TRI) program in the U.S., whereby firms are required to disclose legally emitted chemical releases. TRI has brought about significant reductions in chemical emissions. For example, total on-site and off-site releases of toxic emissions are reportedly down by 59% between 1988 and 2006.⁴ The effect of TRI disclosure on both firm behavior and firm value has been empirically demonstrated.⁵ Other disclosure programs have focused on drinking water safety and risk management plans for chemical releases.⁶

In addition to government dissemination of this information, environmental organizations have utilized this information to provide user-friendly, community-based information sources.⁷ Some caution must be noted, as it is possible that information disclosure programs can have unintended consequences. For example, an information disclosure program might focus firms on pollutants that are less important than others that are not subject to disclosure, or it might cause them to offshore to another country or smaller facility that is not subject to reporting requirements. Indeed, one of the shortcomings of information disclosure programs is that to date, they have not been subject to rigorous cost-benefit tests. Notwithstanding these concerns, it is likely that information programs will yield significant benefits and generally small costs; hence they are likely to be a cost effective mechanism to shed light on environmental exposure and risks. For example, as Vladeck points out,⁸ EPA has recently reduced the availability of TRI data by increasing threshold reporting limits. While no explicit cost-benefit analysis was conducted, EPA noted that the estimated cost savings to firms from reduced reporting was \$1.8 million for 1,800, or \$1,000 per firm.⁹ So, the real question is whether on average, providing

information on TRI releases under the older threshold limits provides more or less than \$1,000 in social benefits.

While the cost-benefit framework set out above is admittedly theoretical and is largely void of actual data, it does provide a starting point for thinking about appropriate policies. Further study might shed light on the magnitude of these costs and benefits, but for now simply considering them carefully is a first step. For example, Vladeck demonstrated that the current burden of proof standards effectively allow government regulators to withhold documents for years based on procedural delays without clearly justifying an exemption.¹⁰ This power to delay appears to have high costs—not only in legal and judicial costs, but also in raising the cost to potential FOIA requesters so much that they are deterred from requesting information in the first place. This is especially true since, as Vladeck demonstrates, legal standards have made it virtually impossible for plaintiffs to collect attorney's fees in FOIA litigation if the government ultimately "voluntarily discloses" prior to being ordered by a court.¹¹ Thus, the benefits of "speedy" disclosure are likely to be very high.

From a research and public policy perspective, one of the most important aspects of Vladeck's paper is his call for more "pro-disclosure mandates" from Congress. Indeed, the call should go beyond simply requiring that environmental data routinely be made available to the public—unless there are substantial risks as discussed earlier. Because information is a valuable public good, providing more data in ways that are accessible will expand the use of those data by researchers. Currently, even TRI data that are made public are not made available in a format that allows for ease of use by researchers. For example, it is difficult to aggregate facility level TRI data to the corporate owner level and toxicity weights are not provided. Linking TRI data to other facility level enforcement data is tedious, and enforcement data themselves are incomplete and not user friendly. Not only does this mean that the high cost of using these data deters many researchers from utilizing them, but each researcher makes their own independent judgments about how to recode, combine, and otherwise build a useable dataset. As a result, fewer studies are conducted, and the studies that are published oftentimes have conflicting conclusions—which might simply be attributable to differences in the datasets they ultimately used. These shortcomings are not simply of academic concern. Studies of environmental enforcement as well as information disclosure programs can help inform policymakers about who to regulate, how to design appropriate disclosure or enforcement policies, and which firms to target for enforcement. Thus, accurate and readily available data can help inform the policy process in ways that will provide the most bang for the government's buck.

Information disclosure can be a powerful tool for changing firm behavior—but at its core, information is simply an imperative in a free market economy. Well functioning markets depend upon informed buyers and sellers. Thus, consumers, homeowners, and residents need to know about

3. Tom Tietenberg, *Disclosure Strategies for Pollution Control*, 11 ENVTL. & RESOURCE ECON., 587 (1998).

4. U.S. EPA, 2006 Toxic Release Inventory (TRI) Public Data Release Brochure, available at <http://www.epa.gov/tri/tridata/tri06/brochure/brochure.htm> (last visited Mar. 9, 2009).

5. See Mark A. Cohen, *Information as a Policy Instrument in Protecting the Environment: What Have We Learned?*, 31 ELR 10425-31 (Apr. 2001); Shameek Konar & Mark A. Cohen, *Does the Market Value Environmental Performance?* 83 REV. ECON. & STAT. 281, 281-89 (2001); Shameek Konar & Mark A. Cohen, *Information as Regulation: The Effect of Community Right to Know Laws on Toxic Emissions*, 32 J. ENVTL. ECON. & MGMT. 109, 109-24 (1997).

6. For example, §1414(c)(4) of the Safe Drinking Water Act Amendments of 1996 requires community water sources to issue "consumer confidence reports" on the safety of their local water supply. 42 U.S.C. §300g-3(c)(4), ELR STAT. SDWA §1414(c)(4). Under §112(r) of the Clean Air Act Amendments of 1990, businesses must publicly disclose "risk management plans" (RPMs) for accidental chemical releases. 42 U.S.C. §7412(r)(7)(B), ELR STAT. CAA §112(r)(7)(B).

7. See in general Scorecard, www.scorecard.org.

8. Vladeck, *supra* note 1, at 10773-74.

9. EPA Toxics Release Inventory Burden Reduction Final Rule, 71 Fed. Reg. 76932, 76938 (Dec. 22, 2006).

10. Vladeck, *supra* note 1, at 10774.

11. *Id.* at 10774 n.11.

the risks and hazards they face in order to make informed judgments about their purchase decisions, where they live and work, where their children play, etc. Without this information, the public themselves will make decisions that are less than optimal. While there are costs to providing information, information itself is valuable—and withholding it is costly. While information disclosure policy should fully take into account these costs and benefits, providing accurate information to the public is unlikely to be too costly relative to benefits, and should become a priority of government regulatory agencies.

Comment on *Information Access—Surveying the Current Legal Landscape of Federal Right-to-Know Laws*

by Gary D. Bass and Sean Moulton

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Openness is an American bedrock principle, with secrecy being disdained except where absolutely necessary. As former Sen. Daniel Patrick Moynihan (D-N.Y.) said, “Secrecy is for losers.”¹ If information is the lifeblood of democracy, then public access to information would be the arteries that keep democracy healthy. Yet, despite the clear importance of transparency to an effective and accountable government, we continue to fall short of the openness we need and have often been promised. David Vladeck’s article, *Information Access—Surveying the Current Legal Landscape of Federal Right-to-Know Laws*,² lays out a clear case for how and why our federal efforts to establish the public’s right to information, especially environmental information, have not yet succeeded and what next steps would be most helpful in correcting that failure.

We as a nation have made repeated attempts to make our government open and accountable to the people. And while progress has been made, in some areas more progress than others, we continue to struggle with the responsibilities of our often longstanding right-to-know laws, such as the Freedom of Information Act (FOIA)³ and the Federal Advisory Committee Act (FACA).⁴ Vladeck appropriately spreads the blame for these shortcomings across all three branches of government. Congress’ right-to-know laws have become outdated and fail to keep pace with the reality of what can and should be accomplished in the Internet age. Executive agencies, fearing criticism and oversight of their actions, continue to be resistant to transparency, causing excessive delays and often requiring those seeking information to go the expensive route of hiring a lawyer and going to court. And the

courts have often, though not always, acted with excessive deference to the federal government.

The growth in government secrecy, especially for environmental and health data, has had profound and negative impacts on the United States. It makes the public and communities less safe. It hinders public participation in policy issues that effect their health and well-being. It contributes to near-record lows in trust of the executive branch. With the growth of the Internet, it would seem a no-brainer that government transparency should be at its strongest point—and, accordingly, our democracy very healthy. Yet the opposite is happening; the public disclosure arteries are seriously clogged, jeopardizing our democratic health. As Vladeck notes in his numerous examples, attempts to get information about issues affecting public health are met with intense long-term resistance making the disclosure of the information take longer and cost more. Given this type of government reaction, it is not surprising that a 2009 survey of American adults found 73% think the federal government is secretive, and 44% think state government is secretive.⁵ The trend line is not good: in 2006, 62% thought the federal government was secretive.⁶

There are three intertwining problems that influence government secrecy concerning environmental information. First, today’s laws and policies on public access are inadequate for today’s 24-hour, 7-day-a-week Internet world. Too often the burden is on the public to request information; and there are far too many loopholes to allow agencies to withhold information. These policies need radical overhaul. Second, the federal government’s use of interactive technology is largely grounded in the 20th century. The use of Web 2.0 thinking is only starting to make its way into government via the incoming Obama Administration, but the hardware, software, and capacity of public employees needs significant upgrade. Finally, even with the best technology and policies, there is an underlying

1. THE HONORABLE DANIEL PATRICK MOYNIHAN, *SECRECY: THE AMERICAN EXPERIENCE* 227 (Yale Univ. Press 1998).

2. David C. Vladeck, *Information Access—Surveying the Current Legal Landscape of Federal Right-to-Know Laws*, 39 ELR (ENVTL. L. & POL’Y ANN. REV.) 10773 (Aug. 2009) (a longer version of this Article was originally published at 86 Tex. L. Rev. 1787 (2008)).

3. 5 U.S.C. §552.

4. Pub. L. No. 92-463, §15, 86 Stat. 770, 776 (1972) (codified at 5 U.S.C. app. 2 (2000)).

5. Press Release, Sunshine Week, Federal Govt. Still Viewed as Secretive; President’s FOI Orders Get High Marks (Mar. 13, 2009), at http://www.sunshineweek.org/sunshineweek/secracy_poll_09 (last visited June 1, 2009). The poll was conducted by the Scripps Howard News Service and Ohio University in a study commissioned by the American Society of Newspaper Editors.

6. *Id.*

culture of secrecy that pervades government. No civil servant gets rewarded for improving public access, but they sure get attention if they give out information that could be misused. Disincentives for openness are built into the way agencies and government operates. Civil servants need to be given the freedom to disclose information and the rewards for doing so.

Probably the most vexing policy problem is FOIA, the venerable, core right-to-know law. Vladeck explores the repeated attempts to update and fix FOIA.⁷ The latest fix, the Open Government Act of 2007,⁸ may still help as agencies implement the required changes. While the law's basic purpose—establishing the fundamental responsibility of government to disclose information to anyone—is laudable, Vladeck concludes that “FOIA’s file-a-request-and-wait-for-a-response approach is also an anachronism.”⁹ In this context the Open Government Act is nothing more than a palliative or a band-aid to fix a more profound problem. Congress has not yet realized that the laws itself needs a fundamental overhaul. The ultimate goals should be to have a national standard that affirmatively requires federal agencies to disclose information to the public in a timely manner and in ways that make the information findable and useable.

Even within the current FOIA framework there are major implementation failures. The federal government has been implementing FOIA for more than 40 years and the reality is they have never done a particularly good job at it. A primary reason is that administrations often do not welcome the openness that FOIA promises. Requesters are typically researching governmental problems and failures of management. The temptation to overuse some of the broader exemptions to hide embarrassing information is often too great for agency officials, and corporations, to resist. As Vladeck notes, some of the most problematic exemptions over the years have been Exemption 5, which applies to inter-agency and intra-agency materials that would not be available under litigation, and Exemption 4, for trade secrets and confidential business information.¹⁰ Without creating some clearer definitions or establishing some checks and balances for the use of these exemptions, enormous amounts of information will never be disclosed.

No single policy change or action will suddenly make government completely transparent. The solution is not as simple as instituting guidance to agencies to disclose as much information as possible under FOIA requests, although most certainly that must be done. Vladeck lists in his article three proposals for reform.¹¹ He describes them as ‘modest,’ but these are the type of bold thinking that is needed today. Certainly each contains the possibility of major improvement in the implementation of FOIA and FACA.

The boldest change Vladeck proposes is to establish a new requirement on the executive branch “to use Internet technology to make environmental information accessible to the public without routinely having to use FOIA’s request-and-wait procedures.”¹² This would represent a major shift in the government’s disclosure responsibility. Rather than reviewing documents responsive to an information request attempting to determine which met requirements to be withheld, agencies would proactively review environmental data seeking to determine which information needed to be released. Indeed, such an approach would be welcome in other areas beyond the environment.

FOIA already mandates affirmative electronic disclosure of agency final opinions and orders, policy statements, staff manuals that affect the public, and frequently requested information.¹³ So, the Vladeck approach can be implemented immediately by the Obama Administration. If federal environmental and health agencies recognize that much of the information they house is subject to “frequently requested information,” FOIA’s current legal authority can be broadly used. In this context, it would be helpful to include a requirement that agencies also disclose a list of all material not being released to the public with an explanation for each withholding decision. Such a list would allow those still using the FOIA request process to address the government’s argument for withholding the initial request, rather than delaying that discussion to the appeal or a court trial.

Attempting to address the continual overuse of confidential business information (CBI) claims (FOIA exemption 4), Vladeck’s second proposal is directed more at the implementation process of FOIA, but is no less important. The proposal seeks legislative action containing three intertwined parts. First, requirements that companies claiming confidential business information submit detailed justifications to support these claims.¹⁴ Second, empower federal agencies to levy fines against false claims.¹⁵ And third, provide sufficient agency funding to properly review such claims.¹⁶

Recently, the U.S. Government Accountability Office (GAO) addressed the problem of CBI claims in relation to the Toxic Substances Control Act (TSCA). According to GAO, “EPA’s ability to provide the public with information on chemical production and risk has been hindered by strict confidential business information provisions of TSCA, which generally prohibits the disclosure of confidential business information.”¹⁷

7. Vladeck, *supra* note 2, at 10773.

8. OPEN Government Act of 2007 §6(a)(1), 5 U.S.C. §552(a)(6)(A)(ii) (2008).

9. Vladeck, *supra* note 2, at 10779.

10. *Id.* at 10776, 10777.

11. *See id.* at 10774.

12. *Id.* at 10779.

13. 5 U.S.C. §552(a)(2).

14. Vladeck, *supra* note 2, at 10774.

15. *Id.*

16. *Id.*

17. JOHN STEPHENSON, U.S. GOV’T ACCOUNTABILITY OFFICE, GAO-09-428T, CHEMICAL REGULATION: OPTIONS FOR ENHANCING THE EFFECTIVENESS OF THE TOXIC SUBSTANCES CONTROL ACT 3 (2009), available at http://energy-commerce.house.gov/Press_111/20090226/testimony_gao.pdf (last visited June 1, 2009).

The undisclosed information is needed for various activities, including “developing contingency plans to alert emergency response personnel to the presence of highly toxic substances at manufacturing facilities,” according to GAO.¹⁸ GAO reports about 95% of TSCA premanufacture notices are submitted containing some information labeled “confidential.”¹⁹ These notices contain basic health and safety information and are required before a company can manufacture a new chemical. While health and safety studies and associated data are not eligible for CBI protection, chemical and company identity can be eligible. According to Richard Denison, a senior scientist at the Environmental Defense Fund, “[t]his allowance can lead to perverse outcomes, such as that a chemical’s adverse effects on mammalian reproduction must be disclosed, but identification of which chemical causes the effect may be kept a secret.”²⁰

Vladeck’s model for up-front substantiation is already used for the Toxics Release Inventory (TRI). Under TRI, a company cannot claim trade secrecy if: (1) it has already disclosed the information (other than in limited circumstances) or failed to take reasonable precautions to protect it; (2) another law already requires the company to disclose the information; (3) the information is already easy to find out using reverse engineering; or (4) disclosure is not likely to harm the firm’s competitive position.²¹ The result is that less than 2% of TRI submissions claim CBI exemptions.²²

The final reform proposal advanced by Vladeck in his article seeks to improve the courts’ interpretation of right-to-know laws.²³ He believes Congress should establish a higher burden of justification on the federal government when it seeks to withhold environmental data.²⁴ Additionally, he believes a special provision should be added to FOIA that empowers courts to use a balancing test to weigh the public benefit of disclosure against the private interest of secrecy.²⁵ Once again, Vladeck offers practical and useful solutions. There is no reason not to empower courts to use such a balancing test for any disclosure question from the spending of government funds to homeland security. If the public benefit of disclosure is more important than the interests in withholding, the information should be released.

Vladeck appropriately notes that many immediate changes can and should be made by the Obama Administration, which has promised unprecedented levels of transpar-

18. *Id.*

19. *Id.* at 13.

20. Richard A. Denison, *Ten Essential Elements in TSCA Reform*, 39 ELR 10020, 10027 (Jan. 2009).

21. 42 U.S.C. §11023, ELR STAT. EPCRA §322(b).

22. WORKING GROUP ON COMMUNITY RIGHT-TO-KNOW, *Trade Secret Claims Under Right-to-Know Laws*, in WORKING NOTES ON COMMUNITY RIGHT-TO-KNOW 2 (1997).

23. Vladeck, *supra* note 2, at 10781.

24. *Id.*

25. *Id.*

ency.²⁶ At the same time, congressional action is also needed to ensure that the new emphasis on transparency is maintained by future administrations.²⁷ The solution is multi-dimensional: it requires changing the mindset and climate within government to emphasize transparency, as well as establishing the proper policy framework and building the technology capacity of government to seize the potential of the Internet.

Three final points build on Vladeck’s argument for greater disclosure. First, the public’s right to know is a tool to enable greater health, safety, and accountability. Thus, right-to-know is not the ultimate goal; it is the vehicle to achieve a particular purpose. The corollary to this point is that right-to-know is not a substitute for regulation or enforcement. Disclosure provides the ammunition for knowing where regulation is needed.

Second, federal environmental and health agencies need to establish new approaches for assuring the public it is collecting the right information and that what is collected is of high quality. For example, for several years, the TRI was modified to collect less information. The loss of these data is now irreversible. Fortunately, through the FY 2009 omnibus appropriations bill, Congress instructed EPA to restore the data that is no longer collected so that the problem is rectified going forward in time.²⁸ Similarly, on March 10 EPA announced that it will propose a new rule to require greenhouse gas emissions reporting from thousands of businesses nationwide.²⁹ A greenhouse gas registry would be created as a database for collecting, verifying, and tracking emissions from specific industrial sources. These are but two examples of the need to have a system of public input about information collection gaps that must be addressed by government.

Third, Vladeck places an emphasis on the use of the Internet as a means for disclosure. While laudable it raises two challenges. First, the Internet should never become the sole vehicle for disclosure. Too many people—low-income, rural residents, and others—still lack high-speed access to the Internet or even any access. Thus, federal agencies must continue to protect print and other forms of dissemination. Second, the emergence of newer interactive technologies provides a call for new ways of bringing policy and technology experts together to work hand-in-hand. Simply putting more data on the Internet is not a solution; it must be done in a thoughtful, coordinated manner that employs open standards and open source programming in all right to know activities.

26. *Id.* at 10782.

27. *Id.*

28. 2009 Omnibus Appropriations Act, Pub. L. No. 111-008, §425 (2009).

29. See Press Release, EPA Proposes First National Reporting on Greenhouse Gas Emissions (Mar. 10, 2009), available at <http://yosemite.epa.gov/opa/admpress.nsf/bd4379a92ceceac8525735900400c27/4bd0e6c514ec1075852575750053e7c0%21OpenDocument> (last visited June 1, 2009).

ARTICLE

Using Competition-Based Regulation to Bridge the Toxics Data Gap

by Wendy Wagner

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A person unfamiliar with the intricacies of chemical regulation in the United States might assume that regulators are hard at work weeding out dangerous products, requiring warnings on thousands of others, and collecting copious toxicity research on the rest. In truth, however, the regulatory regime in the United States works nothing like this. There is little information available to regulators for evaluating the possible hazards of chemicals, and even for the limited research that does exist, some unspecified portion of the scientific studies is at risk of being biased or otherwise unreliable.¹ Moreover, since the U.S. Environmental Protection Agency (EPA) focuses most of its firepower on regulating individual chemical substances rather than chemical mixtures, consumers have little notion of the comparative toxicity of the chemical products on the market and lack adequate instructions regarding their proper use. There is simply no way to sugarcoat the ugly truth: chemical regulation in the United States has been a dismal failure.²

The basic structure of the law governing toxic substances—the Toxic Substances Control Act (TSCA)³—deserves much of the blame for this regulatory dysfunction.⁴ In the regulation of chemicals, manufacturers are not required to do any testing unless commanded by EPA, and EPA must justify its demand with some scientific evi-

dence.⁵ Due in part to this formidable burden, in the nearly thirty years of its regulatory authority, EPA has issued testing mandates for fewer than 200 chemicals.⁶ Most of the remaining chemicals, which include approximately 83,000 individual chemical substances, are effectively unrestricted and often unreviewed with regard to their health and environmental impacts.⁷ Even when there is considerable information indicating that a chemical is unsafe, as there was in the case of asbestos, EPA still must engage in a long and difficult regulatory struggle before imposing the “death penalty” on the hazardous chemical.⁸

If it isn't bad enough that TSCA provides inadequate chemical screening, the Act contributes one more black eye to the manufacture of safe chemicals: it inadvertently reinforces adverse selection for under-tested chemicals. Without regulatory certifications or rewards for extensive testing, there is no market recognition or other trustworthy validation of a manufacturer's conscientious research investment. Cost-cutting manufacturers can thus out compete rival manufacturers who invest heavily in testing to ensure the safe and efficacious use of their chemicals. In fact, good manufacturers, who invest in researching the effectiveness and safety of their products, may not only lose the money spent on testing but could also inadvertently trigger interest from plaintiffs' attorneys and regulators since there will be some toxicity information available that flags their products as potentially hazardous. In such a regime, testing can become a negative

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1. See John S. Applegate, *The Perils of Unreasonable Risk: Information Regulatory Policy and Toxic Substances Control*, 91 COLUM. L. REV. 261, 284–89 (1991) (discussing the toxic data gap).
2. See, e.g., John S. Applegate, *The Government Role in Scientific Research: Who Should Bridge the Data Gap in Chemical Regulation?*, in *RESCUING SCIENCE FROM POLITICS* 255, 268 (Wendy Wagner & Rena Steinzor eds., 2006); Applegate, *supra* note 1.
3. 15 U.S.C. §§2601–2692, ELR STAT. TSCA §§2–412.
4. See generally Daniel C. Esty, *Environmental Protection in the Information Age*, 79 N.Y.U. L. REV. 115 (2004).

5. Except for chemicals produced in high volumes and posing a substantial risk of exposure, see, for example, 15 U.S.C. §2603(a), ELR STAT. TSCA §4(a). TSCA provides EPA with the authority to impose testing requirements on new chemicals only if EPA can demonstrate that existing data are “insufficient” to assess the chemical and EPA has reason to suspect that the new chemical “may present” a risk or hazard. *Id.* §2604(e).
6. U.S. GOV'T ACCOUNTABILITY OFFICE, *CHEMICAL REGULATION: OPTIONS EXIST TO IMPROVE EPA'S ABILITY TO ASSESS HEALTH RISKS AND MANAGE ITS CHEMICAL REVIEW PROGRAM*, (2005) REPORT NO. GAO-05-458, at 18, available at <http://www.gao.gov/new.items/d05458.pdf> [hereinafter *CHEMICAL REGULATION*].
7. See, e.g., EPA, *What Is the TSCA Chemical Substance Inventory?*, <http://www.epa.gov/opptintr/newchems/pubs/invntory.htm> (last visited June 1, 2009).
8. See, e.g., *Corrosion Proof Fittings v. EPA*, 947 F.2d 1201, 1215, 22 ELR 20037 (5th Cir. 1991).

attribute, and the chemicals about which little is known are given a competitive advantage over chemicals subjected to extensive research or green innovations.

While such a counterproductive regulatory scheme would seem at first blush to be a perfect candidate for public-spirited reform, the political system is poorly equipped to redress the perverse incentives for chemical ignorance. The highest-stakes participants in toxics policy are the chemical manufacturers and, not surprisingly, they have become well organized and fortified against reform of a regulatory scheme that they find quite congenial to their interests. The diffuse public, whose views are loosely represented by a few public interest groups, cannot begin to match this strong manufacturer block with a vested interest in the status quo.⁹ With the exception of a few highly publicized near-crises that spark majoritarian activity, chemical regulation is likely to be paralyzed in its existing dysfunctional state.

This article considers the entrenched failure of chemical regulation and offers a different angle for regulatory reform that taps into market competition between rival firms to produce relevant information about the toxicity of certain chemical products on the market.¹⁰ By repositioning the regulatory decision as an adjudication between rival manufacturers, the proposed regulatory process is fueled by the expertise, information, and energies of manufacturers of safer products eager to put their competitors' more hazardous products out of business. This shift in regulatory approach also breaks up the unified political coalition of manufacturers into two groups—those that might enjoy competitive benefits from such a proposal because they have been vigilant in testing their products and those that will lose because they have not. While this shift does not guarantee that some manufacturers will be persuaded to support a competition-based reform of toxics policy, it at least provides some hope of an altered configuration of stakeholders that are less resilient in opposing reform.

The proposal for a competition-based approach to chemical regulation unfolds in three sections. The first section details the ways that TSCA exacerbates adverse selection in the chemical market by failing both to encourage adequate toxicity testing and to reward elaborate testing when it does occur. The second section offers a competition-based proposal that redresses this problem by rewarding manufacturers who prove that their products are environmentally superior to identified competitor products. The final section looks beyond the regulation of chemicals to other regulatory arenas—including the regulation of pesticides, nanotechnology, drugs, and polluting activities—to consider how competition-based regulation might advance these programs.

I. Why Chemical Regulation Has Failed in the United States

The regulation of chemicals in the United States is based on a familiar cops-and-robbers model that pits regulators and regulated parties against one another. Under such a regime, it is ultimately up to the cops (EPA) to find the robbers (the problematic chemicals) and develop evidence against them before taking regulatory action. The effectiveness of toxics policy thus depends in large part on how many cops there are relative to robbers and how easy it is to amass evidence against them.

More specifically, TSCA creates a presumption of innocence for a chemical unless EPA establishes that it may pose an “unreasonable risk” to human health or the environment.¹¹ Unlike the regulatory programs governing drugs and pesticides, chemical manufacturers are not automatically required to test their products as a condition to marketing. In fact, the Act actually places the burden on EPA to justify not only the need for regulatory action, but also any demands for basic testing in circumstances where little information is available. EPA thus faces a classic Catch-22: the agency can require a manufacturer to conduct testing on a chemical in order to evaluate its safety, but in order to require testing, EPA must have some scientific information that shows evidence of a risk.¹²

EPA's formidable burden of proof, coupled with a universe of tens of thousands of chemicals, many of which lack basic toxicity tests, is clearly not a blueprint for regulatory success. Without a large team of regulators, which EPA lacks, the game is essentially over before it begins.¹³ While EPA has managed to take some regulatory action, including requiring additional testing on approximately 10% of new chemicals through its more rigorous premanufacture notice regulatory program,¹⁴ it has demanded testing or imposed regulatory restrictions on less than two percent of chemicals that were in the TSCA inventory as of 1979.¹⁵ Even the most vigilant public interest groups find it difficult to fill these large gaps in regulatory oversight since they are similarly impeded by the extensive uncertainties and the correspondingly large investment of scientific expertise needed to determine whether and which chemicals are most hazardous.

Once a regulatory system fails, other institutions may pick up the slack, but in practice, both the market and the tort system serve in many instances only to compound the perverse incentives for chemical ignorance. For its part, the market offers few comparative advantages to manufacturers who

11. See 15 U.S.C. §§2604(f)(1), 2605(a), ELR STAT. TSCA §§5(f)(1), 6(a).

12. *E.g.*, Chem. Mfrs. Ass'n v. EPA, 859 F.2d 977, 984, 19 ELR 20001 (D.C. Cir. 1988).

13. See, e.g., OFFICE OF TECH. ASSESSMENT, U.S. CONGRESS, SCREENING AND TESTING OF CHEMICALS IN COMMERCE, (1995) No. OTA-BP-ENV-166, at 11.

14. See EPA, Summary of Accomplishments, <http://www.epa.gov/opptintr/new-chemicals/pubs/accomplishments.htm> (last visited Feb. 11, 2009). Moreover, the EPA estimates that only about twenty percent of new chemicals submitted as pre-manufacture notices get a detailed review. CHEMICAL REGULATION, *supra* note 6, at 12.

15. See, e.g., CHEMICAL REGULATION, *supra* note 6, at 17–18.

9. See, e.g., NEIL K. KOMESAR, IMPERFECT ALTERNATIVES: CHOOSING INSTITUTIONS IN LAW, ECONOMICS, AND PUBLIC POLICY 167–68, 192 (1994).

10. For the first and apparently the only discussion of using competition as a regulatory tool, see DAVID DRIESEN, THE ECONOMIC DYNAMICS OF ENVIRONMENTAL LAW 153–61 (2003).

conduct rigorous toxicity tests to ensure the safety of their chemicals. Corporate self-proclamations that a chemical is safe or green—even when true—generally cannot be verified by consumers and thus may be discounted as “cheap talk,” even when consumers may be otherwise receptive to this type of information.¹⁶

Tort law similarly provides little corrective in reversing the perverse incentives for ignorance and instead similarly tends to exacerbate the problem.¹⁷ Much like regulation, tort law requires plaintiffs to bear the burden of proving that the defendant’s products or pollutants more likely than not caused their diseases.¹⁸ Unless there are scientific links between the product and a particular disease, such as the association of asbestos exposure with a rare cancer like mesothelioma, victims are generally without recourse. When virtually no toxicity information is available on a chemical product, the manufacturer has little to fear from tort liability.¹⁹ The tort system thus compounds the perverse incentives of the regulatory and market systems favoring ignorance and seems capable of counteracting them only in highly unusual cases where plaintiffs have just the right mix of information regarding potential hazards and manufacturer neglect.

The cops-and-robbers approach not only allows the “robber” (or untested chemical) to hide in the weeds, it also neglects to provide rewards for those manufacturers who do rise above this rational course by testing their chemicals for long-term hazards. TSCA makes no effort to distinguish the well-tested, environmentally benign chemicals from the under-tested yet potentially very toxic products.²⁰ Since tested chemicals are not distinguished from untested chemicals but are more costly to produce, they are likely to be less competitive in a nondiscriminatory market.²¹ Indeed, instead of counteracting this perverse feature of the market, regulatory requirements and tort law may ultimately reinforce the resulting market for lemons by singling out and imposing heavier demands on chemicals for which some testing exists but where the resulting risks remain quite uncertain. In such a regime, nice guys finish last, or they at least find it tough to compete with their cost-cutting competitors.

These multiple, entrenched incentives for ignorance help explain the substantial lack of toxicity testing for most chemicals in the United States. Virtually every prominent expert panel convened to consider the topic has expressed alarm at the dearth of research and basic information about the poten-

tial adverse effects of products, wastes, and industrial activities.²² For example, as of 1984 *no* toxicity testing existed for more than 80% of all toxic substances used in commerce,²³ and by 1998 at least one-third of the toxic chemicals produced in the highest volumes still failed to satisfy the minimal testing standards recommended by an international expert commission.²⁴

For the uninitiated in toxics regulation, the most curious part of this regulatory saga is the unhappy ending—why has such a badly structured program been tolerated for more than thirty years? The answer is grim. Somewhat perversely, the multiple, overlapping incentives for toxic ignorance seem to have solidified within the regulated community a resolve to resist legislative change. Currently, the benefiting stakeholders—namely chemical manufacturers—have a strong interest in keeping the dysfunctional program in place, in part because the disincentives for under-testing are tightly interconnected. Requirements that demand additional testing, lower EPA’s burden of proof, or otherwise subject chemical manufacturers to greater regulation risk subjecting them to a greater probability of tort liability and marketplace stigma. Mandatory toxicity testing thus becomes a dreaded development since there is no telling what such testing might ultimately reveal.

II. A Different Approach: Competition-Based Regulation

The lessons from TSCA are incontrovertible: The cops-and-robbers approach to regulation is a failure and alternative approaches are desperately needed. In this section, I propose a competition-based approach to chemical regulation that divides and conquers by setting manufacturers against one another and rewarding the good guys within the chemical industry at the expense of the dirtier, unsafe chemicals.

In competition-based regulation, regulators provide a venue for the better chemicals to prosper at the expense of the worse (untested or unnecessarily risky) chemicals by adjudicating claims of environmental superiority. If a competitor establishes that there are measurable and significant differences between its product and a competitor’s product with

16. Mary L. Lyndon, *Information Economics and Chemical Toxicity: Designing Laws to Produce and Use Data*, 87 MICH. L. REV. 1795, 1816 (1989). At least one commentator has suggested that some manufacturers are also worried about exposing themselves to Federal Trade Commission enforcement if that agency later determines that their “green” claims are in error. E. Howard Barnett, *Green With Envy: The FTC, the EPA, the States, and the Regulation of Environmental Marketing*, 1 ENVTL. LAW. 491, 507–08 (1995).

17. See, e.g., Applegate, *supra* note 1, at 299–300; see also Margaret A. Berger, *Eliminating General Causation: Notes Towards a New Theory of Justice and Toxic Torts*, 97 COLUM. L. REV. 2117, 2135–40 (1997).

18. E.g., W. PAGE KEETON ET AL., PROSSER AND KEETON ON TORTS §41 (5th ed. 1984).

19. Cf. Rider v. Sandoz Pharms. Corp., 295 F.3d 1194 (11th Cir. 2002).

20. Cf. George A. Akerlof, *The Market for “Lemons”: Quality Uncertainty and the Market Mechanism*, 84 Q. J. ECON. 488 (1970); see also Lyndon, *supra* note 16, at 1814 n.72.

21. Lyndon, *supra* note 16, at 1814 n.72 and accompanying text.

22. See, e.g., NATIONAL RESEARCH COUNCIL, GRAND CHALLENGES IN ENVIRONMENTAL SCIENCE (2000); NATIONAL RESEARCH COUNCIL, BUILDING A FOUNDATION FOR SOUND ENVIRONMENTAL DECISIONS (1997); NATIONAL RESEARCH COUNCIL, REVIEW OF EPA’S ENVIRONMENTAL MONITORING AND ASSESSMENT PROGRAM: OVERALL EVALUATION (1995); NATIONAL RESEARCH COUNCIL, RESEARCH TO PROTECT, RESTORE, AND MANAGE THE ENVIRONMENT (1993); NATIONAL RESEARCH COUNCIL, TOXICITY TESTING: STRATEGIES TO DETERMINE NEEDS AND PRIORITIES (1984) [hereinafter TOXICITY TESTING].

23. See TOXICITY TESTING, *supra* note 22, at 118 fig.2.

24. See, e.g., ENVIRONMENTAL DEFENSE FUND, TOXIC IGNORANCE: THE CONTINUING ABSENCE OF BASIC HEALTH TESTING FOR TOP-SELLING CHEMICALS IN THE UNITED STATES (1997) available at http://www.edf.org/documents/243_toxicignorance.pdf; BUREAU OF NAT’L AFFAIRS, *CMA More Optimistic Than EDF on Lack of Data for 100 Chemicals*, DAILY ENV’T REP., Dec. 1, 1997, at A-4; OFFICE OF POLLUTION PREVENTION AND TOXICS ENVIRONMENTAL PROTECTION AGENCY, OFFICE OF POLLUTION PREVENTION AND TOXICS, *What Do We Really Know About the Safety of High Production Volume Chemicals?*, 22 Chem. Reg. Rep. (BNA) 261 (1998).

regard to health or environmental consequences, EPA may not only certify this environmental superiority, but in some cases it might also restrict the inferior chemical with regard to its range of uses or even ban it entirely.

This regulatory power is justified by EPA's authority to make "unreasonable risk" determinations under TSCA.²⁵ By identifying the superior qualities of its product, a competitor effectively establishes that the inferior, more risky chemical product presents an unreasonable risk: The benefits of the inferior chemical, in light of an effective substitute, approach zero and do not offset the product's risks.²⁶ Competition-based regulation carries the unreasonable risk calculation one step further, however, by rewarding the superior product. This certification of superiority operates almost like a patent or other intellectual property reward for first-movers who demonstrate socially positive innovations relative to more dangerous competitor products. Government procurement decisions could even be tethered—by rule—to require the government to purchase only these superior products if they are available, or at least require government purchasers to stop purchasing inferior chemicals.

The key attribute of this approach is its ability to dredge up more comprehensive and accurate information on chemical risks and safer substitutes than the traditional command and control approach. Rather than rely on manufacturers to produce unflattering information about their own products' risks—an approach that has arguably failed—the competition-based approach enlists competitors to do the dirty work. As a result, far more useful information regarding chemical risks and exposures is likely to come forward. The striking similarity of this proposal with recent proposals for competition-based reform of the patent system—where non-patent-holders could file petitions to cancel a patent as invalid—attests to the increasing recognition by policymakers of the valuable role market competitors can serve in informing regulatory decisions.²⁷ Undoubtedly, manufacturers will sometimes overstate the risks of competitor products, but adversarial adjudications help protect against this overstatement by providing competitors with a full opportunity to rebut or disprove allegations of risk. Even the requirements of the European Community's Registration, Evaluation, and Authorisation of Chemicals (REACH) regulation and other proposals for more rigorous substitute analyses rely primarily on manufacturers to produce the incriminating information on their own chemical's risks.²⁸

Although the details will require significant tweaking, a preliminary formulation of the proposal positions EPA as

the certifier of competitive claims of environmental or health superiority under TSCA. EPA would adjudicate these competitive claims through adversarial hearings in formal rule-making fashion. If a company establishes that its product is significantly safer to the public health or the environment than a competitor product for an identified set of uses,²⁹ and it is available at roughly the same price per application, then the product could be certified as competitively superior for those uses unless this evidence is rebutted by the competitor.³⁰ A company receiving an inferior designation would, at the very least, be required to label its product by noting its inferior status relative to a superior substitute. The company receiving an inferior certification could also appeal the agency's decision.

This claim of competitive superiority would encompass any number of different factors involving health or environmental effects. For example, a product could be characterized as superior if it provides the same service at the same cost, but involves fewer health risks to users, to the workers who manufacture it, or to the environment through leaching or volatilization. One could also imagine claims of environmental superiority with regard to life cycle costs where a product that is otherwise identical to a competitor may be superior because it can be more safely disposed into landfills or is biodegradable. Keeping the idea of superiority open-ended might actually spur product innovation in unforeseeable, environmentally positive ways.

If a product is certified as superior, the certification could be useful not only to consumers, but also to insurers, investors, and might even ward off tort litigation since it would indicate that the manufacturer produced a "reasonable alternative design."³¹ This resolution of competitive claims will sometimes involve difficult decisions about the uses to which a product can be put, as well as the risks facing multiple users. For example, a competitor may argue that all uses are not replaced by a superior product, which in turn could potentially lead to complicated, detailed labels. A clear presumption could help streamline the decision making process in these cases; EPA could establish a presumption that once a superior substitute is established, it is considered a complete substitute for all uses of the inferior product unless the manufacturer of the inferior product rebuts this presumption.

A claim of superiority also entails the prospect of regulatory awards. Once compared against a superior substitute, some inferior, risky products will have no redeeming benefits. When such a showing has been made by a competitor, EPA may have little choice other than to ban or significantly restrict the inferior product since the evidence effectively

25. *E.g.*, 15 U.S.C. §§2604(f)(1), 2605(a), ELR STAT. TSCA §§5(f)(1), 6(a).

26. *Id.* §2605(c)(1)(C).

27. See Patent Reform Act of 2007, H.R. 1908, 110th Cong. ch. 32 (placed on Senate calendar, Sept. 11, 2007); see also NATIONAL RESEARCH COUNCIL, A PATENT SYSTEM FOR THE 21ST CENTURY, 95 (2004).

28. See, *e.g.*, Registration, Evaluation, and Authorisation of Chemicals (REACH), Regulation (EC), No. 1907/2006, OJ L 396/1 (Dec. 30, 2006), arts. 55, 60(4)–(5); see also Lars Koch & Nicholas A. Ashford, *Rethinking the Role of Information in Chemicals Policy: Implications for TSCA and REACH*, 14 J. CLEANER PRODUCTION 31–46 (2006) (arguing for greater attention to the availability of substitutes earlier in the risk analysis process).

29. The criteria for when evidence establishes a "significant" difference between products and how uses and risks should be compared could be determined either on a case-by-case basis or, ultimately through a rulemaking. The scant attention given to it here does not imply that it is an easy undertaking. The best approach might rely on several years of case-by-case adjudications to develop factual scenarios from which more general agency rules or guidelines can be drawn to help channel future petitions and adjudications.

30. Such a label of "inferiority" would likely be justified under the broad authority to restrict products that EPA enjoys under §6(a) of TSCA. 15 U.S.C. §2605(a), ELR. STAT. TSCA §6(a).

31. See RESTATEMENT (THIRD) OF TORTS: PRODUCTS LIABILITY §2(b) (1998).

establishes that the inferior product presents an “unreasonable risk” to health or the environment given the ready availability and comparable cost of a superior substitute.³²

A recent experience with coal-tar based asphalt sealants illustrates how this competition-based regulation might work. Through detective work, the city of Austin learned that coal-tar based asphalt sealants leach high levels of very toxic substances, called polycyclic aromatic hydrocarbons (PAHs), into surface waters.³³ Austin officials discovered this because the PAHs were found in sediments in Barton Springs and biologists determined that the resulting toxic sediments were responsible for the decline of the endangered Barton Creek salamander population.³⁴ By tracing the source of the PAH contamination upstream, Austin officials isolated the culprit—a parking lot at the top of a hill that had recently been sealed with coal-tar sealant and produced very high PAH readings. Further tests revealed that coal-tar sealants typically leach very high levels of PAHs, but other types of asphalt sealants not created from coal tar are significantly less toxic to the environment and are no more expensive than the coal-tar based sealants.³⁵ As a result of its findings, Austin banned the use of coal-tar based asphalt sealants.³⁶ Several retailers, including Lowe’s and Home Depot followed Austin’s lead and refused to carry coal-tar sealants, and Dane County in Wisconsin also banned coal-tar sealants.³⁷ For reasons that appear to be linked to the perceived impotency of TSCA and the enormous burdens of restricting chemicals under Section 6 of that Act, EPA has not taken regulatory action under TSCA against coal-tar based sealants.³⁸

Under the competition-based proposal, if a petition is filed by the manufacturer of a purportedly less toxic sealant, EPA would be forced to rule on whether the coal-tar based asphalt sealants produce an “unreasonable risk.” This would be established through an adversarial hearing and buttressed by evidence supplied by the petitioner, including the availability of a safer substitute product. Even if a competitor manufacturing the non-coal-tar based sealant chose not to file a competitive claim, the city of Austin, Lowe’s, or an environmental group could advance the claim. A formal, adversarial hearing would also provide the manufacturers of coal-tar based sealants with the opportunity to defend their product; indeed, it may turn out after a fair and balanced hearing that the coal-tar based sealants are not environmentally inferior after all.

By engaging in oversight of chemical safety using information generated by competitors and other adversaries, this competition-based approach to regulation surmounts several problems that currently paralyze TSCA. First and most importantly, the competitive approach breaks through political gridlock by separating the high-stakes participants into two competing factions—those that are likely to benefit from competitive, good guy rewards and those that are not. Although it is unclear how many stakeholders will land on each side of this new political fence, the proposal might generate enough defectors to support meaningful reform of TSCA.

Second, a competition-based approach uses economic inducements rather than generic statutory commands to generate useful toxicity information. This not only has the advantage of being more likely to produce information expeditiously, but is also more likely to produce information that has immediate, real world consequences in terms of public health and safety. Rather than unilaterally demand across-the-board testing, regardless of the effectiveness of substitutes or possible risks of exposure, this approach isolates the places in the market where dramatic improvements in the safety of chemicals are possible. The deployment of market forces thus focuses regulatory attention on the worst products that enjoy the largest market share. Profitable commercial products such as air fresheners, road de-icers, and fertilizers, which may contribute significantly to health and environmental hazards, might be scrutinized more intently through this new, competitive lens if manufacturers perceive that differences in product safety are significant enough to warrant regulatory distinctions.

Third, competition-based regulation provides a mechanism for avoiding some of the scientific uncertainties that can paralyze chemical regulation, not only because competitors will produce more information on chemicals, but also because the proposal will lead to natural presumptions against suspect chemicals when well-tested and safer substitutes exist. For example, if one type of herbicide appears to disrupt hormonal systems in frogs, or is carcinogenic to animals, then a competitor’s product that lacks these risks and has no apparent offsetting risks may be certified as superior unless there is a compelling rebuttal. There need not be decisive evidence of harm in humans from the inferior product; only credible risks which are unjustified in view of the competition. Unjustified risks—relative to a substitute product—thus create a default presumption that the competitor must rebut in order to ward off a certification of inferiority.

Finally, reliance upon an adversarial hearing for a challenged chemical product would assure that the quality of the research underlying an assessment of both the inferior and superior products is better than when regulators are left to depend on self-testing provided by individual manufacturers without meaningful checks and balances. As a result, the adversarial process should provide a more robust forum for rigorous, adversarial evaluation of the quality of research as compared to the current system, which largely relies on untested information supplied to regulators by regulated parties.

32. See, e.g., 15 U.S.C. §2605(a), ELR. STAT. TSCA §6(a).

33. See, e.g., Barbara J. Mahler et al., *Parking Lot Sealcoat: An Unrecognized Source of Urban Polycyclic Aromatic Hydrocarbons*, 39 ENV’T. SCI. TECH. 5560 (2005).

34. See, e.g., David C. Richardson, *Parking Lot Sealants: On the Trail of Urban PAHs*, STORMWATER, May/June 2006, at 40, 42–44 (describing the city of Austin’s investigations).

35. See, e.g., CITY OF AUSTIN, THE COAL TAR FACTS: COAL TAR SEALANT FACT SHEET (2004), available at <http://www.ci.austin.tx.us/watershed/downloads/coaltarfacts.pdf> (last visited June 1, 2009).

36. See, e.g., Richardson, *supra* note 34, at 46.

37. See, e.g., *Coal Tar-Based Pavement Sealers Implicated as a Source of Urban Water Pollution*, SCI. DAILY, Feb. 13, 2007, available at <http://www.sciencedaily.com/releases/2007/02/070212101900.htm>; Matthew DeFour, *Dane County Bans Sealants With Coal Tar*, WIS. ST. J., Apr. 6, 2007, available at <http://www.madison.com/wsj/home/local/index.php?ntid=128156&ntpid=5>.

38. See, e.g., Letter from Brent Fewell, Acting Assisting Administrator, U.S. EPA, to Senator Jim Jeffords (Oct. 16, 2006) (unpublished letter on file with author).

As with any new approach, however, there are also several open-ended questions regarding the implementation of competition-based regulation that might impair its success in practice. First and foremost, it is not clear whether there actually will be significant distinctions in the safety of a sizable number of chemical products. In order to know in advance if there will be such distinctions, we would need to know more about the characteristics of the products on the market, which is precisely the problem competition-based regulation seeks to redress.

Second and relatedly, it is possible that an enormous amount of information and resources will be required by regulators to preside over each competition-based claim. A single claim of product superiority might not only be technically complex, but it might also be rebutted by showing that the allegedly superior product is actually environmentally inferior in other ways. Ultimately, multiple risk-risk tradeoffs between two competitors could be thrashed out for weeks in highly technical hearings, only to end in a standoff that proves irreconcilable.³⁹ One modest anticipatory correction to limit some of these administrative costs is to require an unambiguous showing of superiority and to impose rigid limitations on evidence and briefs. If regulators insist on a clear showing of environmental superiority, then they may be able to quickly dispense of cases that involve apples-oranges comparisons.

Third, even if bright lines can be drawn between some inferior and superior chemicals on the market, manufacturers may still choose not to file competitive claims. Underutilization of the process could result from an unwritten allegiance between chemical manufacturers to resist regulatory intervention, but it more likely could emerge out of a perception that filing the claims will involve more costs than benefits. It is also unclear as a political matter whether manufacturers will actually fracture or whether they will instead remain united against regulatory or legislative change, even when it involves competition-based regulation. Nevertheless, even if manufacturers unite and block change from EPA or Congress, it is possible that a respected nonprofit could still preside over claims of competitive superiority and, in so doing, provide better market information.⁴⁰

Despite these and undoubtedly a number of other open questions,⁴¹ there seem to be few risks to at least experiment-

ing with competition-based regulation. Competition-based regulation does not displace existing regulation; it simply adds to it. Except for modest staffing of EPA to preside over the competitive claims, there is little to lose and possibly a great deal to gain. Experimentation may ultimately reveal that there are too many kinks, some of them unforeseeable, to make the proposal workable. Alternatively, the approach could be highly successful, leading to the creation of so much information that a larger forum and staffing for the adjudications would be necessary.

III. Beyond Toxic Products

Competition-based regulation falls outside the existing system of incentive-based regulatory tools. By combining property-types of rewards through the certification of superiority with increased risks of market stigma, regulatory restrictions, and an increased risk of tort liability for inferior products, competition-based regulation rolls several features of other incentive-based regulatory tools into a single approach. Competition-based regulation thus deserves its own unique label in the regulatory toolbox.

In practice, competition-based regulation is likely to be most effective, relative to other regulatory tools, when the oversight of products or polluting activities requires the compilation of a great deal of information, when regulated parties possess most of this information and/or necessary expertise, and when there are sufficient distinctions between competing products or approaches. Competition-based regulation is also particularly useful in situations where nonprofit organizations or the diffuse public are unlikely to be able to counter the political power of the high stakes regulated communities and where adverse consequences of under-regulation are unlikely to materialize in visible catastrophes that spark public outrage.

Pesticide regulation fits this profile and is an ideal candidate for competition-based regulation. Although EPA has forced the generation of considerable information about the risks of pesticides in recent years through the Food Quality Protection Act,⁴² there is still little effort by EPA to compare pesticide substitutes or translate existing toxicity information in a way that provides meaningful information to consumers' purchasing decisions.⁴³ In fact, although a comparison of substitutes is arguably allowed under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA),⁴⁴ EPA does

39. Cf. generally JOHN D. GRAHAM & JONATHAN BAERT WIENER, *RISK VERSUS RISK: TRADE OFFS IN PROTECTING HEALTH AND THE ENVIRONMENT* (1995). (Note that even then, however, the resultant glut of information might move the market forward through improved information about various product-related risks.)

40. See, e.g., Jamie A. Grodsky, *Certified Green: The Law and Future of Environmental Labeling*, 10 YALE J. REG. 147, 209-10 (1993).

41. There is also the possibility that challenges could arise under the First Amendment with respect to agency requirements for labeling or from antitrust law with regard to certifying one product as superior to another product. A closer look at both sets of concerns, thanks to work by Professor Grodsky in the eco-labeling context, suggests that these types of challenges are unlikely to be successful as long as the regulator's decision of superiority involves significant health or environmental improvements between competitors, follows a robust evidentiary process, and is not otherwise arbitrary and capricious. See *id.* at 183-84. This is not to say that these types of challenges to competition-based regulation cannot be filed, but at this point they do not appear to present meaningful impediments.

42. See, e.g., ENVIRONMENTAL PROTECTION AGENCY, *IMPLEMENTING THE FOOD QUALITY PROTECTION ACT: PROGRESS REPORT 35* (1999), available at <http://www.epa.gov/oppfead1/fqpa/fqpareport.pdf> (last visited June 1, 2009).

43. Donald T. Hornstein, *Lessons From Federal Pesticide Regulation on the Paradigms and Politics of Environmental Law Reform*, 10 YALE J. REG. 369, 392 (1993).

44. See, e.g., 7 U.S.C. §136(bb), ELR STAT. FIFRA §2(bb) (defining "unreasonable adverse effects" to include "taking into account the economic, social, and environmental costs and benefits of the use of any pesticide," which would seem to include consideration of the available substitutes); *id.* §136d(b) (requiring the EPA to make an "unreasonable adverse effects" determination as a prerequisite to canceling or otherwise restricting a pesticide registration). On the other hand, FIFRA seems to actively protect worthless pesticides, at least at the registration stage. See, e.g., *id.* §136a(c)(5), ELR STAT. FIFRA §3(c)(5) (prohibiting the administrator from making the "lack of essentiality" of a pesticide a basis

not require data on the effectiveness of a pesticide during the registration process when assessing whether the pesticide constitutes an “unreasonable risk.”⁴⁵ Under the competition-based approach, EPA would be forced to make these important comparisons between competitor products, which could in turn create incentives for the production of more environmentally sensitive pesticides.

The oversight of health and environmental risks of nanotechnology is another regulatory area that might benefit from competition-based regulation. A number of scholars have expressed great concern that the available information is insufficient to evaluate the health and safety consequences of manufacturing, using, and disposing of products made with nanotechnology.⁴⁶ Because the manufacturing community benefits from this unregulated state, moreover, it has been difficult to generate pressure for greater regulatory oversight.⁴⁷ Competition-based regulation might provide a backdoor to encourage the generation of this type of information if the risks of competitor nanotechnology products are sufficiently divergent from one another or from substitute products not made with nanotechnology to support credible claims of environmental superiority between rival products.

The regulation of pollution is also amenable to competition-based regulation. David Driesen suggests a competitive, private claims approach to encourage further pollution reductions for classic pollution problems.⁴⁸ Under Driesen’s proposal, firms that pollute less (for example, by devising cleaner processes) would be entitled to a private claim for damages against their dirtier competitors. The damages would include not only the costs expended in achieving the lower pollutant levels (i.e., switching to more expensive, but cleaner-burning fuels), but also a premium charge levied against the dirtier firm(s).⁴⁹ Other permutations of competition-based regulation are also possible that may not encourage innovation, but at least might strengthen incentives for compliance with pollution-related requirements. In the Toxic Release Inventory disclosure program⁵⁰ or standard pollution discharge requirements, for example, a statutory amendment could provide a company with competitive profit losses if they prove that their competitor failed to file timely or reliable estimates of toxic releases or otherwise enjoyed cost savings from non-compliance. A more novel extension of competition-based regulation would allow competitor manufacturers to report unjustified adverse health consequences from a rival’s unsophisticated handling of toxic materials, as compared with their own superior substitute processes or technologies that result in lower amounts of toxic releases. Again, the superior

manufacturer would be rewarded the profits that they would have enjoyed had their inferior competitor used these more expensive, but less environmentally risky superior processes or technologies.

IV. Conclusion

The important but still seemingly unobtainable goal for chemical regulation is to generate a great deal of useful information which in turn informs decisions about the risks of chemicals on the market. When set against a regulatory community that enjoys asymmetrical information regarding their products and that is well-organized and well-staffed, the few overburdened environmental groups and regulators who represent the diffuse public cannot begin to keep up.

Competition-based regulation helps fracture these high stakeholders and pit them against one another in generating risk-related information that will allow the best products to rise to the top as competitively superior and the worst to be singled out as inferior. Perhaps as promising as its theoretical potential for solving the regulatorily-created market for lemons problem is the practical fact that this regulatory approach can be implemented without radical changes in the existing regulatory infrastructure and with few costs associated with experimentation. Chemical regulation shows no sign of immediate reform. It is time to give the competitive capabilities of the market a try.

for denying its registration). This could support an argument that FIFRA bars the consideration of substitutes and efficacy.

45. See, e.g., Mary Jane Angelo, *Embracing Uncertainty, Complexity, and Change: An Eco-Pragmatic Reinvention of a First-Generation Environmental Law*, 33 *ECOLOGY L.Q.* 105, 163 (2006).

46. See generally J. CLARENCE DAVIES, *EPA AND NANOTECHNOLOGY: OVERSIGHT FOR THE 21ST CENTURY* (2007).

47. E.g., *id.* at 17–32 (describing the current failure of EPA to regulate nanotechnology and the weaknesses of the TSCA in this particular effort).

48. See, e.g., DRIESEN, *supra* note 10, at 153–61.

49. *Id.* at 153.

50. See 42 U.S.C. §11023 (2000), ELR STAT. EPCRA §313.

Comment on *Using Competition-Based Regulation to Bridge the Toxics Data Gap*

by Mark Greenwood

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In her Article, Prof. Wendy Wagner takes on one of the core challenges of U.S. chemical management policy: how to assure that useful toxicity data is generated about chemicals in commerce. She offers a creative proposal for harnessing competitive instincts in companies to assure that such data are developed. As described below, there are important questions about whether this proposal will actually work in practice. At the same time, the history of chemical regulation in the United States has taught us that our assumptions about how the market will respond to specific regulatory policies are often wrong. In that context, this proposal and other experimentation with competition-based regulatory initiatives deserve serious attention.

At the outset of the article, Professor Wagner presents a fairly pessimistic assessment of the current state of information about chemical risk in our society. She presents her perspective on the failures of the Toxic Substances Control Act (TSCA) to generate necessary toxicity information about chemicals, arguing that the U.S. Environmental Protection Agency (EPA) is stuck in a “cops and robbers” legal framework that stymies its ability to force testing by regulation. She also indicates that the marketplace and the tort liability system provide additional disincentives for chemical producers to generate and disseminate information about their products. Her conclusion is that “multiple, entrenched incentives for ignorance help explain the substantial lack of toxicity testing for most chemicals in the United States.”¹

Certainly there is some reality to the disincentives she describes. At the same time, it is not the case that these existing mechanisms have been a complete failure. If one focuses on the set of chemicals that are actually in commerce, it is a misnomer to suggest that there are no toxicity data available on these chemicals. Particularly in the last several years, government programs around the world, both regulatory and voluntary, have stimulated more toxicity testing.² In addition,

chemical producers have faced increasing demand for product safety information from their downstream customers. In some cases, these efforts have evolved into collaborations with a broader community of academic and non-governmental institutions.³

One of the problems that have undermined policy debates on U.S. chemical regulation for several decades has been a lack of common understanding about the relevant universe of chemicals. Many commenters, including Professor Wagner, indicate that there are 75,000 chemicals in commerce in the United States. This number, however, is an estimate of the number of chemicals on the TSCA Chemical Substances Inventory, a list of chemicals that may have been in commerce since 1978. EPA has recognized, however, that this list is unlikely to represent the universe of chemicals that are actually in commerce.⁴ Most recently, in the context of its Chemical Assessment and Management Program (ChAMP), EPA has estimated that the universe of organic chemical substances produced in a significant volume (above 25,000 pound per year), is approximately 6,750 substances.⁵ When measured against that universe, the state of available chemical toxicity testing does not appear as bleak.

The better way to frame the problem is that policymakers face a mixed picture of chemical testing. Some chemicals in commerce are well characterized, reflecting mandates and

ufacturers to provide a base set of testing information on chemicals produced at volumes of over one million pounds per year, has made publicly available over 8,000 previously unpublished studies. See U.S. EPA, Basic Information—High Production Volume (HPV) Challenge Program, <http://www.epa.gov/hpv/pubs/general/basicinfo.htm> (last visited June 1, 2009). In conjunction with this voluntary program, EPA has required testing under the authorities of TSCA for HPV chemicals that were not sponsored in the voluntary program. For the most recent rule of this nature, see *Testing of Certain High Production Volume Chemicals; Second Group of Chemicals*, 73 Fed. Reg. 43314 (July 24, 2008) (to be codified at 40 C.F.R. pt. 799).

3. An example of such collaborations is the Green Chemistry and Commerce Council. See <http://www.greenchemistryandcommerce.org/home.php> (last visited June 1, 2009).

4. See U.S. EPA, Chemical Assessment and Management Program (ChAMP): TSCA Inventory Reset, <http://www.epa.gov/champ/pubs/hpv/tsc.html> (last visited June 1, 2009).

5. U.S. EPA, Chemical Assessment and Management Program (ChAMP): Basic Information, <http://www.epa.gov/champ/pubs/basic.html> (last visited June 1, 2009).

1. Wendy Wagner, *Using Competition-Based Regulation to Bridge the Toxics Data Gap*, 39 ELR (ENVTL. L. & POL'Y ANN. REV.) 10789 (Aug. 2009) (a longer version of this Article was originally published at 83 IND. L.J. 629 (2008)).

2. As an example, EPA has reported that its High Production Volume (HPV) Challenge program, which seeks voluntary commitments from chemical man-

incentives that emanate from regulatory agencies and various marketplace actors. For other chemicals, however, those systems are not working effectively, and we have information gaps that should be filled. In many ways, this situation presents the most difficult of challenges for policymakers. What is the best set of policy actions to address important data needs that will not also discourage current incentives that seem to be working? Since nobody seems to have developed a comprehensive field theory that adequately guides those choices, pragmatic experimentation is the order of the day.

Professor Wagner puts forward a proposal under which a regulatory agency (presumably EPA) makes determinations about the environmental superiority of particular chemicals through an adjudicatory process. In this proceeding, competitors for an economic niche (a chemical use) would present the best case for their products and challenge the claims of competitors. After reviewing the evidence underlying the competitive claims, EPA would make a determination about whether a particular chemical substance is superior for its intended use, after considering its environmental benefits as well as its technical and economic performance. While it was not entirely clear what further actions would necessarily follow from this determination, the range of options could include product labeling changes and possibly bans on the “losing” substance.

This proposal presents significant challenges for the agency administering the program, many of which Professor Wagner has accurately characterized. The most difficult problems to overcome include the following:

- After decades of work on federal environmental policy, we do not have established methodologies for making tradeoffs among differing environmental values. What are the metrics for determining how many British thermal units (BTUs) of increased energy demand are worth reducing a pound of pollutant emissions? When should we prefer a chemical that is less toxic to humans but presents a serious threat to wildlife?
- Replacing chemicals in complex technological settings is a difficult task. In most modern industrial settings, it is rare that we find drop-in substitutes for existing chemicals. The series of assessments necessary for switching to new chemical ingredients and process aids, often referred to as the qualification process, typically involves multiple analyses of end-product performance characteristics, compatibilities among reactants and necessary equipment modifications that can take several years and substantial cost to complete. It is not always easy to determine that a safer chemical can easily be substituted for another chemical.
- Adjudications take time. Adversarial processes typically include multiple procedural steps, rules for presenting evidence and opportunities to be heard. To do

justice to the extensive record developed in such proceedings, the finders of fact must review large bodies of information and formulate well-reasoned conclusions. It is worth noting that the modern day emphasis on informal rulemaking under the Administrative Procedure Act as the primary mechanism for establishing regulations was, in many ways, motivated by the desire to move away from slow-moving adjudicatory processes for the formulation of policy.

The adjudicatory process suggested by Professor Wagner would also present many challenges to those who might participate in such proceedings, including the following:

- As a threshold matter, it is not clear that companies will initiate these proceedings to challenge their competitors. This is less a question of industry loyalties than a matter of uncertain results in an intimidating process. Companies will reasonably assume that they will face high transaction costs in challenging a competitor in an EPA proceeding. Of the three potential outcomes—win, lose or draw—two represent a waste of money and one of those is a disaster. If a company has strong data showing the comparative advantage of its product for the environment, most companies would prefer to turn that information over to their sales staff and tell them to do their job, rather than take on the high cost and uncertainty of an EPA proceeding.
- Some of the better arguments about the comparative advantage of particular chemical products may be based on information about material sourcing and cost profiles that constitute trade secrets, information that companies would be disinclined to offer as evidence in a proceeding that shares such information with competitors.
- The challenges of an adjudicatory process will be most difficult for medium and small businesses, many of which operate on the cutting edge of new technology. There is some risk that a competition-based adjudicatory process would favor larger companies with older, entrenched products who could afford to muster the resources necessary to wage effective challenges in such a process and thereby intimidate newer technologies under development by small companies.

Despite these limitations, Professor Wagner’s proposal warrants further consideration and refinement as part of a package of policy reforms that could encourage development of better risk-related information. There will be situations where a combination of factors, including the available environmental data, the market position of differing companies, customer sensitivity to health or environmental considerations, and differences in corporate culture, could produce effective results through adjudications about the environ-

mental superiority of competing chemicals. It is worth experimenting with this model and learning from the experience.

In the end, it is only through the willingness to experiment that the United States will develop a stronger national chemical management program. At times the most direct way to improve the availability of risk-related information is to mandate further testing through regulation. The European Union's Registration, Evaluation and Authorization of Chemicals (REACH) program is certainly the current grand experiment on the world stage with this approach. We do not yet know, however, whether this highly ambitious program will be efficient in generating the right data in a timely way.

Other strategies worth considering, which share Professor Wagner's valid emphasis on the power of market forces, are ones that emphasize the obligations of chemical manufacturers to disclose all that is known and not known about the toxicity of the materials they are offering to their customers. For example, it could make sense to enhance current hazard communication programs, including the Material Safety Data Sheets that routinely accompany chemicals in commerce.

Perhaps an even more fundamental set of policy changes could focus on reforming the basic scientific tests we use to assess human health effects, potentially reducing the cost of such testing. The world of chemical hazard assessment is undergoing substantial change as scientists develop new methods for screening chemicals, often through high-throughput mechanisms, that will allow us to obtain valuable insights on the potential toxicity of chemicals more cheaply, much faster and with a greater sensitivity to the animal welfare concerns associated with wide-scale use of existing test methodologies.

In this field of environmental policy, where the political and economic dynamics guiding behavior are difficult to characterize, it seems that a pragmatic willingness to try multiple approaches is the only sensible strategy.

Comment on Using Competition-Based Regulation to Bridge the Toxics Data Gap

by Richard A. Denison, Ph.D.

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In *Using Competition-Based Regulation to Bridge the Toxics Data Gap*,¹ Prof. Wendy Wagner offers a useful and provocative proposal intended to address the many shortcomings of current U.S. policy toward industrial chemicals. The proposal derives from a diagnosis of the root causes of these policy failings with which I wholeheartedly concur.² The main elements of that critique are the following:

- Despite the fact that the Toxic Substances Control Act (TSCA)³ states unambiguously that it is U.S. policy that data be developed for all chemicals in commerce adequate to determine their health and environmental effects, and that manufacturers bear the responsibility to develop those data,⁴ for the great majority of chemicals, few data are available to the public or to the U.S. Environmental Protection Agency (EPA) to characterize their hazards.
- EPA's authority to require testing of chemicals is highly constrained and hence seldom employed.
- Companies have little or no incentive to develop health and environmental data on their own initiative, not only for chemicals already on the market but also for new chemicals subject to pre-manufacture notification and review by EPA. And because the default in the face of data gaps or uncertainties is no action, industry has an incentive to seek to perpetuate rather than rectify them.

- Even when EPA does manage to obtain evidence of significant risk, its authority to act to control a chemical's production or use is even more constrained than its data gathering authority and is virtually never used.⁵
- EPA's access to information, not to mention its resources, is dwarfed by those of the chemicals industry.

These failings yield a dysfunctional regulatory environment and chemicals market, ill-informed and unable to distinguish, let alone motivate or reward the development of, more benign chemicals and chemical products.⁶ It is little wonder, then, that companies have seen little need to innovate toward inherently safer chemical and product design.

Seeking to break up and recast this market dynamic is therefore entirely appropriate, and Wagner's proposal seeks to do just that. In doing so, it also posits a pivotal role for government in the heart of the chemicals market, one that goes well beyond its traditional regulatory role: that of judge and jury in deciding which chemicals and products should succeed in that market and which should fail. Proposing such a role for government raises both major pragmatic questions (many of which Wagner herself anticipates) as to whether and how it might work in the face of government's limited authorities and the enormity of the chemicals economy, and a more fundamental question as to the appropriate role of government in market selection and deselection of chemicals.

Wagner's proposal is not unique in assigning a role to government in identifying and seeking to promote the sub-

1. Wendy Wagner, *Using Competition-Based Regulation to Bridge the Toxics Data Gap*, 39 ELR (ENVTL. L. & POL'Y ANN. REV.) 10789 (Aug. 2009) (a longer version of this Article was originally published at 83 IND. L.J. 629 (2008)).

2. See RICHARD A. DENISON, NOT THAT INNOCENT: A COMPARATIVE ANALYSIS OF CANADIAN, EUROPEAN UNION, AND UNITED STATES POLICIES ON INDUSTRIAL CHEMICALS (2007), available at http://www.edf.org/documents/6149_NotThatInnocent_Fullreport.pdf (last visited June 1, 2009); Richard A. Denison, *Ten Essential Elements in TSCA Reform*, 39 ELR 10020 (Jan. 2009).

3. 15 U.S.C. §§2601-2692, ELR STAT. TSCA §§2-412.

4. TSCA's preamble states: "It is the policy of the United States that . . . adequate data should be developed with respect to the effect of chemical substances and mixtures on health and the environment and that the development of such data should be the responsibility of those who manufacture and those who process such chemical substances and mixtures." 15 U.S.C. §2601(b)(1), ELR STAT. TSCA §2(b)(1).

5. Since adoption of TSCA in 1976, EPA has succeeded in mandating limited restrictions on the production or use of only five substances. The five substances are: polychlorinated biphenyls (PCBs), by virtue of a mandate from Congress; fully halogenated chlorofluoroalkanes used as aerosol propellants; dioxin in certain wastes; asbestos (limited to products no longer in commerce); and hexavalent chromium used in water treatment chemicals in comfort cooling towers. See U.S. GOV'T ACCOUNTABILITY OFFICE, CHEMICAL REGULATION, OPTIONS EXIST TO IMPROVE EPA'S ABILITY TO ASSESS HEALTH RISKS AND MANAGE ITS CHEMICAL REVIEW PROGRAM, (2005) REPORT NO. GAO-05-458, at 58-60, available at <http://www.gao.gov/new.items/d05458.pdf>.

6. See Joseph H. Guth et al., *Require Comprehensive Safety Data for All Chemicals*, 17 NEW SOLUTIONS: J. ENVTL. & OCCUPATIONAL HEALTH POL'Y 233 (2007), available at <http://www.louisvillecharter.org/paper.safetydata.shtml> (last visited June 1, 2009).

stitution of chemicals of concern with safer alternatives. A few examples illustrate a number of possible roles for government. Massachusetts' Toxics Use Reduction Institute (TURI) provides research and technical assistance to the state's businesses in identifying and implementing less toxic alternative materials and processes to specific hazardous chemicals. TURI also conducts formal alternatives assessments of technical and economic as well as the environmental performance of the alternatives.⁷

The European Union's recently adopted Registration, Evaluation, and Authorization of Chemicals (REACH) regulation requires manufacturers seeking a time-limited authorization to use certain so-called "substances of very high concern" themselves to analyze the availability, viability and risks of alternatives. If viable alternatives are identified, a substitution plan and timetable for implementation are required.⁸

The state of Maine adopted in 2008 a law that authorizes (but does not require) the state to ban production and sale of a children's product containing a "priority chemical of high concern" to which children are exposed if the state finds that a safer alternative is available at "comparable cost." The state can also require the manufacturer of a product containing such a chemical to conduct and submit an alternatives assessment, and to pay for an independent assessment if the state finds that the manufacturer's assessment is insufficient.⁹

California recently enacted legislation mandating companies that make or use priority chemicals of concern in consumer products to conduct broad life cycle-based alternatives assessments through a process subject to government oversight, although it leaves to the subsequent regulatory development process critical details as to how the outcome of such assessments will relate to the exercising of the expansive authorities granted the state to regulate such chemicals.¹⁰

These different approaches to adopting a chemicals policy that seeks to mandate or drive substitution all face a fundamental dilemma. On the one hand, producers or users of a chemical are the ones who know the most about the functionality, performance characteristics and needs and the economics of their chemical and, potentially at least, alternatives to it. On the other hand, they also likely have the highest vested interest in maintaining their ability to continue to produce or use that chemical and are likely to dispute the viability of a claimed substitute. To what extent is it desirable for govern-

ment to insert itself into such a process—and could it deliver the necessary expertise and objectivity?

Wagner argues that directly pitting against each other the manufacturers of a chemical of concern and of an alternative claimed to be safer—and having EPA to adjudicate the dispute—would both bridge the data gap plaguing chemicals management and foster a robust market for safer alternatives to the most dangerous chemicals. The remainder of this comment addresses the questions: would it work and is it sufficient?

I. Would It Work?

Wagner argues that her proposal could be wholly or largely implemented using EPA's current TSCA authority and would require minimal additional resources.¹¹ As to authority, she essentially argues that EPA's identification of a safer alternative would be sufficient to meet its burden to find that a chemical "presents or will present an unreasonable risk" in order to regulate it, whether merely to require labeling or to ban it outright. Yet nothing in TSCA suggests the requisite risk finding can be a relative judgment, that is, that no matter how large or small the risk a chemical poses, that risk can be deemed "unreasonable" if an alternative exists that poses less risk.¹² Moreover, beyond the scientific determination of risk, TSCA requires EPA to make several other findings in order to deem a risk unreasonable: it must still find that the economic and social costs of imposing controls on the chemical are outweighed by the benefits, after exhaustively considering the benefits of the chemical, not only the existence but the viability of alternatives, and the impact of regulation on the economy, small businesses and innovation.¹³ It must still demonstrate that the proposed control is the least burdensome it could have proposed.¹⁴ And it must still demonstrate that no other statute could address the concern.¹⁵

There is little question that identifying one or more viable substitutes is a *necessary* part of TSCA's unreasonable risk calculus. It is harder, however, to envision such a finding by itself to be *sufficient* to deem a risk unreasonable under

7. See TURI—Toxics Use Reduction Institute, www.turi.org.

8. See THE EUROPEAN PARLIAMENT AND THE COUNCIL OF THE EUROPEAN UNION, Registration, Evaluation, Authorization and Restriction of Chemicals (REACH), Regulation (EC), No. 1907/2006, OJ L 396/1 (Dec. 30, 2006), art. 62, available at <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2006:396:0001:0849:EN:PDF> (last visited June 1, 2009). Some observers have argued that such companies will have little incentive to identify alternatives to the very chemical they seek authorization to use. Others, however, see significant advantage in compelling a search for alternatives by the party that possesses the most precise knowledge of the technical and economic performance requirements and arguably has the most to gain from an orderly transition to alternatives for a chemical under such intense scrutiny. See also Denison, NOT THAT INNOCENT, *supra* note 2, at VI-4-5 box 5.

9. 38 ME. REV. STAT. ANN. tit. 38, §§1691-1699 (2008).

10. See CAL. HEALTH & SAFETY CODE §25252 (2009).

11. Wagner also sees competition-based regulation as a means to facilitate subsequent TSCA reform by driving wedges between companies now forming a united front that has and will otherwise continue to succeed in blocking such reform. While industry unity has indeed been an obstacle to reform, it is difficult to see why this proposal alone would drive challenger companies to embrace broad-based reform complete with expanded data requirements and regulatory authority. In practice, might it not have the opposite effect of relieving political pressure for such reform?

12. One key conceptual advantage of the proposal is that it could foster the application of risk assessment methodologies in a comparative rather than absolute manner, as a means to determine preferability among options rather than seek to derive an absolute measure of risk of a single option. A recent report of the National Academies identifies this comparative use of risk assessment as a much-needed enhancement of existing risk assessment methodologies, see National Research Council, Science and Decisions: Advancing Risk Assessment 4 (2008), available at http://www.nap.edu/catalog.php?record_id=12209.

13. It is difficult to imagine this burden could be met merely by identifying a safer alternative. And while the adjudicators might deliver some information useful to EPA in meeting its evidentiary burdens, EPA would still need to produce its own risk, cost-benefit, alternatives and regulatory impact assessments. See 15 U.S.C. §2606(c)(1), ELR STAT. TSCA §6(c)(1).

14. See 15 U.S.C. §2606(a), ELR STAT. TSCA, §6(a).

15. See 15 U.S.C. §§2606(c), 2609, ELR STAT. TSCA §§6(c), 9.

TSCA. Nor do I see a basis in TSCA to presume that EPA has authority to require a product to be labeled as inferior to another, as opposed to bearing warnings as to its hazard or instructions for safe use or disposal.¹⁶

Beyond whether or not EPA has the requisite authority under TSCA, the proposal raises questions of feasibility, given the scale of the chemicals market. With tens of thousands of chemicals in commerce for which safety information is needed and to which safer alternatives may exist or emerge, two questions must be asked of Wagner's proposal. First, could EPA manage the workload? Second, could chemical-by-chemical adjudications in practice yield sufficient and reliable information to "bridge the toxics data gap" for such large numbers of chemicals? These questions are intimately related and directly trade off against each other, of course: the fewer in number the adjudications that companies seek or that EPA can handle, the fewer chemicals for which data would be developed.

Wagner projects that requests for adjudications would be small in number, somehow limited only to "places in the market where dramatic improvements in the safety of chemicals are possible."¹⁷ But assuming they see advantage in winning such a contest, why would competitors so restrain themselves? Competition in relation to other product attributes is certainly not so limited; brands constantly churn out new products like rabbits, look-alike products abound and marketers seek to exploit even the slightest perceived advantage. In anticipating this problem might arise, Wagner suggests that EPA could solve it by requiring "an unambiguous showing of superiority" to qualify for adjudication.¹⁸ But this puts the cart before the horse: while EPA could set in advance clear criteria defining what constitutes both a chemical of concern and a legitimate claim of superiority, how could it judge whether the evidence of superiority was unambiguous before agreeing to adjudicate a dispute, when that is the purpose of the adjudication in the first place? To the extent companies see market value in prevailing in EPA's decisions, there is every reason to expect EPA would be swamped with requests to adjudicate claims (however spurious) of superiority (however small).¹⁹

While Wagner's observation that EPA's "cops" are greatly outnumbered by both companies and chemicals is sound, EPA's "judges" under her proposal could be even more outnumbered by the potentially endless numbers and combinations of potential adjudicants. And because any given adjudication would necessarily apply only to that case, even slight variations on it (an additional use of a chemical, a new claimed alternative or alternative to an alternative) would compel a *de novo* adjudication. EPA's workload would be further compounded by its likely having to provide an appeals process for its decisions, given that they would be

adjudicated "through adversarial hearings in formal rule-making fashion."²⁰

The proposal's premise that it would be easier and less work for EPA to digest, judge and challenge two competing companies' claims and counterclaims than to conduct and defend its own assessment is far from a given. While the competitors might to some extent police each other (as Wagner puts it, "do the dirty work"), what is to guard against companies generating or bringing forth only selective information biased in favor of their chemicals? And the more "open-ended" the scope of analysis as to what constitutes a "safer" alternative—while clearly desirable in order to avoid so-called "regrettable substitutions" that replace one set of hazards with another—the greater the complexity, the opportunity for conflicting data and claims and for risk-risk trade offs, and the demand for EPA expertise, time and resources.²¹

Finally, because it would be making a decision intended to directly influence the market, EPA would necessarily have to judge, and hence become expert in assessing not only environmental superiority, but also whether an alternative is economically and functionally equivalent to the incumbent chemical or product. And in most if not all cases, the competitions would have to be waged and EPA's judgments rendered use-by-use, since cost and performance, and sometimes environmental preferability, are necessarily specific to a given application.

II. Is It Sufficient?

Wagner's proposal could be made more manageable by strictly limiting the number and nature of adjudications in some fashion, imposing such limits would also curtail the proposal's primary objective to "bridge the toxics data gap," because information would only be developed for the relatively small number of chemicals subject to adjudications.

Even if larger numbers of adjudications were feasible for EPA to conduct, it is difficult to see how this approach would yield reliable safety data for most of the tens of thousands of chemicals in commerce—in my view a key objective of chemicals policy reform, essential to identify both "bad actors" and a broad range of potential safer substitutes. Data would be developed only for those chemicals challenged by, plus the limited alternatives made by, companies able and willing to engage in adjudications. This would limit the scope and applicability of any alternatives assessment and make it unlikely that data sufficient to identify the best among the full range of possible substitutes for a chemical of concern would be developed.

Finally, given TSCA's overly generous allowances for companies to claim submitted information confidential, it

16. TSCA §6(a)(3) provides EPA with authority only to require a substance, or any article containing the substance, to be labeled or accompanied by warnings and instructions for use, distribution or disposal. 15 U.S.C. § 2606(a)(3), ELR STAT. TSCA §6(a)(3).

17. Wagner, *supra* note 1, at 10793.

18. *Id.* at 10794.

19. Wagner anticipates this same problem. *See id.* at 10794.

20. *Id.* at 10792.

21. Here again, Wagner has raised a similar concern with the proposal; *see id.* at 10792-94. However, seeking to make EPA's workload more manageable by "quickly dispens[ing] of cases that involve apples-oranges comparisons," could well increase the likelihood of regrettable substitutions, thereby frustrating the proposal's objective of facilitating the migration to truly safer alternatives. *Id.* at 10794.

must be asked whether this proposal would, without broader reform of TSCA's information policies, actually lead to an increase in publicly available information about chemicals of concern and their alternatives.

It is also interesting to ask—though more difficult to answer—whether or to what extent EPA's decisions would, in the absence of regulatory prohibitions on a chemical of concern, drive a sufficiently broad shift in the market to justify the effort. Even if EPA had the authority to require losers of adjudications to label their products as “inferior” to the winners', would the market respond to such labels? Other attempts by government or third parties to identify greener products, through, for example, eco-labeling and preferential procurement policies, have achieved only limited boosts in the market for alternatives.²²

Finally, in the absence of broader reform that substantially lessens EPA's burdens of proof under TSCA to regulate a chemical, I worry that the current proposal's linking of a chemical of concern with alternatives to it runs the risk of exacerbating rather than alleviating one of the core flaws of TSCA: making EPA's ability to ban a chemical of concern contingent on the identification of viable alternatives for each use of the chemical.²³

III. Concluding Remarks

Wagner's creative proposal for competition-based regulation is motivated by the clear need to increase both chemical information in the market and incentives and rewards for the development of safer alternatives. A role for government in promoting the market's transition to safer chemicals and products is clearly needed and appropriate. But I question whether EPA is either able or best suited to serve as exclusive judge and jury as to what constitutes a safer and viable alternative to a chemical of concern—especially given the complexity and pitfalls inherent in seeking to assess (often in advance of commercialization) the detailed economic and technical performance characteristics of each use of a chemical and its potential substitutes.²⁴ Might not those questions

be better left to the market itself to decide, with EPA's role focused on setting data and disclosure requirements, test protocols and ground rules for judging health and environmental safety, and banning or restricting chemicals that cannot be shown to be safe?

If applied in a limited fashion, competition-based regulation may contribute to accelerating a shift in current markets away from reliance on particular chemicals of high concern. But given the sheer scale of the chemicals market, I believe that only broader reform of policies will be sufficient to drive the needed changes. Paramount among these reforms is to require development of and broad public access to comprehensive and reliable safety and use information on chemicals already in and entering commerce. Only in this manner can we enlist and empower the many thousands of market participants—who make decisions on a daily basis that determine which chemicals are produced and how they are used—who must act in order to drive our chemicals economy toward safer chemicals and products. Additionally, policy reforms must shift the burden of proof from government to show harm to industry to show safety of its chemicals, and must provide government with broad authority to regulate chemicals that can harm human health or the environment.²⁵ These reforms, in my view, are essential to fostering a truly innovative and competitive chemicals economy.

Wagner's proposal can be viewed as offering a creative means to expand on the ways in which EPA might act within its current limited authorities. When offered in 2007, it was in the face of what seemed to be insurmountable odds against achieving the needed broader reforms of TSCA. Happily, that situation has begun to change, with a remarkably diverse range of actors recognizing the need for just such reforms, encompassing environmental and consumer advocates, academic research scientists, organized labor, groups representing health professionals and health-affected individuals, and companies that both produce and use or sell chemicals and chemical products. Wagner's proposal is still useful in helping to discern a place in that broader reform for market competition as a means to accelerate the development of safer alternatives to chemicals of concern.

22. See, e.g., Jamie A. Grodsky, *Certified Green: The Law and the Future of Environmental Labeling*, 10 YALE J. REG. 147 (1993); Lisette Ibanez & Gilles Grolleau, *Can Ecolabeling Schemes Preserve the Environment?*, 30 ENVTL. RESOURCE ECON. 233 (2008) 40:233--249; and Misty L. Archambault, *Making the Brand: Using Brand Management to Encourage Market Acceptance of Forestry Certifications*, 81 N.Y.U. L. REV. 1400 (2006).

23. TSCA §6(c)(1) requires EPA to assess “the benefits of such substance or mixture [it seeks to ban or restrict] for various uses and the availability of substitutes for such uses.” 15 U.S.C. §2606(c)(1), ELR STAT. TSCA §6(c)(1). Wagner herself suggests that, under her proposal, “regulatory restrictions would fall only on those products that are completely out-competed with regard to all uses relative to the certified superior substitute.” Wendy E. Wagner, *Using Competition-Based Regulation to Bridge the Toxics Data Gap*, 83 IND. L.J. 629, 643 (2008).

24. One intriguing but unexplored question raised by Wagner's proposal is: What would be the legal consequences if EPA's “safer” alternative later proves unsafe?

25. See Denison, *Ten Essential Elements in TSCA Reform*, 39 ELR 10020 (Jan. 2009).

H O N O R A B L E M E N T I O N

Narrowing the Accountability Gap: Toward a New Foreign Investor Accountability Mechanism

by Natalie L. Bridgeman and David B. Hunter

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I. Introduction

This Article addresses the “accountability gap”¹ in foreign investment projects and proposes the creation of a Foreign Investor Accountability Mechanism (the Mechanism) to ensure that multinational enterprises (MNEs) may be held accountable to the social and environmental standards to which they have agreed.

MNEs have adopted an ever-increasing number of standards, guidelines, principles, norms, and best practices (hereinafter standards and norms)² to address the environmental and social impacts of their investments. However, a number of barriers often prevent implementation of those standards and norms in the countries where these investments are located (host countries). Barriers include weak host country regulatory authority capacity, lack of political will, lack of leverage over violators, and corruption. In addition, investment treaties, host government agreements, foreign policy pressure from home country governments, and jurisdictional challenges may further weaken the ability of host countries to enforce laws, norms and standards. In home countries

(generally speaking, the OECD countries where MNEs are headquartered), a similar gap exists, with limited remedies available for project-affected people and, where available, challenges in enforcement. Thus, MNEs operate in a “norm-rich” environment that lacks effective governance structures for monitoring or enforcing compliance with their commitments.

Certain international institutions have developed accountability mechanisms, in part because of an increasing recognition that locally-affected communities have little effective access to justice under international law. By allowing locally-affected people to bring claims, these mechanisms have expanded citizen access to some international decision-makers affecting their lives. In some contexts, use of the mechanisms has improved lives and has served to strengthen the accountability of MNEs. To an extent, the existence of these mechanisms sets a precedent for the creation of a broader citizen-based mechanism, such as the one promoted here. Unfortunately, the contexts in which these mechanisms are effective tend to be narrow, either because the scope of the mechanism’s jurisdiction is itself narrow or because the remedies available through the mechanism are inadequate to force meaningful change on the ground. While these institutions are important, they do not sufficiently narrow the MNE accountability gap.

A new mechanism is needed to close the accountability gap between the aspirational quality of these standards and norms and their implementation. While support for a new mechanism is mounting, few proposals have discussed in detail how a new, community-driven mechanism would function. This Article proposes a new Foreign Investor Accountability Mechanism to narrow the accountability gap by providing communities affected by foreign investment projects with an avenue for voicing their concerns and for holding MNEs accountable for the various promises that they make during

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1. We use the term “accountability gap” to describe the policy space between the many international standards and norms and the lack of corresponding mechanisms to require adherence to those norms. Consult full article for a more detailed account of the current shortcomings and weaknesses of existing forums and procedures. The authors also discuss some of the existing enforcement mechanisms, such as the World Bank Inspection Panel and the International Finance Corporation’s (IFC) Compliance Advisor/Ombudsman, and their flaws.
2. Well-known examples of these standards and norms include the Organization for Economic Cooperation and Development’s (OECD) Guidelines on Multinational Enterprises, the United Nations Global Compact, the World Commission on Dams’ Principles and Recommendations, the IFC Environmental and Social Standards, the Equator Principles, the Roundtable on Sustainable Palm Oil, Rio Tinto’s corporate sustainable development policies and literally dozens of other industry- or company-specific standards and norms.

project design, approval, and preconstruction phases, or to gain financing or the “social license to operate.”³

In addition, the Mechanism offers several advantages to MNEs. MNEs need to increase their credibility and increase compliance with standards and norms for their own benefit, as well as for the benefit of the locally-affected communities. This mechanism would help to demonstrate compliance, would serve as a risk management tool, and thus would improve MNEs’ ability to receive support from financial institutions. Also, the Mechanism would provide an opportunity to hold civil society groups accountable for invalid claims by forcing them to prove allegations of misconduct in an objective forum where the MNE’s performance can be independently evaluated (and vindicated if necessary).

II. Proposal

A. *Proposed Design and Function of a New Foreign Investment Accountability Mechanism*

The Mechanism’s primary purpose would be to investigate and report publicly on concerns raised by locally-affected people that projects are not meeting applicable environmental and social standards and norms. The Mechanism would be a tool for determining compliance, not a mediation or arbitration mechanism. The Mechanism would provide for citizen action and be based on and judged by the following principles: independence, transparency, fairness and objectivity, professionalism, accessibility, and effectiveness in evaluating claims and communicating findings.

The proposed Mechanism would be a free-standing entity, and its jurisdiction would extend to those entities that had agreed or acceded to the Mechanism’s jurisdiction, mission, and operating procedures. Entities such as MNEs, Equator Banks, export credit agencies, and others that are in need of a compliance mechanism would be free to sign up to the Mechanism. Additionally, entities that already have complaint mechanisms could use the new Mechanism as an appellate body, and other frameworks to which a company has committed would become part of the terms of reference for any investigation.

Eventually, the proposed Mechanism could supplant, complement, or harmonize other accountability mechanisms. By referencing the reports of other mechanisms in its interpretation of standards and norms, the Mechanism would promote the development of a body of jurisprudence among the institutions. This would increase the predictability of results, lower risk to MNEs, and likely improve the overall quality of the interpretation of standards and norms.

A novel feature of the proposed Mechanism is that the normative framework that will be applied to each case will be project-specific. The proposed Mechanism builds on the

experience of existing accountability mechanisms, but it also takes lessons from the creation of the standards and norms themselves. The scope of the standards and norms that could form the framework for the Mechanism’s operations would be tailored to each specific project, reflecting all environmental and social norms to which it has committed in the context of a specific project. Any project-specific promises the company makes to local officials or community leaders in order to obtain the consent to operate would also be incorporated into the normative framework against which the project’s compliance will be measured.

Any member of a negatively affected community may submit to the secretariat a claim that one of these entities has violated a discernible international standard. Though the Mechanism would not have enforcement authority, it would provide remedy recommendations and would publicly issue its reports. The Mechanism’s findings would then be used by other entities in their own enforcement, planning, and monitoring activities.

B. *Composition and Funding of the Mechanism*

Membership would include all entities that had acceded to the Mechanism’s jurisdiction, which will serve as a statement by MNEs and others of their support for the Mechanism’s mission and methodology.⁴ Nongovernmental organizations (NGOs) would also be asked to participate as members of the Mechanism. NGO endorsement of the Mechanism’s general approach is important for the Mechanism’s credibility and its acceptance by affected communities. International NGOs that are members might also agree to voluntarily suspend campaigns against any MNE project that is under investigation by the new Mechanism. Advance agreement (represented by membership in the Mechanism) of MNEs and NGOs on the general operating procedures, fact-finding methodologies, reporting methodologies, and similar procedures, would provide credibility to the process.

The proposed Mechanism’s leadership would include an executive committee and a secretariat headed by the chairperson of the Mechanism. The executive committee’s primary function would be to select the secretariat of the Mechanism, including the chairperson and chief investigator. Other roles include ensuring the fiscal accountability of the Mechanism and providing governance oversight. To ensure credibility, the executive committee would include representatives of affected communities and other interested stakeholders, in addition to the members selected by the MNE and NGO membership.

Members would share overhead costs across a wide cross-section of industry while bearing only the costs of their specific investigations. The proposed Mechanism should have sufficient funding from membership fees to meet its core operating expenses. Much like litigation fees in the United States, MNEs or other entities whose projects are being investigated would have to pay contribution for direct expenses beyond

3. These promises may include: (i) commitments to follow international, industrywide, or sectoral standards and norms; (ii) commitments made as part of corporatewide social and environmental policies; and (iii) project-specific commitments made to secure host government approval or financing from financial institutions, such as the IFC, export credit agencies, or private commercial banks.

4. Further information about the composition of the executive committee and the panel members is included in the full article.

the core budget expended in investigating any project. The fees would come due after the investigation was completed, thus annually replenishing a revolving fund that allows the Mechanism to carry out necessary investigations.

III. Conclusion

This article highlights an existing gap in the protections that international and national law provide to local communities harmed by the environmental and social impacts of development and investment projects. It proposes a new Foreign Investor Accountability Mechanism that will hold MNEs accountable to the various normative commitments they have made during project preparation, design, and approval to prevent or minimize environmental and social harms on communities affected by their operations. The Mechanism would 'harden' the existing set of standards and norms and empower affected communities in their dialogues with MNEs. In short, the authors hope this article contributes to the ongoing dialogue on new and innovative ways to enhance MNE accountability to their host communities.

H O N O R A B L E M E N T I O N

Size Matters: Regulating Nanotechnology

by Albert C. Lin

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Nanomaterials and products containing nanomaterials are quickly being integrated into a wide range of commercial and noncommercial applications. As nanomaterials grow more commonplace, we are coming in contact with these substances on an increasingly regular basis, in products ranging from stain-resistant khaki pants to sunscreens. Despite the expanding use of nanomaterials, relatively little is known about the possible harm they could pose. Current forms of government regulation are proving inadequate in addressing this potential harm. Therefore, it is imperative that new mechanisms be developed to learn more about these new substances, while protecting against the unknown risks they present to society.

Nanotechnology is the term used to describe the burgeoning field of manipulating matter at a nanometer scale. Engineered nanomaterials are derived from conventional chemical substances, but have unique characteristics and surface coatings that often lead them to behave very differently. The small size and high surface-area-to-mass ratio of nanosized particles enhance the mechanical, electrical, optical, catalytic, and/or biological activity of a substance. This unusual behavior, however, along with known hazards presented by naturally occurring particles of somewhat similar size, has caused concern over the effects that nanomaterials could have on human health and the environment. Free nanoparticles that may be released into the environment, whether intentionally or incidentally as a product is used, are of particular concern. These substances are believed to be the most likely to be able to enter the body, react with cells, and cause tissue damage. There is very little data on harmful effects from real world exposure to engineered nanoparticles, but this uncertainty should not be used as an excuse for regulatory inaction.

The existing statutes that might be used to regulate nanomaterials are inadequate. The Toxic Substances Control Act (TSCA) is the main authority that could be used to regulate nanomaterials, supplemented by media-based environmental statutes, consumer safety statutes, the Occupational Safety

and Health Act (OSHA), and statutes specific to drugs and certain other products. TSCA's purpose is to address the concern that humans and the environment are exposed to numerous chemical substances that pose unknown or unreasonable risks. However, there is great difficulty in the implementation of this statute, especially as to nanomaterials. TSCA's general approach is that no information on the risk of a chemical means that there is no risk. This places too heavy a burden on the EPA to demonstrate that a risk is or may be unreasonable in order to require testing of a substance or in order to regulate its manufacture or use. In addition, chemical manufacturers sometimes take the position that engineered nanomaterials should not be deemed a new class for purposes of TSCA, and thus subject to more regulation, because they are derived from conventional substances. Other potentially applicable statutes such as OSHA only provide for protection and testing under limited circumstances. The government needs to become proactive and establish a new regulatory approach for nanomaterials.

The government should engage and educate the public about the relevant risks and benefits of nanomaterials. This means switching the regulatory paradigm of nanomaterials from the harm principle, to a more appropriate precautionary principle. Instead of regulating only when harm is demonstrated, as under TSCA, we should develop a statute that does not require conclusive evidence of risk as a prerequisite for the adoption of measures to address potential risks. The regulatory plan put in place needs to protect human health and the environment while facilitating planning and commercialization efforts.

All products that contain nanomaterials should be subject to a notification and labeling requirement. Promoting the development of uniform nomenclature and metrology for nanomaterials would help ensure effective notification and labeling. Notification would help regulators to keep track of nanotechnology developments and to identify regulatory needs, and labeling would assist the public in making more informed choices. Because free nanomaterials pose potentially greater risks, they should be required to undergo a screening process to help minimize the exposure of workers and consumers to nanomaterials with the greatest like-

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likelihood of toxicity. Such materials should also be subject to post-market monitoring, which will help to identify latent or previously undetected health risks. Finally, we should require manufacturers to internalize potential liability costs by imposing a bonding requirement for products containing free nanomaterials. This requirement will assure that there are funds to pay for potential damages, while giving nanotechnology companies an incentive to make sure their products are safe. By implementing a new statute based on a different regulatory paradigm, we should be better able to protect the public while encouraging the development of valuable new products and technology.

RECENT DEVELOPMENTS

In the Congress

These entries cover activities reported in the *Congressional Record* from June 1, 2009, through June 30, 2009. Entries are arranged by bill number, with Senate bills listed first. "In the Congress" covers all environment-related bills that are introduced, reported out of committee, passed by either house, or signed by the President. "In the Congress" also covers all environmental treaties ratified by the Senate. This material is updated monthly. For archived materials, visit <http://www.elr.info/NewsAnalysis/archive.cfm>.

CHAMBER ACTION

H.R. 325 (Avra/Black Wash Reclamation and Riparian Restoration Project), which would authorize the Secretary of the Interior to participate in the Avra/Black Wash Reclamation and Riparian Restoration Project, was passed by the House. 155 Cong. Rec. H6019 (daily ed. June 1, 2009).

H.R. 689 (jurisdiction of federal lands), which would interchange the administrative jurisdiction of certain federal lands between the Forest Service and BLM, was passed by the House. 155 Cong. Rec. H6022 (daily ed. June 1, 2009).

H.R. 1120 (Central Texas Water Recycling Act of 2009), which would amend the Reclamation Wastewater and Groundwater Study and Facilities Act to authorize the Secretary of the Interior to participate in the Central Texas Water Recycling and Reuse Project, was passed by the House. 155 Cong. Rec. H6019 (daily ed. June 1, 2009).

H.R. 1280 (land grant patent), which would modify a land grant patent issued by the Secretary of the Interior, was passed by the House. 155 Cong. Rec. H6021 (daily ed. June 1, 2009).

H.R. 1393 (Lower Rio Grande Valley Water Resources Conservation and Improvement Act of 2009), which would amend the Lower Rio Grande Valley Water Resources Conservation and Improvement Act of 2000 to authorize additional projects and activities under that Act, was passed by the House. 155 Cong. Rec. H6020 (daily ed. June 1, 2009).

H.R. 2330 (Camp Hale Study Act), which would direct the Secretary of the Interior to carry out a study to determine the suitability and feasibility of establishing Camp Hale as a unit of the National Park System, was passed by the House. 155 Cong. Rec. H6023 (daily ed. June 1, 2009).

H.R. 2430 (fish stocks), which would direct the Secretary of the Interior to continue stocking fish in certain lakes in the North Cascades National Park, Ross Lake National Recreation Area, and Lake Chelan National Recreation Area, was passed by the House. 155 Cong. Rec. H6024 (daily ed. June 1, 2009).

H.R. 2454 (American Clean Energy and Security Act of 2009), which aims to create clean energy jobs, achieve energy independence, reduce global warming pollution, and transition to a clean energy economy, was passed by the House. 155 Cong. Rec. H7451 (daily ed. June 26, 2009).

H.R. 2751 (Consumer Assistance to Recycle and Save Act), which would accelerate motor fuel savings nationwide and provide incentives to registered owners of high-polluting automobiles to replace such automobiles with new fuel-efficient and less polluting automobiles, was passed by the House. 155 Cong. Rec. H6345 (daily ed. June 9, 2009).

COMMITTEE ACTION

S. 685 (oil transportation) was reported by the Committee on Commerce, Science, and Transportation. S. Rep. No. 111-26, 155 Cong. Rec. S6580 (daily ed. June 15, 2009). The bill would require new vessels for carrying oil fuel to have double hulls.

H.R. 556 (wildlife) was reported by the Committee on Natural Resources. H. Rep. No. 111-175, 155 Cong. Rec. H7144 (daily ed. June 23, 2009). The bill would establish a program of research, recovery, and other activities to provide for the recovery of the southern sea otter.

H.R. 934 (submerged lands) was reported by the Committee on Natural Resources. H. Rep. No. 111-176, 155 Cong. Rec. H7144 (daily ed. June 23, 2009). The bill would convey certain submerged lands to the Commonwealth of the Northern Mariana Islands in order to give that territory the same benefits in its submerged lands as Guam, the Virgin Islands, and American Samoa have in their submerged lands.

H.R. 1018 (wildlife) was reported by the Committee on Natural Resources. H. Rep. No. 111-177, 155 Cong. Rec. H7144 (daily ed. June 23, 2009). The bill would amend the Wild Free-Roaming Horses and Burros Act to improve the management and long-term health of wild free-roaming horses and burros.

H.R. 1275 (land exchange) was reported by the Committee on Natural Resources. H. Rep. No. 111-179, 155 Cong. Rec. H7144 (daily ed. June 23, 2009). The bill would direct the exchange of certain land in Grand, San Juan, and Uintah Counties, Utah.

H.R. 2454 (energy) was reported by the Committee on Energy and Commerce. H. Rep. No. 111-137 Pt. 1, 155 Cong. Rec. H6305 (daily ed. June 8, 2009). The bill would seek to create clean energy jobs, achieve energy independence, reduce global warming pollution, and

transition the United States to a clean energy economy.

H.R. 2847 (appropriations) was reported by the Committee on Appropriations. S. Rep. No. 111-34, 155 Cong. Rec. S7069 (daily ed. June 25, 2009). The bill would make appropriations for the Departments of Commerce, Justice, Science and Technology, and related agencies for the fiscal year ending September 30, 2010.

H.R. 2996 (appropriations) was reported by the Committee on Appropriations. H. Rep. No. 111-180, 155 Cong. Rec. H7144 (daily ed. June 23, 2009). The bill would make appropriations for the Department of the Interior, environment, and related agencies for the fiscal year ending September 30, 2010.

H.R. 2997 (appropriations) was reported by the Committee on Appropriations. H. Rep. No. 111-181, 155 Cong. Rec. H7144 (daily ed. June 23, 2009). The bill would make appropriations for Agriculture, Rural Development, Food and Drug Administration, and related agencies programs for the fiscal year ending September 30, 2010.

H. Res. 449 (greenhouse gas) was reported by the Committee on Energy and Commerce. H. Rep. No. 111-146, 155 Cong. Rec. H6742 (daily ed. June 12, 2009). The resolution would request the president to provide certain documents in his possession to the House relating to EPA's April proposed finding that greenhouse gas emissions are a danger to public health and welfare.

H. Res. 578 (appropriations) was reported by the Committee on Rules. H. Rep. No. 111-184, 155 Cong. Rec. H7236 (daily ed. June 24, 2009). The resolution would provide for consideration of the bill (H.R. 2996) making appropriations for the Department of the Interior, environment, and related agencies for the fiscal year ending September 30, 2010.

BILLS INTRODUCED

S. 1172 (Brown, D-Ohio) (energy) would direct the Secretary of Energy to establish a grant program to facilitate the production of clean, renewable energy from municipal solid waste. 155 Cong.

Rec. S6030 (daily ed. June 3, 2009). The bill was referred to the Committee on Energy and Natural Resources.

S. 1175 (Cantwell, D-Wash.) (energy) would amend the Public Utility Regulatory Policies Act of 1978 to authorize the Secretary of Energy to make loans to electric utilities to carry out projects to comply with any federal renewable electricity standard. 155 Cong. Rec. S6030 (daily ed. June 3, 2009). The bill was referred to the Committee on Energy and Natural Resources.

S. 1189 (Bayh, D-Ind.) (energy) would require the Secretary of Energy to conduct a study of the impact of energy and climate policy on the competitiveness of energy-intensive manufacturing and measures to mitigate those effects. 155 Cong. Rec. S6185 (daily ed. June 4, 2009). The bill was referred to the Committee on Energy and Natural Resources.

S. 1191 (Bayh, D-Ind.) (energy) would require the Secretary of Energy to prepare a report on climate change and energy policy in the People's Republic of China and in the Republic of India. 155 Cong. Rec. S6186 (daily ed. June 4, 2009). The bill was referred to the Committee on Energy and Natural Resources.

S. 1214 (Lieberman, I-Conn.) (conservation) would conserve fish and aquatic communities in the United States through partnerships that foster fish habitat conservation to improve the quality of life for the people of the United States. 155 Cong. Rec. S6364 (daily ed. June 9, 2009). The bill was referred to the Committee on Environment and Public Works.

S. 1215 (Casey, D-Pa.) (SDWA) would amend the SDWA to repeal a certain exemption for hydraulic fracturing. 155 Cong. Rec. S6364 (daily ed. June 9, 2009). The bill was referred to the Committee on Environment and Public Works.

S. 1216 (Klobuchar, D-Minn.) (Consumer Product Safety Act) would amend the Consumer Product Safety Act to require residential carbon monoxide detectors to meet the applicable ANSI/

UL standard by treating that standard as a consumer product safety rule and encourage states to require the installation of such detectors in homes. 155 Cong. Rec. S6364 (daily ed. June 9, 2009). The bill was referred to the Committee on Commerce, Science, and Transportation.

S. 1224 (Warner, D-Va.) (NOAA) would reauthorize the Chesapeake Bay Office of NOAA. 155 Cong. Rec. S6452 (daily ed. June 10, 2009). The bill was referred to the Committee on Commerce, Science, and Transportation.

S. 1225 (Sanders, I-Vt.) (energy) would require the Commodity Futures Trading Commission to take certain actions to prevent the manipulation of energy markets. 155 Cong. Rec. S6452 (daily ed. June 10, 2009). The bill was referred to the Committee on Agriculture, Nutrition, and Forestry.

S. 1238 (Isakson, R-Ga.) (Workforce Investment Act) would amend the Workforce Investment Act of 1998 to make non-union training programs eligible for federal funding from the Green Jobs program. 155 Cong. Rec. S6542 (daily ed. June 11, 2009). The bill was referred to the Committee on Health, Education, Labor, and Pensions.

S. 1245 (Whitehouse, D-R.I.) (lead removal) would amend the Internal Revenue Code of 1986 to provide a tax credit for property owners who remove lead-based paint hazards. 155 Cong. Rec. S6542 (daily ed. June 11, 2009). The bill was referred to the Committee on Finance.

S. 1246 (Sanders, I-Vt.) (energy) would establish a home energy retrofit finance program. 155 Cong. Rec. S6542 (daily ed. June 11, 2009). The bill was referred to the Committee on Energy and Natural Resources.

S. 1248 (Casey, D-Pa.) (fuel efficiency) would establish a program in DOE to encourage consumers to trade in older vehicles for more fuel-efficient vehicles and motorcycles. 155 Cong. Rec. S6542 (daily ed. June 11, 2009). The bill was referred to the Committee on Finance.

S. 1250 (Nelson, D-Fla.) (biofuel) would amend the Internal Revenue Code of 1986 to expand the definition of "cellu-

loxic biofuel” to include algae-based biofuel for purposes of the cellulosic biofuel producer credit and the special allowance for cellulosic biofuel plant property. 155 Cong. Rec. S6542 (daily ed. June 11, 2009). The bill was referred to the Committee on Finance.

S. 1255 (Schumer, D-N.Y.) (fisheries) would amend the Magnuson-Stevens Fishery Conservation and Management Act to extend the authorized time period for rebuilding certain overfished fisheries. 155 Cong. Rec. S6542 (daily ed. June 11, 2009). The bill was referred to the Committee on Commerce, Science, and Transportation.

S. 1264 (Udall, D-Colo.) (infrastructure) would require the Secretary of the Interior to assess the irrigation infrastructure of the Pine River Indian Irrigation Project in the state of Colorado and provide grants to, and enter into cooperative agreements with, the Southern Ute Indian tribe to assess, repair, rehabilitate, or reconstruct existing infrastructure. 155 Cong. Rec. S6580 (daily ed. June 15, 2009). The bill was referred to the Committee on Indian Affairs.

S. 1270 (Wyden, D-Or.) (National Monument) would modify the boundary of the Oregon Caves National Monument. 155 Cong. Rec. S6650 (daily ed. June 16, 2009). The bill was referred to the Committee on Energy and Natural Resources.

S. 1271 (Wyden, D-Or.) (Wild and Scenic Rivers Act (WSRA)) would amend the WSRA to add certain segments to the Rogue River designation. 155 Cong. Rec. S6650 (daily ed. June 16, 2009). The bill was referred to the Committee on Energy and Natural Resources.

S. 1272 (Wyden, D-Or.) (wilderness areas) would provide for the designation of the Devil’s Staircase Wilderness Area in the state of Oregon and designate segments of Wasson and Franklin Creeks in the state of Oregon as wild or recreation rivers. 155 Cong. Rec. S6650 (daily ed. June 16, 2009). The bill was referred to the Committee on Energy and Natural Resources.

S. 1311 (Wicker, R-Miss.) (Federal Water Pollution Control Act (FWPCA)) would amend the FWPCA to expand and

strengthen cooperative efforts to monitor, restore, and protect the resource productivity, water quality, and marine ecosystems of the Gulf of Mexico. 155 Cong. Rec. S6845 (daily ed. June 19, 2009). The bill was referred to the Committee on Environment and Public Works.

S. 1320 (Tester, D-Mont.) (energy) would provide assistance to owners of manufactured homes constructed before January 1, 1976, to purchase Energy Star-qualified manufactured homes. 155 Cong. Rec. S6888 (daily ed. June 22, 2009). The bill was referred to the Committee on Energy and Natural Resources.

S. 1321 (Udall, D-Colo.) (water) would amend the Internal Revenue Code of 1986 to provide a credit for property labeled under the Environmental Protection Agency Water Sense program. 155 Cong. Rec. S6888 (daily ed. June 22, 2009). The bill was referred to the Committee on Finance.

S. 1325 (Specter, D-Pa.) (coal) would amend the Internal Revenue Code of 1986 to permanently extend and modify the section 45 credit for refined coal from steel industry fuel. 155 Cong. Rec. S6938 (daily ed. June 23, 2009). The bill was referred to the Committee on Finance.

S. 1328 (Feinstein, D-Cal.) (federal land) would provide for the exchange of administrative jurisdiction over certain federal land between the Forest Service and BLM. 155 Cong. Rec. S6938 (daily ed. June 23, 2009). The bill was referred to the Committee on Energy and Natural Resources.

S. 1333 (Barrasso, R-Wyo.) (energy) would seek to provide clean, affordable, and reliable energy. 155 Cong. Rec. S6993 (daily ed. June 24, 2009). The bill was referred to the Committee on Finance.

S. 1342 (Crapo, R-Idaho) (radiation) would include Idaho and Montana as affected areas for purposes of making claims under the Radiation Exposure Compensation Act based on exposure to atmospheric nuclear testing. 155 Cong. Rec. S6993 (daily ed. June 24, 2009).

The bill was referred to the Committee on the Judiciary.

S. 1348 (Chambliss, R-Ga.) (hunting) would recognize the heritage of hunting and provide opportunities for continued hunting on federal public land. 155 Cong. Rec. S7069 (daily ed. June 25, 2009). The bill was referred to the Committee on Energy and Natural Resources.

S. 1350 (Pryor, D-Ark.) (gasoline) would encourage increased production of natural gas and liquified petroleum gas vehicles and to provide tax incentives for natural gas and liquefied petroleum gas vehicle infrastructure. 155 Cong. Rec. S7069 (daily ed. June 25, 2009). The bill was referred to the Committee on Finance.

S. 1356 (Boxer, D-Cal.) (National Trails System Act) would amend the National Trails System Act to provide for the study of the Western States Trail. 155 Cong. Rec. S7070 (daily ed. June 25, 2009). The bill was referred to the Committee on Energy and Natural Resources.

S. 1369 (Wyden, D-Or.) (WSRA) would amend the WSRA to designate segments of the Molalla River in the state of Oregon as components of the National Wild and Scenic Rivers System. 155 Cong. Rec. S7070 (daily ed. June 25, 2009). The bill was referred to the Committee on Energy and Natural Resources.

S. 1371 (Nelson, D-Fla.) (water supply) would amend the Internal Revenue Code of 1986 to provide for clean renewable water supply bonds. 155 Cong. Rec. S7070 (daily ed. June 25, 2009). The bill was referred to the Committee on Finance.

S. 1379 (Whitehouse, D-R.I.) (energy) would encourage energy efficiency and conservation and development of renewable energy sources for housing, commercial structures, and other buildings, and would create sustainable communities. 155 Cong. Rec. S7070 (daily ed. June 25, 2009). The bill was referred to the Committee on Energy and Natural Resources.

H.R. 2649 (Bean, D-Ill.) (energy) would amend the Internal Revenue Code of 1986 to modify the new energy-efficient home

credit and to provide a credit against tax for the purchase of certain energy-efficient homes. 155 Cong. Rec. H6074 (daily ed. June 2, 2009). The bill was referred to the Committee on Ways and Means.

H.R. 2659 (Christensen, D-V.I.) (land conveyance) would convey certain submerged lands to the government of the Virgin Islands. 155 Cong. Rec. H6074 (daily ed. June 2, 2009). The bill was referred to the Committee on Natural Resources.

H.R. 2662 (Heinrich, D-N.M.) (energy) would dedicate a portion of rental fees from wind and solar energy projects on BLM land for the administrative costs of processing applications for new wind and solar projects. 155 Cong. Rec. H6074 (daily ed. June 2, 2009). The bill was referred to the Committee on Natural Resources.

H.R. 2665 (Matsui, D-Cal.) (development) would establish national centers of excellence for regional smart growth planning. 155 Cong. Rec. H6074 (daily ed. June 2, 2009). The bill was referred to the Committee on Transportation and Infrastructure.

H.R. 2685 (Bordallo, D-Guam) (climate) would establish a National Oceanic and Atmospheric Administration and a National Climate Enterprise. 155 Cong. Rec. H6154 (daily ed. June 3, 2009). The bill was referred to the Committee on Science and Technology and the Committee on Natural Resources.

H.R. 2729 (Luján, D-N.M.) (National Environmental Research Parks) would authorize the designation of National Environmental Research Parks by the Secretary of Energy. 155 Cong. Rec. H6264 (daily ed. June 4, 2009). The bill was referred to the Committee on Science and Technology.

H.R. 2741 (Walden, R-Or.) (Reclamation Wastewater and Groundwater Study and Facilities Act) would amend the Reclamation Wastewater and Groundwater Study and Facilities Act to authorize the Secretary of the Interior to participate in the city of Hermiston, Oregon, water recycling and reuse project. 155 Cong. Rec. H6265 (daily ed. June 4, 2009). The bill was referred to the Committee on Natural Resources.

H.R. 2751 (Sutton, D-Ohio) (fuel efficiency) would accelerate motor fuel savings nationwide and provide incentives to registered owners of high-polluting automobiles to replace such automobiles with new fuel-efficient and less polluting automobiles. 155 Cong. Rec. H6305 (daily ed. June 8, 2009). The bill was referred to the Committees on Energy and Commerce and Ways and Means.

H.R. 2766 (Degette, D-Colo.) (SDWA) would repeal the exemption for hydraulic fracturing in the SDWA. 155 Cong. Rec. H6413 (daily ed. June 9, 2009). The bill was referred to the Committee on Energy and Commerce.

H.R. 2768 (Wamp, R-Tenn.) (energy) would declare nuclear energy to be clean energy for purposes of federal law. 155 Cong. Rec. H6413 (daily ed. June 9, 2009). The bill was referred to the Committee on Energy and Commerce.

H.R. 2775 (Higgins, D-N.Y.) (hazardous substances) would prohibit, as a banned hazardous substance, certain household dishwashing detergents containing phosphorus. 155 Cong. Rec. H6413 (daily ed. June 9, 2009). The bill was referred to the Committee on Energy and Commerce.

H.R. 2781 (Schrader, D-Or.) (Wild and Scenic Rivers Act) would amend the Wild and Scenic Rivers Act to designate segments of the Molalla River in Oregon as components of the National Wild and Scenic Rivers System. 155 Cong. Rec. H6413 (daily ed. June 9, 2009). The bill was referred to the Committee on Natural Resources.

H.R. 2806 (Hastings, R-Wash.) (national parks and wilderness) would authorize the Secretary of the Interior to adjust the boundary of the Stephen Mather Wilderness and the North Cascades National Park to allow the rebuilding of a road outside of the floodplain while ensuring that there is no net loss of acreage to the park or the wilderness. 155 Cong. Rec. H6538 (daily ed. June 10, 2009). The bill was referred to the Committee on Natural Resources.

H.R. 2807 (Kind, D-Wis.) (public lands) would sustain fish, plants, and wildlife on America's public lands. 155 Cong. Rec. H6538 (daily ed. June 10, 2009).

The bill was referred to the Committees on Natural Resources and Agriculture.

H.R. 2809 (Lamborn, R-Colo.) (Wilderness Act) would amend the Wilderness Act to allow recreation organizations consisting of hikers or horseback riders to cross wilderness areas on established trails. 155 Cong. Rec. H6538 (daily ed. June 10, 2009). The bill was referred to the Committee on Natural Resources.

H.R. 2828 (Bishop, R-Utah) (energy) would seek to provide the United States with a comprehensive energy package to place Americans on a path to a secure economic future through increased energy innovation, conservation, and production. 155 Cong. Rec. H6617 (daily ed. June 11, 2009). The bill was referred to the Committees on Ways and Means, Natural Resources, Energy and Commerce, Science and Technology, Rules, and Oversight and Government Reform.

H.R. 2834 (Faleomavaega, D-Am. Sam.) (NOAA) would direct the Administrator of NOAA to conduct a technological capability assessment, survey, and economic feasibility study regarding recovery of minerals, other than oil and natural gas, from the shallow and deep seabed of the United States. 155 Cong. Rec. H6617 (daily ed. June 11, 2009). The bill was referred to the Committee on Natural Resources.

H.R. 2838 (Norton, D-D.C.) (land use) would authorize the Secretary of the Interior to enter into a long-term ground lease for the operation and maintenance of Rock Creek, Langston, and East Potomac as golf courses. 155 Cong. Rec. H6618 (daily ed. June 11, 2009). The bill was referred to the Committee on Natural Resources.

H.R. 2846 (Boehner, R-Ohio) (energy) would seek to increase energy production, encourage the development of alternative and renewable energy, and promote greater efficiencies and conservation for a cleaner environment. 155 Cong. Rec. H6742 (daily ed. June 12, 2009). The bill was referred to the Committees on Natural Resources, the Judiciary, Ways and Means, Energy and Commerce, Armed Services, Oversight and Government Reform, and Science and Technology.

H.R. 2864 (Young, R-Alaska) (Hydrographic Services Improvement Act) would amend the Hydrographic Services Improvement Act of 1998 to authorize funds to acquire hydrographic data and provide hydrographic services specific to the Arctic for safe navigation, delineate the U.S. extended continental shelf, and monitor and describe coastal changes. 155 Cong. Rec. H6743 (daily ed. June 12, 2009). The bill was referred to the Committee on Natural Resources.

H.R. 2865 (Young, R-Alaska) (Arctic) would seek to ensure safe, secure, and reliable marine shipping in the Arctic, including the availability of aids to navigation, vessel escorts, spill response capability, and maritime search and rescue in the Arctic. 155 Cong. Rec. H6742 (daily ed. June 12, 2009). The bill was referred to the Committee on Transportation and Infrastructure.

H.R. 2869 (DeFazio, D-Or.) (energy) would require the Commodity Futures Trading Commission to take certain actions to prevent the manipulation of energy markets. 155 Cong. Rec. H6805 (daily ed. June 15, 2009). The bill was referred to the Committee on Agriculture.

H.R. 2878 (Israel, D-N.Y.) (energy) would authorize microenterprise assistance for renewable energy projects in developing countries. 155 Cong. Rec. H6806 (daily ed. June 15, 2009). The bill was referred to the Committee on Foreign Affairs.

H.R. 2880 (Pingree, D-Me.) (greenhouse gas) would require the Secretary of Agriculture to establish a carbon incentives program to achieve supplemental greenhouse gas emissions reductions on private agricultural and forestland of the United States. 155 Cong. Rec. H6806 (daily ed. June 15, 2009). The bill was referred to the Committees on Agriculture and Energy and Commerce.

H.R. 2883 (Bernice Johnson, D-Tex.) (FWPCA) would amend the FWPCA to provide for security at wastewater treatment works. 155 Cong. Rec. H6902 (daily ed. June 16, 2009). The bill was referred to the Committee on Transportation and Infrastructure.

H.R. 2884 (Faleomavaega, D-Am. Sam.) (energy) would amend the Internal Revenue

Code of 1986 to clarify that electricity produced in certain possessions of the United States and other areas is eligible for the credit for electricity produced from certain renewable resources. 155 Cong. Rec. H6902 (daily ed. June 16, 2009). The bill was referred to the Committee on Ways and Means.

H.R. 2885 (Faleomavaega, D-Am. Sam.) (energy) would amend the Internal Revenue Code of 1986 to expand the credit for electricity produced from certain renewable resources and the investment energy credit to include ocean thermal energy conversion projects. 155 Cong. Rec. H6902 (daily ed. June 16, 2009). The bill was referred to the Committee on Ways and Means.

H.R. 2886 (Faleomavaega, D-Am. Sam.) (energy) would amend the Internal Revenue Code of 1986 to provide the non-business energy property and residential energy-efficient property tax incentives to residents of certain possessions of the United States and other areas. 155 Cong. Rec. H6902 (daily ed. June 16, 2009). The bill was referred to the Committee on Ways and Means.

H.R. 2888 (DeFazio, D-Or.) (Wilderness Area) would provide for the designation of the Devil's Staircase Wilderness Area in the state of Oregon and designate segments of Wasson and Franklin Creeks in the state of Oregon as wild or recreation rivers. 155 Cong. Rec. H6902 (daily ed. June 16, 2009). The bill was referred to the Committee on Natural Resources.

H.R. 2889 (DeFazio, D-Or.) (National Monument) would modify the boundary of the Oregon Caves National Monument. 155 Cong. Rec. H6902 (daily ed. June 16, 2009). The bill was referred to the Committee on Natural Resources.

H.R. 2890 (DeFazio, D-Or.) (WSRA) would amend the WSRA to designate certain river segments in Oregon as wild or scenic rivers. 155 Cong. Rec. H6902 (daily ed. June 16, 2009). The bill was referred to the Committee on Natural Resources.

H.R. 2895 (Cardoza, D-Cal.) (Public Utility Regulatory Policies Act) would amend the Public Utility Regulatory Policies Act of 1978 to promote energy inde-

pendence and self-sufficiency by providing for the use of net metering by certain small electric energy generation systems. 155 Cong. Rec. H6903 (daily ed. June 16, 2009). The bill was referred to the Committees on Energy and Commerce, Oversight and Government Reform, Financial Services, and Transportation and Infrastructure.

H.R. 2899 (Herger, R-Cal.) (forestry) would address the public health and safety threat presented by the risk of catastrophic wildfire on federal forestlands of the state of California by requiring the Secretary of Agriculture and the Secretary of the Interior to expedite forest management projects relating to hazardous fuels reduction, forest restoration, and forest health. 155 Cong. Rec. H6903 (daily ed. June 16, 2009). The bill was referred to the Committee on Agriculture and the Committee on Natural Resources.

H.R. 2908 (Markey, D-Mass.) (Strategic Petroleum Reserve) would provide for the sale of light-grade petroleum from the Strategic Petroleum Reserve and its replacement with heavy-grade petroleum. 155 Cong. Rec. H6971 (daily ed. June 17, 2009). The bill was referred to the Committee on Energy and Commerce.

H.R. 2916 (Chaffetz, R-Utah) (Land and Water Conservation Fund) would provide that no recreation grants made using funds from the Land and Water Conservation Fund may be used to acquire land or make improvements in state or local parks. 155 Cong. Rec. H6971 (daily ed. June 17, 2009). The bill was referred to the Committee on Natural Resources.

H.R. 2944 (Grijalva, D-Ariz.) (land use) would withdraw certain federal lands and interests located in Pima and Santa Cruz counties, Arizona, from the mining and mineral leasing laws of the United States. 155 Cong. Rec. H7022 (daily ed. June 18, 2009). The bill was referred to the Committee on Natural Resources.

H.R. 2950 (Matheson, D-Utah) (water) would direct the Secretary of the Interior to allow for prepayment of repayment contracts between the United States and the Uintah Water Conservancy District. 155 Cong. Rec. H7022 (daily ed. June 18, 2009). The bill was referred to the Committee on Natural Resources.

H.R. 2967 (Kirkpatrick, D-Mich.) (alternative fuel) would amend the Internal Revenue Code of 1986 to deny the alternative fuel and alternative fuel mixture credits for black liquor. 155 Cong. Rec. H7083 (daily ed. June 19, 2009). The bill was referred to the Committee on Ways and Means.

H.R. 2969 (Capps, D-Cal.) (water) would authorize the Administrator of EPA to establish water system adaptation partnerships. 155 Cong. Rec. H7083 (daily ed. June 19, 2009). The bill was referred to the Committees on Transportation and Infrastructure and Energy and Commerce.

H.R. 2982 (Grijalva, D-Ariz.) (energy) would amend the Internal Revenue Code of 1986 to allow Indian tribes to transfer the credit for electricity produced from renewable resources. 155 Cong. Rec. H7085 (daily ed. June 19, 2009). The bill was referred to the Committee on Ways and Means.

H.R. 2998 (Waxman, D-Cal.) (energy) would seek to create clean energy jobs, achieve energy independence, reduce global warming pollution, and transition to a clean energy economy. 155 Cong. Rec. H7145 (daily ed. June 23, 2009). The bill was referred to the Committees on Energy and Commerce, Foreign Affairs, Ways and Means, Financial Services, Education and Labor, Science and Technology, Transportation and Infrastructure, Natural Resources, Agriculture, Oversight and Government Reform, and the Judiciary.

H.R. 3005 (Graves, R-Mont.) (energy) would expedite the increased supply and availability of energy to our nation. 155 Cong. Rec. H7146 (daily ed. June 23, 2009). The bill was referred to the Committee on Energy and Commerce.

H.R. 3008 (Kissell, D-N.C.) (gasoline) would establish a National Strategic Gasoline Reserve. 155 Cong. Rec. H7146 (daily ed. June 23, 2009). The bill was referred to the Committee on Energy and Commerce.

H.R. 3009 (Ross, D-Ariz.) (energy) would promote alternative and renewable fuels and domestic energy production. 155 Cong. Rec. H7146 (daily ed. June 23, 2009). The bill was referred

to the Committee on Natural Resources and the Committee on Energy and Commerce.

H.R. 3029 (Tonko, D-N.Y.) (energy) would establish a research, development, and technology demonstration program to improve the efficiency of gas turbines used in combined cycle power generation systems. 155 Cong. Rec. H7250 (daily ed. June 24, 2009). The bill was referred to the Committee on Science and Technology.

H.R. 3033 (Welch, D-Vt.) (energy) would authorize federal agencies and legislative branch offices to purchase greenhouse gas offsets and renewable energy credits. 155 Cong. Rec. H7250 (daily ed. June 24, 2009). The bill was referred to the Committees on Oversight and Government Reform, House Administration, and Energy and Commerce.

H.R. 3034 (Wilson, D-Ohio) (energy) would amend the Internal Revenue Code of 1986 to adjust the credit percentage for qualifying advanced energy wind projects based on domestic steel content. 155 Cong. Rec. H7250 (daily ed. June 24, 2009). The bill was referred to the Committee on Ways and Means.

H.R. 3083 (Bocchieri, D-Ohio) (energy) would require the Secretary of Commerce to establish a program for the award of grants to states to establish revolving loan funds for small- and medium-size manufacturers to improve energy efficiency and produce clean energy technology. 155 Cong. Rec. H7703 (daily ed. June 26, 2009). The bill was referred to the Committee on Science and Technology.

H.R. 3084 (Baird, D-Wash.) (tribal recognition) would restore federal recognition to the Chinook Nation. 155 Cong. Rec. H7703 (daily ed. June 26, 2009). The bill was referred to the Committee on Natural Resources.

H.R. 3086 (Bordallo, D-Guam) (conservation) would coordinate authorities within the DOI and the federal government to enhance U.S. ability to conserve global wildlife and biological diversity. 155 Cong. Rec. H7703 (daily ed. June 26, 2009). The bill was referred to the Committees on Natural Resources and Foreign Affairs.

H.R. 3097 (Inslee, D-Wash.) (land use) would provide for equitable compensation to the Spokane Tribe of Indians of the Spokane Reservation for the use of tribal land for the production of hydro-power by the Grand Coulee Dam. 155 Cong. Rec. H7704 (daily ed. June 26, 2009). The bill was referred to the Committee on Natural Resources.

H.R. 3105 (Nunes, R-Cal.) (ESA) would provide that operations of the Central Valley Project shall not be restricted under any biological opinion issued under the ESA if such restrictions would result in levels of export less than the historical maximum level of export. 155 Cong. Rec. H7704 (daily ed. June 26, 2009). The bill was referred to the Committee on Natural Resources.

H.R. 3106 (Price, D-N.C.) (Solid Waste Disposal Act) would amend the Solid Waste Disposal Act to direct the Administrator of EPA to establish a hazardous waste electronic manifest system. 155 Cong. Rec. H7704 (daily ed. June 26, 2009). The bill was referred to the Committee on Energy and Commerce.

H. Res. 551 (Stupak, D-Mich.) (water) would express the sense of the House that the interstate compact regarding water resources in the Great Lakes-St. Lawrence River Basin approved by the Congress in Public Law No. 110-342 expressly prohibited the sale, diversion, or export of water from states in the Great Lakes Basin. 155 Cong. Rec. H6903 (daily ed. June 16, 2009). The resolution was referred to the Committee on the Judiciary.

H. Res. 575 (Gingrey, R-Ga.) (takings) would express Congress' support for the private property rights protections guaranteed by the 5th Amendment to the Constitution on the 4th anniversary of the U.S. Supreme Court's decision of *Kelo v. City of New London*. 155 Cong. Rec. H7146 (daily ed. June 23, 2009). The resolution was referred to the Committee on the Judiciary.

H. Res. 599 (Markey, D-Mass.) (national parks) would honor the Minute Man National Historical Park on the occasion of its 50th anniversary. 155 Cong. Rec. H7705 (daily ed. June 26, 2009). The bill was referred to the Committee on Natural Resources.

In the Courts

These entries summarize recent cases under the following categories: Air, Hazardous & Solid Wastes/Substances, Insurance, Land Use, Natural Resources, Water, Wildlife, and Miscellaneous. The entries are arranged alphabetically by case name within each category. This material is updated monthly. For archived materials, visit <http://www.elr.info/NewsAnalysis/archive.cfm>.

AIR

Communities for a Better Environment v. City of Richmond, No. N08-1429, 39 ELR 20126 (Sup. Ct. Cal. June 4, 2009). A California trial court held that a city's environmental impact report for a major expansion of an oil refinery in Richmond, California, violated the California Environmental Quality Act's new greenhouse gas requirements.

Hempstead County Hunting Club, Inc. v. Arkansas Public Service Comm'n, No. CA08-128, 39 ELR 20135 (Ark. Ct. App. June 24, 2009). An Arkansas appellate court struck down a state permit allowing an electric company to build a \$1.6 billion coal-fired power plant near the state's southwest border with Texas.

Metropolitan Taxicab Board of Trade v. City of New York, No. 08 Civ. 7837, 39 ELR 20140 (S.D.N.Y. June 22, 2009). A district court preliminarily enjoined New York City from enforcing regulations that promote the purchase of hybrid taxicabs by reducing the rates at which taxicab owners may lease their vehicles to taxi drivers—thereby reducing the owners' overall profit—if the vehicle does not have a hybrid or clean-diesel engine.

United States v. Cinergy Corp., No. 1:99-cv-1693, 39 ELR 20114 (S.D. Ind. May 29, 2009). A district court ordered an energy company to shut down three generating units at its Wabash River power plant in Indiana and to pay a \$687,500 penalty for CAA violations.

HAZARDOUS & SOLID WASTES/SUBSTANCES

Friedland v. TIC-The Industry Co., No. 08-1042, 39 ELR 20115 (10th Cir. May 29, 2009). The Tenth Circuit held that an individual who already

recovered costs incurred responding to environmental damages at a large gold mine facility in Colorado is not entitled to contribution.

Kalden Construction Co. v. Hansen Aggregates New York, Inc., No. 08-CV-6200, 39 ELR 20119 (W.D.N.Y. May 29, 2009). A district court dismissed a property owner's New York Environmental Conservation Law action against the former owner for contamination at the site.

Snellback Properties, LLC, v. Aetna Development Co., No. 08 C 7326, 39 ELR 20136 (N.D. Ill. June 9, 2009). A district court held that a property owner's receipt of a "no further remediation" letter from the state environmental agency does not bar a neighboring company's lawsuit against it under RCRA.

United States v. SB Building Associates, No. 08-5298, 39 ELR 20128 (D.N.J. June 1, 2009). A district court held that the United States may seek the maximum civil penalties available under CERCLA for a Superfund site owner's failure to comply with a consent order even though the order called for much lower penalties.

United States v. Sunoco, Inc., No. 05-6336, 39 ELR 20139 (E.D. Pa. June 10, 2009). A district court held that under Pennsylvania law, a property owner that agreed to hold the seller harmless for environmental claims does not become a successor to the seller's environmental liabilities.

Washington Environmental Council v. Mount Baker-Snoqualamie National Forest, No. 06-1249, 39 ELR 20129 (W.D. Wash. June 2, 2009). A district court held that environmental groups' CWA lawsuit against the U.S. Forest Service for discharging pollutants at a former mining area in Washington's Mt. Baker-Snoqualamie National Forest is a "challenge" to the Service's cleanup efforts at

the site, and, therefore, is jurisdictionally barred by CERCLA §113(h).

Yankee Gas Services Co. v. UGI Utilities, Inc., No. 3:06-cv-01369, 39 ELR 20116 (D. Conn. May 22, 2009). A district court held that a utility company is not liable under CERCLA for the cost of cleaning up pollution at nine manufactured gas plants in Connecticut owned by its former subsidiary.

INSURANCE

Colony National Insurance Co. v. Specialty Trailer Leasing, Inc., No. 2:09-CV-005-J, 39 ELR 20127 (N.D. Tex. June 2, 2009). A district court held that the pollution exclusion clause contained in a transport company's insurance policy does not cover bodily injuries stemming from the release of a naturally occurring gas.

LAND USE

Montanans for Multiple Use v. Barbouletos, No. 08-5131, 39 ELR 20124 (D.C. Cir. June 5, 2009). The D.C. Circuit upheld the dismissal of land rights groups' complaint against the U.S. Forest Service in which they challenged its management of the Flathead National Forest in northwest Montana.

Schooner Harbor Ventures, Inc. v. United States, No. 2008-5084, 39 ELR 20132 (Fed. Cir. June 16, 2009). The Federal Circuit reversed a lower court's dismissal of a property owner's claim for just compensation after the FWS required mitigation in connection with its sale of property to the U.S. Navy.

NATURAL RESOURCES

Citizens for Better Forestry v. U.S. Department of Agriculture, No. 07-16077, 39 ELR 20122 (9th Cir. June 9, 2009). The Ninth Circuit held that an environmen-

tal group is not entitled to attorneys fees in their action challenging a USDA regulation that the agency withdrew while the case was pending.

Ohio River Valley Environmental Coalition, Inc. v. Salazar, No. 3:09-0149, 39 ELR 20141 (S.D. W. Va. June 18, 2009). A district court held that the West Virginia Department of Environmental Protection may intervene in environmental groups' lawsuit challenging the DOI Secretary's approval of two amendments to the state's surface mining regulatory program.

West Virginia Highlands Conservancy, Inc. v. Kempthorne, No. 07-2189, 39 ELR 20121 (4th Cir. June 10, 2009). The Fourth Circuit held that an environmental group was entitled to attorneys fees in their action challenging an OSM decision that resulted in a remand to the agency for additional investigation.

WATER

Baker v. Exxon Mobil Corp., Nos. 04-35182, -35183, 39 ELR 20130 (9th Cir. June 15, 2009). The Ninth Circuit held that post-judgment interest on the \$507.5 million in punitive damages awarded to the plaintiffs in the *Exxon Valdez* oil spill case will run from the date the judgment was entered—September 12, 1996.

Coeur Alaska, Inc. v. Southeast Alaska Conservation Council, No. 07-984, 39 ELR 20133 (U.S. June 22, 2009). The U.S. Supreme Court held that the U.S. Army Corps of Engineers, not EPA, has the authority to permit slurry discharges from mining operations, and that the Corps complied with the law in issuing such a permit to a gold mine in Alaska.

Friends of the Everglades v. South Florida Water Management District, No. 07-13829, 39 ELR 20118 (11th Cir. June 4, 2009). The Eleventh Circuit held that a

water district may pump polluted canal water into Florida's Lake Okeechobee without an NPDES permit.

Grand Canyon Trust v. U.S. Bureau of Reclamation, No. 07-8164, 39 ELR 20117 (D. Ariz. May 26, 2009). A district court remanded a portion of FWS' 2008 biological opinion that approved the Bureau of Reclamation's selected operating system for a dam along the Colorado River.

Guzman v. County of Monterey, No. S157793, 39 ELR 20138 (Cal. June 22, 2009). The Supreme Court of California reversed a lower court decision holding that residents of a mobile home park may file suit against the county for failing to direct the park owner to notify the residents about contaminated drinking water.

Ohio Valley Environmental Coalition v. Aracoma Coal Co., No. 07-1355, 39 ELR 20113 (4th Cir. May 29, 2009). The Fourth Circuit denied an environmental group's petition for rehearing on a prior court decision in which it reversed and vacated a district court order rescinding four U.S. Army Corps of Engineers permits allowing the filling of stream waters in conjunction with mountaintop mining operations in West Virginia.

United States v. Metropolitan St. Louis Water District, No. 08-3399, 39 ELR 20123 (8th Cir. June 9, 2009). The Eighth Circuit, in a CWA enforcement action filed by the United States and the state of Missouri against a water district, affirmed a lower court decision denying the state's motion to dismiss the district's counterclaims and to strike its affirmative defenses claiming financial inability to comply with the Act's requirements.

United States v. Metropolitan St. Louis Sewer District, No. 08-3404, 39 ELR 20137 (8th Cir. June 22, 2009). The

Eighth Circuit affirmed a lower court decision denying a business trade association's motion to intervene in a CWA enforcement action filed against a local sewer district by Missouri and the United States.

WILDLIFE

Friends of Animals v. Salazar, Nos. 04-01660, -02120, 39 ELR 20134 (D.D.C. June 23, 2009). A district court held that FWS violated the ESA's notice and review provision when it issued a rule exempting three endangered antelope species bred in captivity in the United States from certain protections afforded under the Act.

San Luis & Delta-Mendota Water Authority v. Salazar, No. 1:09-cv-407, 39 ELR 20120 (E.D. Cal. May 29, 2009). A district court preliminarily enjoined FWS from restricting river flows in the Sacramento-San Joaquin Delta for purposes of protecting the threatened Delta smelt.

MISCELLANEOUS

Caperton v. A.T. Massey Coal Co., No. 08-22, 39 ELR 20125 (U.S. June 8, 2009). The U.S. Supreme Court held that a justice sitting on West Virginia's highest court should have recused himself from a case involving a coal company that contributed large sums of money toward the judge's election campaign.

Polar Tankers, Inc. v. City of Valdez, No. 08-310, 39 ELR 20131 (U.S. June 15, 2009). The U.S. Supreme Court held that a local ordinance that imposes a personal property tax on certain boats and vessels but contains exceptions that, in effect, largely limit its applicability to large oil tankers violates the U.S. Constitution's Tonnage Clause, Art. I, §10, cl. 3.

In the Federal Agencies

These entries cover the period June 1, 2009, through June 30, 2009. Citations are to the *Federal Register* (FR). Where available, users can link directly to the appropriate FR citation. Entries below are organized by Final Rules, Proposed Rules, and Notices. Within each section, entries are further subdivided by subject matter area, with entries listed chronologically. This material is updated monthly. For archived materials, visit <http://www.elr.info/NewsAnalysis/archive.cfm>.

Final Rules

AIR

EPA granted a petition for reconsideration of the final rule titled *Implementation of the New Source Review (NSR) Program for Particulate Matter Less Than 2.5 Micrometers (PM_{2.5})* and administratively stayed a grandfathering provision of the PSD program. 74 FR 26098 (6/1/09).

EPA approved the Memphis, Tennessee, CAA §§111(d)/129 plan for existing hospital/medical/infectious waste incinerator (HMIWI) units that commenced construction on or before June 20, 1996. 74 FR 27444 (6/10/09).

EPA approved negative declarations under CAA §§111(d) and 129 certifying that there are no existing HMIWI units in areas covered by the Kentucky and Tennessee air pollution control programs. 74 FR 27718 (6/11/09).

EPA approved negative declarations under CAA §§111(d) and 129 certifying that there are no HMIWI units in areas covered by the local air pollution control programs of Jefferson County, Kentucky; Forsyth County, North Carolina; and Knox County and Nashville/Davidson County, Tennessee. 74 FR 27720 (6/11/09).

EPA approved negative declarations under CAA §§111(d) and 129 certifying that there are no large municipal waste combustion units in areas covered by the local air pollution control programs of Knox, Memphis-Shelby, and Nashville/Davidson counties, Tennessee. 74 FR 27722 (6/11/09).

EPA reaffirmed the promulgation of certain revisions to the Acid Rain Program that were contained in the Clean Air

Interstate Rule (CAIR) and CAIR federal implementation plan. 74 FR 27940 (6/12/09).

EPA withdrew its approval of a revision to Indiana's SIP that would have extended its federally enforceable state operating permit renewal terms from five years to 10 years due to adverse comment. 74 FR 28616 (6/17/09).

EPA updated the outer continental shelf air regulations for the Ventura County air pollution control district in California. 74 FR 28875 (6/18/09).

EPA amended the national volatile organic compound (VOC) emission standards for aerosol coatings under §183(e) of the CAA. 74 FR 29595 (6/23/09).

EPA allocated essential use allowances for the import and production of chlorofluorocarbons—a Class I ozone-depleting substance—for use in metered dose inhalers for calendar year 2009. 74 FR 29952 (6/24/09).

EPA revised the area source category NESHAPs for aluminum, copper, and other nonferrous foundries. 74 FR 30366 (6/25/09).

SIP Approvals: California (emission reduction credits for nitrogen oxide (NO_x) for the San Diego air pollution control district) 74 FR 26525 (6/3/09); (VOC emissions in the Monterey Bay unified air pollution control district and the Placer County air pollution control district) 74 FR 27714 (6/11/09); (fine particulate matter (PM) emissions in the Antelope Valley and South Coast air quality management districts) 74 FR 27716 (6/11/09). Florida (phaseout and removal of Stage II vapor control requirements for Stage I vapor control systems for gasoline dispensing facilities) 74 FR 26103 (6/1/09). Georgia (definitions and emission limitations and standards)

74 FR 27711 (6/11/09). Hawaii (nonregulatory provisions and quasi-regulatory measures) 74 FR 27708 (6/11/09). Illinois (NO_x SIP call Phase II rule) 74 FR 30466 (6/26/09). Indiana (definition of hazardous air pollutant) 74 FR 27442 (6/10/09). Michigan (eight-hour ozone NAAQS, 2005 base-year emissions inventory, and 2020 motor vehicle emission budgets for the Detroit-Ann Arbor nonattainment area) 74 FR 30950 (6/29/09). South Carolina (maintenance plan for the 1997 eight-hour ozone NAAQS for Cherokee County through 2014) 74 FR 26099 (6/1/09). Tennessee (permit exemptions for Knox County) 74 FR 30235 (6/25/09). Virginia (reasonably available control technology (RACT) under the eight-hour ozone NAAQS for the counties of Arlington, Fairfax, Loudon, and Prince William) 74 FR 28444 (6/16/09). Washington, D.C. (RACT under the eight-hour ozone NAAQS) 74 FR 28447 (6/16/09).

ENERGY

EPA finalized amendments to the renewable fuel standard program requirements promulgated on May 1, 2007. 74 FR 29948 (6/24/09).

HAZARDOUS & SOLID WASTE

EPA established November 10, 2010, as the date for facilities and farms to prepare or amend their spill prevention, control, and countermeasure plans. 74 FR 29136 (6/19/09).

TOXIC SUBSTANCES

EPA promulgated significant new use rules under §5(a)(2) of TSCA for 23 chemical substances. 74 FR 29982 (6/24/09).

WILDLIFE

FWS designated critical habitat for the Alabama sturgeon on approximately 524 kilometers (km) of river fall along the Alabama and Cahaba Rivers in Autauga, Baldwin, Bibb, Clarke, Dallas, Lowndes, Monroe, Perry, and Wilcox counties, Alabama. 74 FR 26488 (6/2/09).

FWS designated approximately 62,125 acres in Riverside and San Diego counties, California, as critical habitat for the Quino checkerspot butterfly. 74 FR 28776 (6/17/09).

NOAA-Fisheries designated approximately 19,571 km of perennial river, stream, and estuary habitat and 799 square km of lake habitat in the state of Maine as critical habitat for the Atlantic salmon distinct population segment. 74 FR 29300 (6/19/09).

NOAA-Fisheries and the FWS determined that the Gulf of Maine distinct population segment of the Atlantic salmon warrants listing as endangered under the ESA. 74 FR 29344 (6/19/09).

Proposed Rules

AIR

EPA proposed NESHAPs for the paints and allied products manufacturing area source category based on generally available control technology or management practices. 74 FR 26142 (6/1/09).

EPA proposed to approve the Memphis, Tennessee, CAA §111(d)/129 plan for existing HMIWI units that commenced construction on or before June 20, 1996; see above for direct final rule. 74 FR 27484 (6/10/09).

EPA proposed amendments to its general provisions for stationary sources to allow accredited providers to supply stationary source audit samples and to require sources to obtain and use these samples from the accredited providers instead of from EPA, as is the current practice. 74 FR 28451 (6/16/09).

SIP Proposals: California (emission reduction credits for NO_x for the San Diego air pollution control district; see above for direct final rule) 74 FR 26600 (6/3/09); (VOC emissions from organic solvent cleaning and degreasing operations in the San Joaquin Valley unified air pollution control district) 74 FR 27084 (6/8/09); (VOC emissions in the Monterey Bay unified air pollution control district and the Placer County air pollution control district; see above for direct final rule) 74 FR 27738 (6/11/09); (fine PM emissions in the Antelope Valley and South Coast air quality management districts; see above for direct final rule) 74 FR 27738 (6/11/09); (VOC emissions for the San Joaquin Valley air pollution control district) 74 FR 28467 (6/16/09); (VOC emissions from consumer products) 74 FR 30481 (6/26/09); (particulate matter emissions from open burning, wood burning fireplaces, and heaters and the storage, handling, and transportation of coke, coal, and sulfur for the San Joaquin Valley unified air pollution control district and the South Coast air quality management district) 74 FR 30485 (6/26/09). Georgia (definitions and emission limitations and standards; see above for direct final rule) 74 FR 27737 (6/11/09). Illinois (NO_x SIP call Phase II rule; see above for direct final rule) 74 FR 30481 (6/26/09). Ohio (Akron-Cleveland-Lorain ozone nonattainment area) 74 FR 27957 (6/12/09); (Columbus ozone nonattainment area) 74 FR 27973 (6/12/09). South Carolina (maintenance plan for the 1997 eight-hour ozone NAAQS for Cherokee County through 2014; see above for direct final rule) 74 FR 26141 (6/1/09). Tennessee (permit exemptions for Knox County; see above for direct final rule) 74 FR 30259 (6/25/09). West Virginia (internal combustion engines and cement kilns subject to the NO_x SIP call) 74 FR 27731 (6/11/09).

ENERGY

The Minerals Management Service proposed to require operators to develop and implement a safety and environmental management system to address oil and gas operations in the outer continental shelf. 74 FR 28639 (6/17/09).

PESTICIDES

The Agricultural Marketing Service proposed to add exemptions for six substances and to remove one substance from the national list of allowed and prohibited substances in organic crop production and processing. 74 FR 26591 (6/3/09).

WILDLIFE

NOAA-Fisheries issued its 12-month finding on a petition to expand the critical habitat of the Hawaiian monk seal in the northwestern Hawaiian Islands and to designate additional critical habitat in the main Hawaiian Islands and announced that it will revise the seal's critical habitat. 74 FR 27988 (6/12/09).

FWS announced a 90-day finding on a petition to revise critical habitat for the clay-loving wild buckwheat under the ESA; the Agency found that revision may be warranted and initiated a 12-month status review. 74 FR 29456 (6/22/09).

FWS announced a 90-day finding on a petition to remove the Lost River sucker and the shortnose sucker as threatened and endangered under the ESA; the Agency found that removal is not warranted. 74 FR 30996 (6/29/09).

FWS proposed to list the Georgia pigtoe mussel, interrupted rocksnail, and rough hornsnail as endangered under the ESA and designated approximately 160 miles in Alabama, Georgia, and Tennessee as critical habitat for the species. 74 FR 31114 (6/29/09).

Notices

AIR

EPA entered into a proposed administrative settlement under the CAA that requires it to review an EPA rule promulgating new source performance standards for new stationary compression ignition internal combustion engines. 74 FR 26863 (6/4/09).

EPA entered into a proposed consent decree under the CAA that establishes deadlines for EPA to act on a California SIP revision concerning payment of fees for failure to attain certain air quality standards by a specified date. 74 FR 27790 (6/11/09).

EPA announced availability of the draft document titled *Risk and Exposure Assessment to Support the Review of the Secondary National Ambient Air Quality Standards for Oxides of Nitrogen and Oxides of Sulfur: Second Draft*. 74 FR 28698 (6/17/09).

EPA entered into a proposed consent decree under the CAA requiring the Agency to outline objections to an operating permit issued to the Anadarko Petroleum Corporation to operate a natural gas compressor station in Weld County, Colorado. 74 FR 29691 (6/23/09).

EPA entered into a proposed administrative settlement under the CAA that requires the Agency to amend the NE-SHAP for gasoline distribution facilities, promulgated January 10, 2008, in response to a petition for review by the Alliance of Automobile Manufacturers. 74 FR 31273 (6/30/09).

HAZARDOUS & SOLID WASTE

EPA entered into a proposed administrative agreement under CERCLA that requires the settling party to pay \$60,000 in U.S. response costs incurred at the State Road 144 Ground Water Plume Superfund site in Levelland, Texas. 74 FR 27542 (6/10/09).

EPA Region 2 entered into a proposed administrative agreement under CERCLA that requires the settling party to lease to residents relocated from the Crumb Trailer Park Superfund site in West Winfield, New York, adjacent property at current rental rates for at least 42 months; to impose institutional controls to prohibit residential use of the site; and to perform specified post-removal site controls. 74 FR 27790 (6/11/09).

EPA entered into a proposed administrative agreement under CERCLA that requires the settling party to pay \$119,000 in U.S. response costs incurred at the

Haythorne Logistics Spill site in Cheboygan County, Michigan. 74 FR 28243 (6/15/09).

EPA entered into a proposed administrative settlement under CERCLA for past U.S. response costs incurred at the W.R. Grace Superfund site in Wilder, Kentucky. 74 FR 29698 (6/23/09).

EPA entered into a proposed administrative settlement under CERCLA that requires the settling parties to pay \$357,000 in past and future U.S. response costs incurred at the Anderson-Calhoun Mine and Mill site in Leadpoint, Washington. 74 FR 31031 (6/29/09).

EPA Region 2 entered into a proposed de minimis administrative agreement under CERCLA that requires the town of Rhinebeck to pay \$49,907.23 into a special account for past and future cleanup costs at the Consolidated Iron and Metal Co. Superfund site in Newburgh, New York. 74 FR 31273 (6/30/09).

OFFICE OF THE PRESIDENT

The president issued a memorandum establishing an Interagency Ocean Policy Task Force to meet the objectives of a national policy for the oceans, the coasts, and the Great Lakes. 74 FR 28591 (6/17/09).

The president proclaimed June 2009 as National Oceans Month. 74 FR 28595 (6/17/09).

RADIOACTIVE WASTE

EPA proposed approval of the radioactive, remote-handled, transuranic waste characterization program at the General Electric Vallecitos Nuclear Center in Sunol, California. 74 FR 29694 (6/23/09).

WATER

EPA determined that adequate facilities for the safe and sanitary removal and treatment of sewage from all vessels are reasonably available for the Broad Creek, Fishing Bay, and Jackson Creek watersheds in Middlesex County, Virginia. 74 FR 26858 (6/4/09).

EPA entered into a proposed consent agreement requiring a telecommunications company to pay a \$468,600 penalty assessment in connection with its failure to comply with the CWA, EPCRA, and the CAA at hundreds of facilities across the country. 74 FR 29480 (6/22/09).

EPA gave tentative approval to Idaho's public water supply supervision primacy program. 74 FR 29697 (6/23/09).

WILDLIFE

NOAA-Fisheries announced availability of draft guidance on monitoring the recovery of Pacific Northwest salmon and steelhead listed under the ESA for Idaho, Oregon, and Washington. 74 FR 31008 (6/29/09).

DOJ Notices of Settlement

United States v. Zelmer, Inc., No. 09-4072 (D.S.D. May 21, 2009). Settling CWA defendants that discharged pollutants without a permit into waters of the United States must pay a civil penalty; must restore the impacted areas; must perform mitigation; and must implement a stormwater compliance program. 74 FR 26257 (6/1/09).

United States v. Cyprus Tohono Corp., No. 4:09-cv-296 (D. Ariz. May 26, 2009). A settling CERCLA defendant must pay \$825,000 to the DOI and the Tohono O'odham Nation for natural resource damages at the Cyprus Tohono Mine site on the Tohono O'odham Nation reservation near North Komelik, Arizona. 74 FR 26424 (6/2/09).

United States v. City of Lebanon, No. 1:09-CV-180 (D.N.H. May 27, 2009). A settling CWA defendant that violated its NPDES permit must eliminate discharges from all combined sewer overflow outfalls by December 31, 2020; must achieve specific sewer separation projects on a definitive schedule; must eliminate illicit discharges; and must submit and implement a monitoring, maintenance, and corrective action plan. 74 FR 26425 (6/2/09).

United States v. Georgia Pacific LLC, No. 1:09-cv-429 (W.D. Mich. May 18, 2009). A settling CERCLA defendant must pay \$225,509.91 toward past U.S. response costs incurred at the OU2 disposal area of the Allied Paper/Portage Creek/Kalamazoo River Superfund site in Kalamazoo and Portage counties, Michigan, must pay all U.S. oversight costs, and must perform the EPA-selected remedy at the site. 74 FR 26732 (6/3/09).

United States v. Friction Holdings LLC, No. 09-662 (S.D. Ind. May 29, 2009). A settling CAA, CWA, RCRA, and TSCA defendant must pay a \$337,500 civil penalty; must prepare and implement various sampling, monitoring, and operations plans for the wastewater at its automotive and heavy-duty wet friction material and parts manufacturing facility in Crawfordsville, Indiana; must investigate the facility's groundwater for contamination with polychlorinated biphenyls (PCBs) and other hazardous substances; must remediate two small areas of suspected PCB contamination; and must eliminate several sources of PCB contamination at the facility. 74 FR 26890 (6/4/09).

United States v. AK Steel Corp., No. 97-1863 (W.D. Pa. June 1, 2009). Nine settling CERCLA defendants must pay \$3,037,491.61 in past U.S. response costs incurred at the Breslube Penn Superfund site in Coraopolis, Pennsylvania; must pay \$41,356.04 in past response costs to the state of Pennsylvania; must pay all future response costs; and must fund and perform the EPA-selected remedy at an estimated cost of at least \$8,070,000. 74 FR 27181 (6/8/09).

United States v. Waste Management of Wisconsin, Inc., No. 09-cv-0135 (E.D. Wis. June 5, 2009). Settling CERCLA defendants must pay \$340,898 in U.S. response costs incurred at the Watertown Tire Fire site in Watertown, Wisconsin. 74 FR 28274 (6/15/09).

United States v. General Electric Co., No. 1:09-cv-00545 (D. N. Mex. June 3, 2009). A settling CERCLA defendant must pay \$257,670 in past U.S. response costs incurred at the South Valley Superfund site in Albuquerque, New Mexico, must pay \$71,715 in future U.S. response costs, and must pay interest accrued on those two sums; previous owners of the site, the U.S. Air Force and DOE, must pay \$2,605,330 in past U.S. response costs and must pay \$725,126 in future U.S. response costs. 74 FR 28954 (6/18/09).

United States v. Wallside, Inc., No. 2:09-12317-AC-DAS (E.D. Mich. June 16, 2009). A settling TSCA defendant must pay a \$100,000 civil penalty, must certify that it is now in compliance and will continue to comply with residential lead-based paint hazard notification requirements, and must perform two supplemental environmental projects. 74 FR 30110 (6/24/09).

United States v. City of Duluth, No. 09-cv-1590 (D. Minn. June 23, 2009). Settling CWA defendants must each pay a \$106,000 civil penalty to the United States, must each pay a \$94,000 civil penalty to Minnesota, and must complete a variety of programs and capital improvements at an expected cost of

\$130 million by 2016 for wastewater discharges from a sanitary sewer system. 74 FR 31048 (6/29/09).

United States v. Neapolitan, No. 4:09CV1396 (N.D. Ohio June 18, 2009). A settling Residential Lead-Based Paint Hazard Reduction Act defendant must pay a \$2,000 administrative penalty, must certify that it is complying with residential lead paint notification requirements, and must submit a plan for replacement of all windows that are not certified lead-based paint free. 74 FR 31048 (6/29/09).

In re ASARCO LLC, No. 05-21207 (Bankr. S.D. Tex. June 15, 2009). A settling CERCLA defendant must provide the United States with an allowed general unsecured claim of \$3 million for U.S. response costs incurred at the Asarco Hayden Plant site in Hayden, Arizona. 74 FR 31049 (6/29/09).

United States v. JLG Enterprises, No. 09-00708 (D. Minn. June 23, 2009). Settling CWA defendants that discharged pollutants without a permit into waters of the United States must pay a civil penalty and must restore the impacted areas and/or perform mitigation. 74 FR 31312 (6/30/09).

United States v. City of West Point, No. 08-00293 (D. Neb. June 12, 2009). A settling CWA defendant must pay a \$75,000 civil penalty to both the United States and the state of Nebraska and must dismiss with prejudice its cross-claims against the city of West Point, Nebraska. 74 FR 31312 (6/30/09).

In the State Agencies

The entries below cover state regulatory developments during the month of June 2009. The entries are arranged by state, and within each section, entries are further subdivided by subject matter area. For material previously reported, visit <http://www.elr.info/State/stateupdate.cfm>.

Alaska

AIR

The Department of Environmental Conservation adopted amendments

to ALASKA ADMIN. CODE tit. 18 §50, Air Quality Control. The amendments extend the sunset dates for current emissions fees through June 30, 2010. See <http://notes4.state.ak.us/pn/pubnotic.nsf/cc52605f7c156e7a8925672a0060a91b/1a96617350aa08da892575c30002c67f?OpenDocument>.

California

GENERAL

The Natural Resources Agency will hold two public hearings on proposed

amendments to CAL. CODE REGS. tit. 14, §§15064, 15064.7, 15065, 15086, 15093, 15125, 15126.2, 15126.4, 15130, 15150, and 15183, the California Environmental Quality Act (CEQA). The proposed action is intended to adopt and amend portions of the CEQA Guidelines to explain and implement the requirements of CEQA, and in particular the requirements to analyze and mitigate, if necessary, the effects of greenhouse gas emissions. The hearings will be August 18 and 20, 2009. *See* <http://www.oal.ca.gov/pdfs/notice/27z-2009.pdf> (pp. 1045-052).

Colorado

AIR

The Air Quality Control Commission will hold a public hearing on the proposed repeal of Regulation 13 at 5 COLO. CODE REGS. §1001-16, Reduction on Carbon Monoxide Emissions From Gasoline Powered Motor Vehicles Through the Use of Oxygenated Gasolines. The hearing will be held August 20, 2009. *See* <http://www.cdph.state.co.us/op/aqcc/hearingnotices/2009/Reg%2013%20RMH%20Notice%20082009%20DORA.pdf>.

The Air Quality Control Commission will hold a public hearing to consider the Denver Regional Council of Government's joint interim determination of conformity for amendments to their 2035 Regional Transportation Plan and the 2008-2013 Transportation Improvement Program with the SIP for Air Quality. The hearing will be held August 20, 2009. *See* <http://www.cdph.state.co.us/op/aqcc/hearingnotices/2009/DRCOG%20082009.pdf>.

Florida

WATER

The Southwest Florida Water Management District has proposed amendments to FLA. ADMIN. CODE ANN. rr. 40D-

1.603, Permit Application Procedures; 40D-1.605, Content of Application; 40D-1.6051, Timeframe for Providing Requested Information for Permit Applications and Denial of Incomplete Applications; 40D-1.659, Forms and Instructions; 40D-1.659, Forms and Instructions; 40D-2.091, Publications Incorporated by Reference; 40D-2.101, Content of Application; 40D-22.201, Year-Round Water Conservation Measures; and 40D-22.401, Enforcement. *See* <https://www.flrules.org/Faw/FAWDocuments/FAWVOLUMEFOLDERS2009/3523/3523doc.pdf> (pp. 2798-2804).

The Suwannee River Water Management District proposed amendments to FLA. ADMIN. CODE ANN. r. 40B-1.704, Bond. The purpose of the rule development is to require a bond or other form of surety for as-built certification forms for environmental resource permits. *See* <https://www.flrules.org/gateway/ruleNo.asp?id=40B-1.704>.

The Suwannee River Water Management District proposed amendments to FLA. ADMIN. CODE ANN. r. 40B-4.1090, Publications and Agreements Incorporated by Reference. The effect of the rule development will incorporate the new flood insurance studies for the Suwannee River and its tributaries. *See* <https://www.flrules.org/gateway/ruleNo.asp?id=40B-4.1090>.

The Department of Environmental Protection is initiating rulemaking to adopt FLA. ADMIN. CODE ANN. r. 62-304.310, Apalachicola River TMDLs; 62-304.315, Chipola River Basin TMDLs; 62-304.515, Kissimmee River Basin TMDLs; 62-304.605, Alafia River TMDLs; 62-304.610, Hillsborough River Basin TMDLs; 62-304.615, Manatee River Basin TMDLs; 62-304.620, Little Manatee River TMDLs; 62-304.805, Charlotte Harbor TMDLs. *See* <https://www.flrules.org/gateway/ruleNo.asp?id=62-304.310>.

The Department of Environmental Protection is initiating rulemaking to adopt FLA. ADMIN. CODE ANN. r. 62-304.505, Middle St. Johns River TMDLs. *See* <https://www.flrules.org/gateway/ruleNo.asp?id=62-304.505>.

The South Florida Water Management District will hold a public hearing on

proposed amendments to FLA. ADMIN. CODE ANN. r. 40E-400.315, No Notice General Permit for Activities in Uplands. The amendments would remove partial delegation to Collier County for projects less than 40 acres total land area. Permit applicants in Collier County will now need to submit an application to the South Florida Water Management District for projects less than 40 acres that do not qualify for a No Notice General Permit. The hearing will be held August 18, 2009. *See* <https://www.flrules.org/gateway/ruleNo.asp?id=40E-400.315>.

The Suwannee River Water Management District has proposed amendments to FLA. ADMIN. CODE ANN. r. 40B-1.703, Procedures for Consideration of Permit Applications, and 40B-1.709, Suspension, Revocation, and Modification of District Permits. This proposed rule development will revise the existing rule language by addressing a new type of water use permit, a general permit by rule, that may be obtained and the procedural requirements. *See* <https://www.flrules.org/gateway/ruleNo.asp?id=40B-1.703>.

WILDLIFE

The St. Johns River Water Management District will hold a public hearing on proposed amendments to FLA. ADMIN. CODE ANN. r. 40C-4.021, Definitions, and 40C-4.091, Publications Incorporated by Reference. The amendments reflect that the bald eagle, which is still protected under the federal Bald and Golden Eagle Protection Act, is no longer classified by the Florida Fish and Wildlife Conservation Commission (FWC) as a threatened species under its imperiled species regulations; continue to provide to the bald eagle protections afforded by the District's rules to wildlife species classified by FWC as endangered, threatened, or species of special concern; and update rule references to listed wildlife and plants in the definitions of "listed species," "endangered species," and "threatened species." The hearing will be held August 11, 2009. *See* <https://www.flrules.org/gateway/ruleNo.asp?id=40C-4.02>.

Georgia

WATER

The Environmental Protection Division of the Georgia Department of Natural Resources released a Water Conservation Implementation Plan for Georgia Businesses on May 27, 2009. The plan is intended to guide Georgia's seven major water use sectors in an effort to help sustain the state's water resources, to provide for a secure water supply in the future, to help Georgians use water more efficiently, and to foster a culture of conservation throughout the state. *See* http://www.georgiaepd.org/Files_PDF/news/WCIP%20release%20-%20FINAL%20lhead.pdf.

Idaho

AIR

The Department of Environmental Quality will hold a public hearing on proposed amendments to IDAHO ADMIN. CODE r. 58.01.01.725, Rules for Sulfur Content of Fuels. The proposed revisions would allow for higher sulfur content fuels to be used in fuel burning equipment in Idaho as long as the resulting emissions are at levels equal to or lower than those provided for in the existing rules. The hearing will be held August 4, 2009. *See* http://www.deq.idaho.gov/rules/air/58_0101_0902_proposed.cfm.

WATER

The Department of Environmental Quality proposed amendments to IDAHO ADMIN. CODE r. 58.01.16, Wastewater Rules. The amendments would allow for the creation of a combined very small wastewater treatment and collection system classification for communities with 500 connections or less. *See* <http://adm.idaho.gov/adminrules/bulletin/bul/09bul/09jun.pdf> (pp. 111-22).

Illinois

WATER

The Pollution Control Board has adopted amendments to ILL. ADMIN. CODE tit. 35 §303, Water Use Designations and Site-Specific Water Quality Standards. This site-specific rule would authorize an alternative water quality standard for boron from the point of discharge at the Springfield Metro Sanitary District's Spring Creek Sanitary Treatment Plant to the Sangamon River and then to the confluence with the Illinois River, and in the Illinois River 100 yards downstream from the confluence with the Sangamon River. *See* http://www.cyberdriveillinois.com/departments/index/register/register_volume33_issue24.pdf (pp. 7903-09).

Indiana

AIR

The Air Pollution Control Board adopted amendments to 326 IND. ADMIN. CODE 24-1-2, 24-1-7, 24-1-8, 24-1-9, 24-1-12, 24-2-2, 24-2-7, 24-2-8, 24-2-11, 24-3-1, 24-3-2, 24-3-7, 24-3-8, 24-3-9, and 24-3-12 concerning the Clean Air Interstate Rule. *See* <http://www.in.gov/legislative/iac/irtoc.htm?view=list&lsadocnum=08-5>.

The Pesticide Review Board has adopted 357 IND. ADMIN. CODE 1-13, Open Burning of Pesticide Containers, and 357 IND. ADMIN. CODE 1-14, Use of Pesticide Service Containers. The rules establish a prohibition against open burning of pesticide containers and clear provisions for the proper use and labeling of service containers by pesticide applicators to transport pesticides to the site where they will be applied. *See* <http://www.in.gov/legislative/iac/irtoc.htm?view=list&lsadocnum=09-58> and <http://www.in.gov/legislative/iac/irtoc.htm?view=list&lsadocnum=09-59>.

The Air Pollution Control Board will hold a public hearing on proposed amendments to 326 IND. ADMIN. CODE 1-2-48, Volatile Organic Compounds.

The amendments would revise the definition of volatile organic compounds to include exclusions for dimethyl carbonate and propylene carbonate. The hearing will be held September 2, 2009. *See* <http://www.in.gov/legislative/iac/irtoc.htm?view=list&lsadocnum=09-477>.

The Air Pollution Control Board will hold a public hearing on proposed amendments to 326 IND. ADMIN. CODE 8-1-3 and 8-4, concerning Stage I vapor recovery at gasoline dispensing facilities. The hearing will be held September 2, 2009. *See* <http://www.in.gov/legislative/iac/irtoc.htm?view=list&lsadocnum=07-353>.

HAZARDOUS & SOLID WASTE

The Solid Waste Management Board has rescheduled a public hearing on proposed amendments to 329 IND. ADMIN. CODE 5-1-2, 5-1-3, and 5-1-4, and addition of 329 IND. ADMIN. CODE 5-3, concerning environmental impact statements for major state actions. The hearing will be held September 15, 2009. *See* <http://www.in.gov/legislative/iac/irtoc.htm?view=list&lsadocnum=08-209>.

WATER

The Water Pollution Control Board adopted amendments to 327 IND. ADMIN. CODE 11-1-2, 11-1-3, and 11-1-4; added 327 IND. ADMIN. CODE 11-3; and repealed 327 IND. ADMIN. CODE 11-1-1, 11-1-5, and 327 IND. ADMIN. CODE 11-2, concerning implementation of Indiana law regarding EISs for major state actions that may significantly affect the quality of the human environment. *See* <http://www.in.gov/legislative/iac/irtoc.htm?view=list&lsadocnum=08-210>.

The Water Pollution Control Board will hold a public hearing on proposed amendments to 327 IND. ADMIN. CODE 8, Public Water Supply. These rule changes include amendments and new rules concerning the Stage 2 Disinfectants and Disinfection Byproducts Rule, Long-Term 2 Enhanced Surface Water Treatment Rule, Ground Water Rule, and Lead and Copper Rule Short-Term Regulatory Revisions. The hear-

ing will be held August 12, 2009. See <http://www.in.gov/legislative/iac/irtoc.htm?view=list&lsadocnum=08-198>.

Iowa

WATER

The Environmental Protection Commission proposed amendments to IOWA ADMIN. CODE r. 62, Effluent and Pretreatment Standards: Other Effluent Limits or Prohibitions; and IOWA ADMIN. CODE r. 63, Monitoring, Analytical, and Reporting Requirements. The proposed amendment to Chapter 62 is designed to address new technical data received from U.S. EPA. The proposed amendment to Table II of Chapter 63 is intended to reduce the burden on smaller communities in regard to nutrient monitoring requirements. See <http://www.legis.state.ia.us/asp/ACODOCS/DOCS/06-03-2009.Bulletin.pdf> (pp. 2644-45).

Louisiana

AIR

The Department of Environmental Quality adopted amendments to LA. ADMIN. CODE tit. 33:III, §§111, 2123, and 2143, Control Technology Guidelines. This rule reflects changes made to the lithographic printing materials and letterpress printing materials Control Technology Guidelines (CTG) and the flexible package printing materials CTG that were published in the *Federal Register*. See http://www.deq.louisiana.gov/portal/portals/0/planning/regs/pdf/AQ296fin-technical_amendments.pdf.

The Department of Environmental Quality adopted amendments to LA. ADMIN. CODE tit. 33:III, §2117, Exemption of Volatile Organic Compounds. This rule adds the compounds propylene carbonate; dimethyl carbonate; and 1,1,1,2,2,3,4,5,5,5-decafluoro-3-methoxy-4-trifluoromethyl-pentane to the list of compounds that are exempt from the control requirement of LA. ADMIN. CODE tit. 33:III, Chapter 21. These com-

pounds are added on the basis that they make a negligible contribution to tropospheric ozone formation. In addition to the added compounds, several chemical names are added for clarity. See <http://www.doa.la.gov/osr/reg/0905/0905.pdf> (p. 924).

FISHERIES

The Department of Wildlife and Fisheries fixed the open and close dates for the 2009 Spring Inshore Shrimp Season and has closed to recreational and commercial fishing an area located just south of Port Sulphur in Plaquemines Parish. See <http://www.doa.la.gov/osr/reg/0905/0905.pdf> (pp. 868-69).

GENERAL

The Department of Environmental Quality adopted amendments to LA. ADMIN. CODE tit. 33:I, §3931; 33:III, §§506, 507, 2160, 3003, 5116, 5122, 5311, and 5901; 33:V, §3099; 33:IX, §§2301, 4901, and 4903; and 33:XV, §1599, Incorporation by Reference for 2008. This incorporation by reference rule will keep Louisiana's regulations current with their federal counterparts. See <http://www.deq.louisiana.gov/portal/portals/0/planning/regs/pdf/mm011ftfin.pdf>.

HAZARDOUS & SOLID WASTE

The Department of Environmental Quality adopted amendments to LA. ADMIN. CODE tit. 33:VII, §§508, 709, 717, and 719, Solid Waste Buffer Zones. The regulations covering buffer zone requirements for solid waste non-processing transfer stations and solid waste processing and disposal facilities are amended to clarify who must provide permission for a waiver of buffer zone requirements. See <http://www.doa.la.gov/osr/reg/0905/0905.pdf> (925-26).

The Department of Environmental Quality adopted amendments to LA. ADMIN. CODE tit. 33:IX, §§7301, 7303, 7305, 7307, 7309, 7313, and 7395, Standards for the Use or Disposal of Sewage Sludge and Biosolids. This rule implements Act 56 of the 2008 Regular Ses-

sion of the Louisiana Legislature, which transferred the registration program for haulers of domestic septage from the Department of Health and Hospitals to the Department of Environmental Quality effective July 1, 2009. The transportation requirements contain standards for vehicles that are utilized for the transportation of sewage sludge. See <http://www.doa.la.gov/osr/reg/0905/0905.pdf> (pp. 926-48).

The Department of Environmental Quality adopted emergency amendments to LA. ADMIN. CODE tit. 33:IX, §7301, Sewage Sludge and Biosolids Use or Disposal. The rule allows the department to approve the registrations of transporters of sewage sludge who meet the requirements for registration except that they have designated receiving facilities that have not yet been permitted by the Office of Environmental Services, Water Permits Division. The rule gives the unpermitted facilities four months to submit applications. See <http://www.deq.louisiana.gov/portal/portals/0/planning/regs/pdf/WQ078E.pdf>.

TOXIC SUBSTANCES

The Department of Agriculture and Forestry adopted amendments to LA. ADMIN. CODE tit. 7, §§103, 121, 125, 129, 143, 173, 181, and 205, relating to pesticides. The amendments add definitions and make other technical changes; provide for failure to pass an examination and cheating on examinations; change the name of the right-of-way pest control category for commercial applicators; provide a numbering system for subcategories that agricultural consultants may become certified for; repeal a restriction on application of pesticides; repeal the requirement for publication in the *Louisiana Register* of an annual list of pesticides that, upon disposal, are declared by U.S. EPA to be hazardous waste; and change the water monitoring frequency from monthly to quarterly and the fish tissue sampling from annually to an as-needed basis. <http://www.doa.la.gov/osr/reg/0905/0905.pdf> (p. 870).

The Department of Agriculture and Forestry proposed amendments to LA. ADMIN. CODE tit. 33:XI, §§101 and 303, Interstitial Monitoring Requirement

for Emergency Power Generator UST Systems. This rule requires UST owners and/or operators that install emergency power generator UST systems to conduct interstitial monitoring on all USTs and associated pressurized piping installed after the effective date of this regulation. *See* <http://www.doa.la.gov/osr/reg/0905/0905.pdf> (pp. 988-90).

WATER

The Department of Agriculture and Forestry proposed amendments to LA. ADMIN. CODE tit. 33:IX, §§1309, 1311, 1313, 1315, 1317, and 1319, Louisiana Water Pollution Control Fee System Regulation. This rule changes the name of the annual fee rating worksheets for the water program fees and updates the complexity designation tables (alphabetical and numerical) to conform with OSHA's updates to the SIC codes. *See* <http://www.doa.la.gov/osr/reg/0905/0905.pdf> (pp. 990-1016).

Massachusetts

AIR

The Department of Environmental Protection adopted amendments to 310 MASS. CODE REGS. 7.71, Reporting of Greenhouse Gas (GHG) Emissions. The amendments require the reporting of all GHG emissions associated with electricity sales in Massachusetts by retail sellers, provide for voluntary reporting of GHG emissions, and require verification of reported GHG emissions. *See* <http://www.mass.gov/dep/air/laws/regulation.htm#771>.

GENERAL

The Department of Environmental Protection adopted amendments to 310 MASS. CODE REGS. 4.00, Timely Action Schedule and Fee Provisions; 310 MASS. CODE REGS. 9.00, Waterways Regulations; and 310 MASS. CODE REGS. 40.0000, Massachusetts Contingency

Plan of the Waste Site Cleanup Program. The amendments delete, add, increase, and decrease fees and otherwise amend permit or Annual Compliance Fee categories for environmental programs including Water Pollution Control Title 5, Water Supply, Watershed Management, Wetlands and Waterways, Environmental Laboratory Certification, Air Quality, Hazardous Waste, Solid Waste, Waste Site Cleanup, and Mercury Management. *See* <http://www.mass.gov/dep/service/online/fees.htm#reg>.

HAZARDOUS & SOLID WASTE

The Department of Environmental Protection adopted amendments to 310 MASS. CODE REGS. 19.303, Class II Recycling Programs. The amendments establish the requirement for a solid waste facility permit modification that specifies how a waste-to-energy facility will obtain an approved recycling program. *See* <http://www.mass.gov/dep/recycle/laws/regulation.htm#wec>.

Minnesota

WATER

The Minnesota Pollution Control Agency seeks public comment on the draft Lake Shaokatan Phosphorus TMDL Report. The aquatic life use and aquatic recreation use of Lake Shaokatan is impaired because it does not meet state water quality standards for excess nutrients (phosphorus). Comments are due August 5, 2009. *See* <http://www.pca.state.mn.us/news/data/bdc.cfm?noticeID=281436&blobID=25060&docTypeID=4>.

Nevada

AIR

The State Environmental Commission adopted amendments to NEV. ADMIN. CODE §445B, Electrical Generation Unit Greenhouse Gas Emissions Mandatory Reporting Requirements. The amendments establish mandatory reporting requirements for greenhouse gas emissions for electrical generation units. *See* <http://www.leg.state.nv.us/register/2009Register/R004-09I.pdf>.

New Mexico

AIR

The New Mexico Environment Department (NMED) will hold a public hearing on proposed amendments to N.M. CODE R. §20.2.89, Qualified Generating Facility Certification. The amendments add language that would allow the NMED to evaluate solar photovoltaic and geothermal energy projects to determine whether they meet the requirements of a qualified energy facility in order to qualify for certain tax credits. The NMED would then issue a certification for projects that qualify and deny certifications to projects that do not. The hearing will be held August 13, 2009. *See* <http://www.nmcpr.state.nm.us/nmregister/xx/xx12/Environotice.pdf>.

New York

AIR

The Department of Environmental Quality proposed amendments to N.Y. COMP. CODES R. & REGS. tit. 6, §235, Consumer Products. The amendments would revise the existing consumer products regulation to reduce the amount of volatile organic compounds released into the atmosphere from consumer products. *See* <http://www.dec.ny.gov/regulations/55094.html>.

RECENT JOURNAL LITERATURE

“Recent Journal Literature” lists recently published law review and other legal periodical articles. Within subject-matter categories, entries are listed alphabetically by author or title. Articles are listed first, followed by comments, notes, symposia, surveys, and bibliographies.

For a complete list of all law review articles listed in the Journal Literature section of ELR, visit our Cumulative Law Review Bibliography at <http://www.elr.info/Indexes/clrb.cfm>.

Agriculture

Denton, Blake, *Regulating the Regulators: The Increased Role for the Federal Judiciary in Monitoring the Debate Over Genetically Modified Crops*, 25 UCLA J. ENVTL. L. & POL'Y 333 (2006-2007).

Air Pollution

Wanderscheid, Karen, *The Environmental Protection Agency's "Major Emitting Facility" Definition and Its Effect on Ethanol Facilities: A Review of the Amended Rule and Its Potential Pitfalls and Successes in South Dakota*, 53 S.D. L. REV. 548 (2008).

Climate Change

Ayres, Richard E., *Comment on Addressing Climate Change With a Comprehensive U.S. Cap-and-Trade System*, 39 ELR 10767 (Aug. 2009).

Baur, Donald C., *Comment on Climate Change and the Endangered Species Act: Building Bridges to the No-Analog Future*, 39 ELR 10746 (Aug. 2009).

Borissov, Erin Casper, *Global Warming: Questionable Use of the Political Question Doctrine*, 41 IND. L. REV. 415 (2008).

Brenner, Robert D. & Anna Marie Wood, *Comment on Developing a Comprehensive Approach to Climate Change Mitigation Policy in the United States: Integrating Levels of Government and Economic Sectors*, 39 ELR 10723 (Aug. 2009).

Gerrard, Michael B., *Comment on Developing a Comprehensive Approach to Climate Change Mitigation Policy in the United States: Integrating Levels of Government and Economic Sectors*, 39 ELR 10727 (Aug. 2009).

Guzy, Gary S., *Comment on Developing a Comprehensive Approach to Climate Change Mitigation Policy in the United States: Integrating Levels of Government and Economic Sectors*, 39 ELR 10730 (Aug. 2009).

Irvin, Wm. Robert, *Comment on Climate Change and the Endangered Species Act: Building Bridges to the No-Analog Future*, 39 ELR 10750 (Aug. 2009).

Ludwiszewski, Raymond B. & Charles H. Haake, *Comment on Developing a Comprehensive Approach to Climate Change Mitigation Policy in the United States: Integrating Levels of Government and Economic Sectors*, 39 ELR 10732 (Aug. 2009).

McGinty, Kathleen A., *Comment on Addressing Climate Change With a Comprehensive U.S. Cap-and-Trade System*, 39 ELR 10770 (Aug. 2009).

Peterson, Thomas D. et al., *Developing a Comprehensive Approach to Climate Change Mitigation Policy in the United States: Integrating Levels of Government and Economic Sectors*, 39 ELR 10711 (Aug. 2009).

Ruhl, J.B., *Climate Change and the Endangered Species Act: Building Bridges to the No-Analog Future*, 39 ELR 10735 (Aug. 2009).

Stavins, Robert N., *Addressing Climate Change With a Comprehensive U.S. Cap-and-Trade System*, 39 ELR 10752 (Aug. 2009).

Constitutional Law

Adler, Jonathan H., *God, Gaia, the Taxpayer, and the Lorax: Standing, Justiciability, and Separation of Powers After Massachusetts and Hein*, 20 REGENT U. L. REV. 175 (2007-2008).

Energy

Lunt, Robin J., *Recharging U.S. Energy Policy: Advocating for a National Renewable Portfolio Standard*, 25 UCLA J. ENVTL. L. & POL'Y 371 (2006-2007).

Ottinger, Patrick S., *Neither Fish Nor Fowl: The Louisiana Law of Shut-In Gas Wells*, 69 LA. L. REV. 43 (2008).

Sanders, Patrick B., *Blanco v. Burton: Louisiana's Struggle for Cooperative Federalism in Offshore Energy Development*, 69 LA. L. REV. 255 (2008).

Fish and Wildlife/ Endangered Species Act

Hulick, Anne B., *Habitat Conservation Plans: Protecting Species, Enhancing Democratic Legitimacy, and Promoting Stewardship Are Not Mutually Exclusive Goals*, 25 UCLA J. ENVTL. L. & POL'Y 441 (2006-2007).

Nichols, Kamaile A., *Turtles and Tourism: Where the Endangered Species Act Ends and Community Activism Begins*, 25 UCLA J. ENVTL. L. & POL'Y 411 (2006-2007).

General Environmental Law

- Bass, Gary D. & Sean Moulton, *Comment on Information Access—Surveying the Current Legal Landscape of Federal Right-to-Know Laws*, 39 ELR 10786 (Aug. 2009).
- Bridgeman, Natalie L. & David B. Hunter, *Narrowing the Accountability Gap: Toward a New Foreign Investor Accountability Mechanism*, 39 ELR 10803 (Aug. 2009).
- Cohen, Mark A., *Comment on Information Access—Surveying the Current Legal Landscape of Federal Right-to-Know Laws*, 39 ELR 10783 (Aug. 2009).
- Freeman, Jody & Adrian Vermeule, *Massachusetts v. EPA: From Politics to Expertise*, 2007 SUP. CT. REV. 51 (2007).
- Johnson, Lisa, *Do the Good Guys Always Wear Green? An Analytical Framework to Evaluate Businesses' Relationships to the Natural Environment*, 10 J.L. & SOC. CHALLENGES 55 (2008).
- Karst, Kenneth L., *From Carbone to United Haulers: The Advocates' Tales*, 2007 SUP. CT. REV. 237 (2007).
- Lin, Albert C., *Size Matters: Regulating Nanotechnology*, 39 ELR 10806 (Aug. 2009).
- Percival, Robert V., *Massachusetts v. EPA: Escaping the Common Law's Growing Shadow*, 2007 SUP. CT. REV. 111 (2007).
- Vladeck, David C., *Information Access—Surveying the Current Legal Landscape of Federal Right-to-Know Laws*, 39 ELR 10773 (Aug. 2009).
- Wolfe, Matthew W., *The Shadows of Future Generations*, 57 DUKE L.J. 1897 (2008).

Hazardous Waste/ Toxic Substance Regulations

- Denison, Richard A., *Comment on Using Competition-Based Regulation to Bridge the Toxics Data Gap*, 39 ELR 10799 (Aug. 2009).
- Greenwood, Mark, *Comment on Using Competition-Based Regulation to Bridge the Toxics Data Gap*, 39 ELR 10796 (Aug. 2009).
- Wagner, Wendy, *Using Competition-Based Regulation to Bridge the Toxics Data Gap*, 39 ELR 10789 (Aug. 2009).

Native Americans/ Indigenous Peoples

- Hill, Sean, *Sunshine in Indian Country: A Pro-FOIA View of Klamath Water Users*, 32 AM. INDIAN L. REV. 463 (2007-2008).
- Wagner, Joanna M., *Improving Native American Access to Federal Funding for Economic Development Through Partnerships With Rural Communities*, 32 AM. INDIAN L. REV. 525 (2007-2008).
- Walstad, Whitney Austin, *A Step in the Wrong Direction for the Tribal Sovereignty of the Passamaquoddy Tribe and the Penobscot Nation*, 32 AM. INDIAN L. REV. 487 (2007-2008).

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- Bretsen, Stephen N. & Peter J. Hill, *Irrigation Institutions in the American West*, 25 UCLA J. ENVTL. L. & POL'Y 283 (2006-2007).
- Klein, Christine A., *Water Transfers: The Case Against Transbasin Diversions in the Eastern States*, 25 UCLA J. ENVTL. L. & POL'Y 249 (2006-2007).

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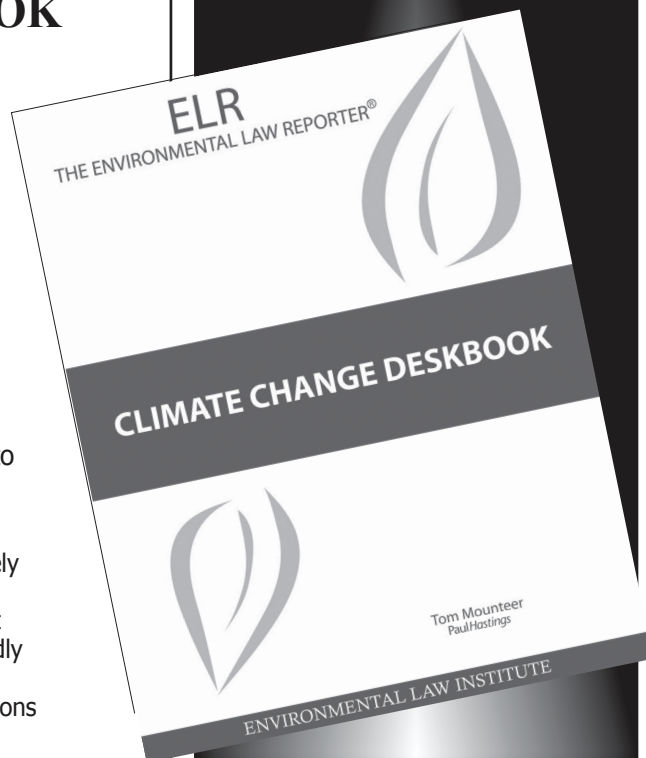
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