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Transforming
Environmental
Protection
for the
21st Century

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Environment.Gov: Transforming Environmental Protection for the 21st Century

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Innovate for the Environment

Those who take elected office in January 2001 have within their reach the tools to implement a new environmental agenda: one that will address serious problems now beyond the efforts of traditional regulatory programs; and one that will reduce the costs of the nation's continuing environmental progress.

Using innovative tools, and imaginative leadership, the United States could achieve three enormously important environmental goals within the decade:

- freeing America's rivers, lakes, and estuaries from the oxygen-depleting nutrients that overwhelm them through runoff from farm fields, city streets, and suburban lawns
- enabling America's cities to breathe easier and its mountains to stay greener by finally bringing under control many of the dispersed sources of ground-level ozone and smog
- preparing America, and perhaps other nations of the world, to make choices about how best to increase energy efficiency and reduce production of carbon dioxide and other greenhouse gases

The nation can accomplish those aims if it commits to transforming its approach to pollution control and environmental management. This report tells how.

Key elements of such a new approach are already being used: a shift away from end-of-the-pipe technology requirements and toward whole-facility environmental management and permitting; cap-and-trade systems to drive down pollution-prevention costs; and performance requirements for facilities, whole watersheds, and even states. Their hallmark is the creation of incentives for technological innovation, for civic involvement and collaboration, and for place-specific solutions. As a result, the approaches tend to achieve environmental results at lower costs than traditional regulation.

But before the United States can complete the transformation of its environmental protection system, it will need better information about the environment, as well as more robust evaluation of environmental management efforts. The challenge is not merely technological: advanced monitoring systems and information technologies already maintain public accountability in many innovative approaches. It is, rather, organizational: EPA will have to change, as

will state environmental agencies, businesses, and the many other organizations that comprise the nation's system of environmental governance. Revolutionary information technology is already transforming the links among and between those organizations and the citizenry—and thus inspired the title of this report. *Environment.gov* is aimed at the entire network of public and private decisionmakers that determines the quality of the nation's environment.

The United States must continue to transform its environmental management system, not because innovation is good *per se*, but because the present system will *not* solve the most pressing of the nation's outstanding environmental problems. Neither will it fulfill the ultimate national agenda of providing future generations continuing economic prosperity, coupled with the quality of life that flows from clean air and water and healthy, sustainable ecosystems. Assuring those benefits to our children's children will require that all parts of society share the responsibility for innovating for more effective and efficient environmental protection.

Increasing the efficiency of the nation's approach to environmental protection is essential and should become part of EPA's core mission. This report focuses on two parts of that challenge: reducing "compliance costs," the amount firms or communities must pay to meet their individual or collective environmental responsibilities; and reducing public and private "transaction costs," the time, money, and labor consumed in negotiating an agreement. Reducing those costs will make it economically and politically easier for the nation to improve the environment, both in the short term nationally and in the long run globally. Neither the United States nor other nations of the world are likely to make much progress toward reducing the emission of greenhouse gases, for example, until everyone is convinced that they are doing so at the lowest possible price.

One of the virtues of America's environmental management system has been the consistency and stability derived from the series of sweeping environmental statutes the nation enacted three decades ago. But its strength has become, in many cases, its weakness. The statutes and the system they support are not keeping up with changing technology, changing public attitudes, or changing global relationships. Even the most ambitious and successful efforts in the United States to use innovative techniques to manage environmental problems seem cautious and inadequate when compared with the problems the system must confront over the next two decades. The next EPA administrator and the next Congress will have an opportunity—and the responsibility—to implement more significant reforms.

The Case for Change

Today's environmental regulatory system can fail the nation because it cannot address three pervasive types of problems that are outlined below:

Policy problems: Traditional regulatory approaches can keep most forms of industrial pollution in check, but they cannot reach many of the remaining sources of pollution and environmental degradation: the large and small users of fertilizers, the hundreds of millions of consumers of electricity and fossil fuels in the United States and the billions of consumers around the world, and the direct physical threats to ecosystems and endangered species. Even where traditional regulatory approaches succeed in reducing pollution, they often fail to achieve their gains at the lowest possible cost to society, and they provide too few incentives for entrepreneurs to develop more efficient technologies. The United States has relied heavily on one policy tool for controlling pollution: the enforceable—and vigorously enforced—federal or state permit. That tool cannot effectively reduce pollution from millions of small, dispersed sources, or even from thousands of large business-like farms.

Management problems: Congress and the executive branch have organized EPA, as well as other executive agencies, in ways that result in narrow—and sometimes ineffective—attacks on environmental and economic problems. EPA's division into offices and programs focusing exclusively on air pollution, water pollution, and hazardous wastes, for example, has produced a management structure that deals poorly with complex, multilayered environmental and economic problems. EPA is not organized well to foster or respond to increasingly complex arrangements among public and private institutions, or the changing capacities of states. That EPA cannot currently collaborate effectively with the Departments of Transportation, Energy, Agriculture, Interior, and State hobbles the nation's ability to manage the environmental aspects of large-scale issues such as global trade, production agriculture, or climate change. EPA cannot adequately address those problems by itself. As constituted, the agency cannot possibly be the protector of the nation's environment, despite the expansive responsibility implied by its name.

Political problems: The political status quo is deadlock. The divisions between the two major political parties, between Congress and the president, and between the federal government and the states, have impeded broad innovation and environmental progress. Because so many Americans agree on the basic goals of environmental protection, however, each of those institutions has an opportunity to be rewarded for ending the political stalemate, for joining a political consensus for change. The alternative, muddling through for several more years, would probably not be catastrophic, though it would certainly waste economic and human resources, and seriously erode the nation's capacity to protect its environment in the future. Moreover, failing to act would weaken the nation's potential leadership role in addressing global environmental crises.

This report, prepared by a panel of the National Academy of Public Administration, lays out a strategy for reform at the federal, state, and local levels of government, as well as in the private sector. The panel concludes that EPA and Congress should:

- focus aggressively on reducing nutrients in surface waters, using cap-and-trade systems, targeted public spending, and collaborative watershed processes to achieve state, local, and national goals
- focus aggressively on reducing ground-level ozone and smog, using a combination of market-based tools to reduce emissions of several of its chemical precursors: nitrogen oxides (NO_x), particulates, and, where adequate safeguards are in place, volatile organic compounds (VOCs)
- enable states to experiment with bold new regulatory approaches designed to encourage companies to achieve higher levels of environmental performance and to develop innovative control technologies and techniques
- establish a credible, authoritative source of environmental information that will support a performance-management system geared toward the most-effective use of techniques to reduce pollution, as well as harm to ecosystems
- strengthen the management of EPA, focusing on speeding up decisionmaking and developing more effective structures at headquarters and the regions for managing problems in specific places
- reframe EPA's critical relationships with states, other federal agencies, and nongovernmental institutions, to enhance their collective capacity to address complex environmental problems

The panel bases that strategy on its collective experience, on research completed by the Academy staff, on 17 retrospective evaluations of innovations in environmental management completed by a diverse group of academic researchers, practitioners, and consultants, and on a prospective look at the environmental problems and opportunities that may lie ahead.

The evaluations provide an extraordinary resource: detailed knowledge from the field. They focus not only on the application of new policy tools and the changing relationships among companies, individuals, and government agencies, but also on the challenge of innovating. Parts of the environmental management system in the United States are dynamic—the growing availability to consumers of “green electricity,” for example—but much of it is ossified. The research demonstrates that government programs, because they are based in the legislative process and formal rulemaking, are among the most change-resistant parts of the system. The research also documents the extraordinary efforts of numerous elected, appointed, and career officials to reshape those programs, to enhance their effectiveness, and to improve the environment.

What the research does not show is the full extent of change under way in EPA, the states, business, and the broader environmental community. By necessity, the Academy focused on only a handful of initiatives, all of them chosen because they appeared to be constructive and successful. EPA managers are proud of many initiatives not covered in these pages: efforts to reduce diesel emissions, to implement performance measures for enforcement programs, to promote voluntary energy conservation, to expand public access to information about the hazards posed by high-production-volume chemicals. The panel did not set out to document every initiative, or to produce a scorecard for the effectiveness or commitment of particular institutions. Neither did it choose to evaluate reform efforts intended to weaken environmental protections. Rather, the panel sought to understand the potential of new approaches to environmental problem solving, as well as to identify barriers that frustrate progress.

Tomorrow's Problems and Opportunities

The environmental management system of the future can and should be more dynamic, effective, and efficient than today's. But what should it look like? What problems will it need to solve? Who or what will be its prime movers, its rulemakers? What role will government institutions play? Private companies? Nongovernmental organizations? Individual citizens? “Governance,” after all, is not solely the domain of formal governmental institutions—legislatures, courts, and agencies—but arises from the actions of the rest of civil society. Which forms of governance will be most effective at managing the environmental problems of the next 20 years? Most importantly, given the range of possible answers to those questions, what should EPA, Congress, and the states do now?

The panel answers most of those questions in this report, though it approaches the question of the future's most pressing environmental problems with considerable humility. Forecasting environmental trends is beyond the scope of this project—and is notoriously difficult. Nevertheless, making thoughtful decisions today requires critical thinking about the future. In this section, the panel presents a few assumptions about environmental trends, and then a more extended discussion of changes in institutional roles that have occurred over the last decade. Within that context, the panel then offers three “scenarios,” short, provocative narratives about the future intended not to predict events but to stimulate critical thinking about near-term decisions. The scenarios share some basic assumptions about the circumstances that will shape the environment, the economy, and society, but they diverge in several ways that illustrate that very different systems of governance—each with its own strengths and weaknesses—are possible.

Drivers of Change

The panel assumes that the following eight trends or drivers will continue for at least a decade and are likely to alter fundamentally the environment, what people know about the environment, and the institutional capacity to manage the environment:

- increased demand for energy services, particularly as China and India become wealthier nations, which will probably increase the emissions of greenhouse gases
- increased wealth and demand for resources in the United States and abroad, including a growing demand for access to relatively unspoiled natural areas for recreation and housing
- increased pressures on ecosystems, particularly from land-use changes caused by development, and from the spread of non-native plant and animal species
- increased costs for maintaining and replacing the nation's aging infrastructure for delivering drinking water and treating wastewater
- increased access to information through ever faster, smaller, and cheaper computers, environmental monitors, cameras, and web devices
- increased global trade, communication, and harmonization of environmental standards and norms
- increased understanding of the human genome, how organisms—probably including individual humans—respond to environmental hazards, and the capacity to modify the genetic makeup of plants, animals, and microorganisms
- increased improvements in technology, such as fuel cells, theoretically enabling the replacement of carbon-based fuels with hydrogen-based fuels

The Current Context

Absent from the list of drivers above are “toxic dumping” and most forms of industrial pollution because EPA’s regulatory programs have kept those problems in check. Authorized by the Clean Air Act, the Clean Water Act, and other statutes, the agency has forced large-scale polluters to reduce their air and water emissions and manage their hazardous wastes.¹ Strong national programs have required firms to use particular pollution-control technologies, and required states to achieve specific levels of air quality. Those programs have matured: most are now implemented by state environmental agencies acting with varying degrees of oversight by EPA’s 10 regional offices. States typically issue permits to firms or publicly owned wastewater treatment facilities; states—and occasionally EPA—enforce those permits in an effort to maintain a culture of compliance.

Chapter 2 of this report examines the strengths and weaknesses of that permit-based compliance system, focusing on innovations designed to reach activities that permitting cannot touch, or to encourage public and private actors to produce environmental benefits beyond mere compliance with regulatory standards. EPA is pushing some of those innovations, but most are coming from state agencies and from regulated businesses themselves as they struggle to find more effective and less costly ways to meet their state’s environmental

and economic goals. Most businesses are not seeking a “rollback” of pollution-control requirements, but do want to avoid being required to install yet another level of control technology, particularly if they can point to greater environmental gains they might achieve more cheaply otherwise.

There is another pressure on the regulatory regime as well: a demand from the market for faster changes in production processes. Permitting systems simply cannot respond quickly enough to the needs of manufacturers of computer equipment, pharmaceuticals, and specialty chemicals, for example. The time-delay in securing permits is just one aspect of the transaction costs associated with various permitting systems. Other costs include labor and legal fees incurred by a business and its regulatory agency. Thus one of the challenges of any new system of environmental management is to develop ways to lower those costs. Another is keeping down the notoriously high transaction costs of trying something new.

The time to accept those challenges is now: the entire environmental regulatory system appears poised to exploit new technologies and related policy tools. Advances in on-site and remote monitoring technologies are enabling the replacement of traditional permit systems with tradable-allowance systems and facility-level emissions caps. As monitoring improves, the need for inspection and enforcement operations declines. The Internet is enabling more informative versions of EPA's Toxics Release Inventory, for example.² (Chapter 3 of this report examines several efforts to innovate using trading and better monitoring data.)

Of course, EPA has been more than a regulator or a source of compliance data. It has provided funds for large capital projects: the construction of sewage and wastewater treatment systems, drinking-water systems, and, through the Superfund program, the cleanup of contaminated sites. But analysts predict that municipalities will need to raise billions more dollars in the next decade to repair, replace, or expand their water treatment systems. States and communities may also seek cash from EPA or other federal sources for other place-based environmental projects, ranging from the restoration of large ecosystems (such as the Everglades) to paying farmers to install better manure-management systems to reduce phosphorus and nitrogen loadings in rivers, lakes, and estuaries.

Ecosystem restoration, production agriculture, international trade—those problems have never been part of the EPA regulatory sphere, yet environmental protection at the local and regional level is increasingly requiring the coordinated management of pollution, natural resource uses, economic development, and land-use decisions. Chapter 4 of this report focuses on watershed management and considers how EPA fits into that multiparty network of problem solvers.

Among the most potentially significant changes EPA has implemented over the last decade have been in its relationships with states, through NEPPS, described in Chapter 5, and in the organizational structure of the agency, described in Chapter 6. In 1994 Administrator Carol Browner consolidated all of the agency's enforcement staff under the new Office of Enforcement and Compliance Assurance (OECA). In 1995 and 1996 she moved the planning function from the Office of Policy, Planning, and Evaluation into the Office of the Chief Financial Officer, and let the vestigial evaluation function disappear. In 1999, she created the Office of Environmental Information, nominally on a par with OECA, and consolidated a number of the remaining pieces into the Office of Policy, Economics, and Innovation. Meanwhile, EPA's New England regional office reorganized along functional lines that went further than headquarters: it organized the permitting functions of the major media programs (air, water, solid waste) in a single office, and began to redefine its role *vis-à-vis* headquarters and the six states of Region 1. Given that about 40 percent of EPA's 18,375 employees work in regional offices, such changes may have a large impact on EPA as a whole.³ They may already presage a step

toward the nation's adoption of an environmental protection system based more on achieving specific environmental goals than on meeting activity-based targets.

It is safe to say that most Americans do not care how EPA is organized, whether a local factory has one permit or 30, or what statutory basis or statistical model agencies use to gather consistent, reliable data. As Americans have demonstrated over the last three decades, however, they do care about the environment: about reducing health threats from pollution, about protecting endangered species and wild places, about leaving future generations of Americans a natural environment that is as rich, beautiful, and sustainable as possible. Many Americans also care about environmental governance: it makes a difference to farmers if new rules are coming from EPA or the Department of Agriculture, it makes a difference to businesspeople if they have a chance to review their corporate data before it is posted on the web, and it makes a great deal of difference to many Americans whether the nation's environmental laws apply to people, regions, and companies fairly.

The three scenarios that follow start with the broad range of governance issues described above and then combine them in different ways. For example, in the first scenario, the private sector and a host of environmental groups have exploited the potential of the web in disseminating environmental information, while EPA has missed out. In the second and third scenarios, EPA has established itself as the most credible provider of web-based information. In the second scenario, EPA drives a host of national environmental programs, while in the third, the agency focuses primarily on information, leaving most of the rest of the regulatory process to state and local governments. In all three scenarios, Americans support environmental protection, though they choose very different institutions and tools to achieve it, and the results vary somewhat based on those choices and the other details in the scenarios. The scenarios do not follow the dictates of "Goldilocks Effect:" that is, one is not too optimistic, one too pessimistic, and one "just right." Rather, the panel hopes that readers will use them as an inspiration for fresh thinking. Imagine:

Scenario 1: The Green Web

Frustrated by almost a decade of gridlock in Congress and inertia in federal and state environmental agencies, environmentalists all but stopped lobbying Congress at the turn of the century and went shopping instead. Nongovernmental organizations joined forces with a new generation of manufacturers, utilities, and Internet companies to establish dynamic markets for environmentally friendly products and services, ranging from organic foods to clean cars and electricity generated from renewable sources. North American and European consumers in large numbers chose to "buy green," even when costs were somewhat higher, and manufacturers responded. Americans deliberately invested their pensions in socially responsible stocks, and boards of directors responded. By 2002, most automakers could assure consumers that firms registered to the ISO 14001 standard for environmental management systems produced their cars. By 2012, consumers could set their e-shopping programs to purchase only completely recyclable products.

Activists with digital videocameras and inexpensive remote sensors played a critical role in establishing and policing the system. They called global attention, via the Internet, to environmental "predators." Originally, the term was reserved for companies using wood cut from old-growth forests, or routinely topping the web listings of toxic emitters, but it eventually came to be applied to ranchers with lax grazing practices and hotels with above-average water use. The green web could provide so much information to consumers committed to using that informa-

tion, that it corrected one of the classic market failures: the propensity of firms and individuals to externalize their environmental costs.

Most federal and state environmental regulatory programs atrophied. They stopped trying to innovate, their most creative talent went elsewhere, and they hunkered down into a routine role as a regulatory backstop: issuing perfunctory permits and enforcing actions against a relatively small number of firms and facilities that were either indifferent to the web's pressure, or were operating in areas where consumers and investors simply didn't care.

EPA missed its chance to become one of the premiere "content providers" on the green web, ceding that role to several large NGOs and for-profit companies. Thus consistency and objectivity have not been among the green web's strengths. Bad data can be flashed around the world—and have rapid impacts on the fortunes of individual companies or whole sectors. The green web tends to feed consumer fears and accelerate consumer fads. As a result, international markets punish genetically modified foods one day, a particular brand of cotton the next, and goods produced in Nation X the next, and then reverse their fortunes a year later. The very attributes that made the green web so powerful a force for environmental improvement—the speed with which it can spread information to households around the world, and the automatic connections it can provide between consumer preferences and purchases—has left many wondering what would happen if consumer demand for greener goods began to flag.

Scenario 2: Old Glory

Not since the dawn of the Great Society, some federal officials noted, had Americans held them in such high esteem as at the end of the first decade of the 21st Century. Americans had a renewed faith in Congress and the executive agencies, including EPA, because the institutions had successfully transformed themselves to better achieve the nation's priorities.

Americans wanted cleaner air, cleaner water, and some assurance that their grandchildren would be able to enjoy the outdoors and a stable global climate. They were willing to do their share to achieve those goals, but they really did not want to have to sign onto the Internet every night to check up on corporate emissions rates, the source of their strawberries, or the compliance record of the company trying to build an office park downtown. And they wanted to be sure that everyone played by the same rules: that if gas-guzzlers were bad for the atmosphere, *no one* could buy a gas-guzzler.

So, Americans turned to federal and state regulatory and natural-resource agencies to manage the environment for them. EPA now works as much as possible through market-based and information-based measures, providing sources of pollution with as much flexibility as possible in meeting national or regional ambient standards. Emissions-trading systems rely on web-based registries; companies report their environmental impacts through constantly updated websites managed by an office initiated jointly by EPA and the Securities and Exchange Commission. Although those new regulatory requirements are less prescriptive than in the old days, they are still hotly contested and often overturned. The agency's enforcement unit relies increasingly on remote sensing and other information technologies to automate compliance assurance. Compliance rates are very high. The degree of flexibility available to companies makes enforcement more difficult in some sectors, though scandals have been rare; companies are always mindful of the public relations damage NGOs can produce if they see fit.

Congress poured money into expanding and rebuilding public water and sewer systems; into the permanent acquisition of open space and environmentally sensitive land; into farm payments targeted to achieve environmental gains; into environmental monitoring and data

interpretation; and into basic research with the potential to improve energy efficiency over time. Congress eventually revised the federal tax code in ways that made environmental conservation less expensive and environmental harm (producing carbon dioxide, developing natural areas) more expensive. The myriad actors in the economy responded quickly to the change.

Ironically, as federal and state environmental agencies and programs became more effective, Americans stopped worrying about the environment, losing track of where government programs were heading. As the government became more environmentally sophisticated, citizens became less so. Some bureaucrats worry about what would happen in the event of a problem that would require public understanding and action, not just public support.

Scenario 3: Local Option

Just as simple organisms confronting varied habitat evolved into the dazzlingly complex array of specialized species that inhabit the earth today, so too has the management of environmental problems. States, acting singly or in coalitions, have assumed primary responsibility for managing most air and water pollution problems. People organized around specific places—watersheds, mountains, or economic resources—are the front-line of environmental action in most parts of the country.

By 2010, several states replaced traditional permitting systems with individual compacts negotiated between and among firms, communities, and state regulators, which achieves local environmental and economic goals at relatively low cost. Some sub-state areas have allocated substantial resources to buy development rights to valuable habitat. States sharing a large watershed created their own nutrient-trading system to protect the river and its estuaries. The people in a neighboring watershed decided to let their rivers become eutrophic, rather than impose any additional costs on their resident farms.

EPA plays a critical stabilizing role in this dynamic and varied system: it maintains a credible and up-to-date environmental information system. Data from reliable sources all over the country pour into the EPA network, enabling communities, states, and regions to see where environmental conditions are improving or worsening, where particularly harmful sources of pollution originate, where human exposures to various hazards are highest, and where different management approaches appear to be having the biggest impact. EPA also guides a forward-looking environmental research program that continues to shed light on environmental risks to human health, ecosystems, and economies. Armed with that risk information and local performance data, people ask their state and municipal governments and their local businesses for the environment that they want. The effectiveness of those state and local authorities, of course, varies across the country.

The federal government has essentially abandoned the notion of setting consistent regulatory standards for the whole nation and has delegated to the states all of its place-based permitting programs (retaining pesticide registrations, toxic release inventory, the acid-rain trading program, and a few other programs that are national in scope). EPA also concentrates on global environmental issues. The millions of Americans living in coastal areas have called on their representatives in Congress to take serious action on climate change. The agency offers little assistance, however, when conflicts arise among states. EPA's information systems might clearly identify a group of polluters in two states that are degrading air quality in four states to their east, but the downwind states have few levers to move their neighbors to act.

Lessons from the Scenarios

The three scenarios illustrate a number of points, chief among them that the United States will need a strong federal environmental regulatory agency for decades to come. New technologies—monitoring systems, the Internet, fuel-efficient cars—have the power to transform *how* the nation achieves its environmental goals, but they cannot miraculously eliminate the governance challenge of environmental protection. The nation is so broad and diverse that only a federal system actively engaged in resolving local, state, and national conflicts can reliably lead to enhanced environmental protection at the lowest possible cost. EPA must remain the backbone of the system, establishing national policies and standards, ensuring a degree of consistency across states, and engaging in global environmental issues.

Although the stability built into the status quo inhibits innovation, it also prevents many environmental problems from getting worse. The nation's basic system of environmental regulation is—and will continue to be—an essential component of environmental protection. It is largely through regulation that Americans have made companies, towns, and one another take responsibility for their potential impacts on their shared environment.

It appears unlikely that any individual player will be able to dominate the flow of environmental information over the Internet. As the “green web” scenario illustrates, a wide range of businesses and NGOs will use the web to promote various causes, and to provide information that may greatly enhance the efficiency of environmental protection. Freedom of information is a profoundly American tradition, and should be a part of the environmental governance system of the future. For the nation to reap the full benefits of the information age, however, the federal government must establish itself as the most credible source of consistent, reliable, and useful data about sources of pollution, environmental hazards, and place-specific environmental conditions. EPA has a critical role in building that system, though several other federal agencies and all of the states have essential roles as well.

The Leadership Challenge

The innovations described in this report demonstrate some of the approaches that the nation and states will need to use to make progress against significant outstanding environmental problems. In most cases, the innovations also demonstrate the value of a precious commodity in environmental management today: leadership.

At the national level, EPA was preoccupied for most of the 1990s by political struggles between the White House and Congress, and between the federal government and the states. Since 1995, it has seemed as if a stalemate between Congress and the administration on issues of funding and authority were the highest environmental goal achievable. As a result, many who believe statutory reform could make environmental protection more effective and more efficient have rejected legislation as a productive strategy. They simply have not trusted Congress to pass legislation that would help the nation address its environmental problems.

During the same time frame, the courts struck down a number of EPA initiatives—including an attempt to reduce human exposures to ozone and fine particles—finding that the initiatives exceeded the agency's authority.

The combination of those forces created challenges for EPA and its state counterparts. It was clear to many inside and outside EPA that the agency needed to innovate, to “reinvent” its programs, yet the distrust between EPA and Congress effectively prevented securing congressional authorization for significant reform. The administrator created an Office of Reinven-

tion, which made headway on a number of issues within the agency and tried to encourage innovations among the states. In 1997, an Academy panel concluded that those efforts were moving in the right direction, though ultimately of marginal impact because they were so tightly constrained by EPA's authorizing statutes, as well as by an agency culture that was averse to taking risks.⁴

Those constraints are evident in virtually all of the case studies the panel commissioned for this project. The innovations are encouraging, but they are not dramatic or unequivocal. Most of them make managers operate with one hand tied behind their backs. Often, the most forceful constraint has been EPA's Office of Enforcement and Compliance Assurance, which has resisted innovations proposed by EPA and the states when those innovations appeared to lack statutory legitimacy or might have weakened EPA's capacity to enforce the law.

Regardless of who wins the 2000 presidential and congressional elections, the next EPA administrator will have to deal with the aftermath of five years of stalemate on environmental policy in Washington. Continuing in the same path would leave the new administrator without a legacy, but, more importantly, it would leave the nation even more frustrated with its government.

To make progress on outstanding environmental problems, the administrator will need a good ear—to hear the public's mandate—and a gift for challenging Americans to do their part in accomplishing that mandate. The administrator will need to articulate a vision for the agency and its relationships with the states, and then engage the agency and the states in fulfilling that vision. And, of course, the administrator will need to find a way to work constructively with Congress—or around Congress, if it proves incapable of meeting its own leadership challenges.

This report focuses its recommendations on the steps the next EPA administrator should take to encourage innovation throughout the environmental management system. Viewing the next administrator as “the only hope,” however, is a prescription for failure. There are thousands of other environmental leaders at work in America and abroad—people in business, NGOs, schools, state houses, and town halls; people within EPA itself and its state counterparts; people in numerous federal agencies with an impact on the environment—with whom the administrator must work, and from whom EPA must learn. This report includes information and advice for environmental leaders throughout the governance system.

Setting the Agenda for 2001

The next administrator, after consultation with Congress, should identify a manageable number—perhaps as few as two or three—of significant environmental problems to address first, and then marshal the support and develop the tools that will be needed to make progress. The Academy panel commends three problems in particular because they pose high risks to human health, the sustainability of ecosystems, and other social values, and because they are ripe for action: nonpoint runoff of nutrients, sediments, and other pollutants into surface waters; smog; and preparing for a reduction of greenhouse gas emissions.

Making progress on any of those problems will require new ways of thinking; new market-based tools to keep the costs of action as low as possible; new levels of coordination across federal agencies, state and local agencies, and numerous sectors of the economy; and new ways to share information and responsibilities with the American people. What is most important, strategically, is that the administrator innovates *for a purpose* that Americans agree is important. Innovation for its own sake is unsustainable, as well as pointless. As the studies described in this

report demonstrate, innovation is difficult, time consuming, and filled with risk. Innovators need to know that their efforts have a chance of making a significant improvement in a significant problem. Although smog, nonpoint runoff, and climate change are difficult issues to address, technically and politically, they are of such magnitude that Americans should find them worthy targets. Innovation, by necessity, will follow, and so too will progress on the other environmental problems which must remain part of EPA's agenda.

Report Structure

The rest of this report explains the Academy's research into innovative environmental management and develops recommendations for applying some of those techniques to outstanding environmental problems. Chapters 2 through 6 draw from the Academy's own research as well as from the 17 studies completed by independent research teams for this project. (The full research reports are available in separate volumes and on-line at the Academy's web site.)⁵ Each of those chapters concludes with findings and detailed recommendations. Chapter 7 synthesizes the reports' findings and recommendations and presents them as a plan for action.

Appendix A lists the research teams that prepared papers for this project. Appendix B presents a summary of the major statutes that EPA administers. Appendix C is a glossary of the terms used in this report. The panel members and Academy staff responsible for the report are listed in Appendix D.

Research and Analytical Methods

This is the third major report about the Environmental Protection Agency prepared at the request of Congress by the National Academy of Public Administration's Center for the Economy and the Environment. In 1995, the Academy published *Setting Priorities, Getting Results: A New Direction for EPA*,⁶ and in 1997, *Resolving the Paradox of Environmental Protection: An Agenda for Congress, EPA, and the States*.⁷ The former analyzed the consequences of EPA's media-specific statutes, its stove-piped management, and its failure to integrate planning and budgeting in ways that would lead to more effective priority setting and use of analytical tools such as risk assessment and cost-benefit analysis. The 1997 volume tracked several of EPA's most important "reinvention" initiatives, and concluded they were having only marginal impact. The report stressed the need for performance-based approaches to regulation and state oversight in order to encourage the regulated entities to find the most cost-effective ways to meet their federal environmental obligations. In both of the projects, an Academy panel of fellows and others with relevant expertise supervised a research staff and prepared a final public report.

The U.S. Congress commissioned this report in EPA's FY 1998 appropriations act. The appropriations committees directed EPA to dedicate money to the project:

\$2,000,000 for the National Academy of Public Administration to design and manage a series of independent evaluations of recent EPA initiatives to improve the effectiveness and efficiency of EPA activities. These studies shall also assess how lessons learned can be built into ongoing agency programs. The conferees note that EPA has yet to develop a program evaluation capacity, a critical element of meeting the requirements of GPRRA and ensuring the most effective allocation of resources. EPA is to enter into an agreement with the Academy within 90 days so that the reports may be made available to the Congress within two years.⁸

The Academy responded by forming a distinguished panel to oversee the work. That panel and the staff of the Academy's Center for the Economy and the Environment spent several months talking with senior EPA managers, EPA staff members, state environmental commissioners, environmental advocates, business leaders, and others in order to identify the most significant innovations in environmental management for evaluation. The Academy also issued a general call to researchers and others to propose innovations for study. To the Academy's delight, many program managers within EPA urged the Academy to evaluate their programs. The process produced a long list of innovations from which to choose. Eventually the panel settled on the topics presented here, and commissioned a set of highly respected independent researchers to undertake the analyses and write reports describing their findings.

Although EPA and other officials with direct knowledge of the innovations in question reviewed each of the research papers, which were also reviewed by the Academy panel and peer reviewers, the researchers had final control of their own reports including their findings and recommendations. Simultaneously, the Academy staff conducted its own research into innovative management approaches and organizational issues. In June 2000, the Academy convened some 40 environmental leaders from around the nation to discuss the findings, recommendations, and implications of the 17 research reports in a roundtable setting presided over by the panel.⁹

The staff and panel consolidated all of that analysis and commentary into this report. Senior EPA officials have reviewed and commented on the document, though the Academy panel exercised final say in the publication. The process has yielded a work of uncompromised independence and objectivity

Transforming Environmental Governance

The nation's environmental management "system" is so rich and complex that no one institution—not Congress, not EPA, not the states or Wall Street, or even the myriad NGOs and private companies—controls the system. Yet each of those institutions, acting separately, *can* change the system. Indeed, each *has* changed the system. The innovations described in this report have originated and propagated within EPA, state agencies, communities, and companies.²⁵⁴ Because promising practices for dealing with the 21st Century's outstanding environmental problems emerge at many points in the system, EPA and Congress must redefine their leadership roles to foster broad innovation. In fact, the nation will meet its environmental and social goals only if Congress and EPA deploy new policy tools to better mobilize the nation's resources. This chapter lays out a strategy for EPA, Congress, businesses and NGOs, to achieve that *transformation* of environmental governance.

In 1995, an Academy panel found that the nation's system for protecting the environment was "broken"—in the sense that it was not addressing high-risk problems, was not responding to environmental problems that crossed environmental media, and was failing to draw on the problem-solving capacity of states, cities, and the private-sector firms it was regulating.²⁵⁵ In each of those respects, the system is still broken. High-risk problems, including non-point water pollution, smog, and the emission of greenhouse gases, are not responsive to traditional federal or state pollution-control programs. The innovations examined in this report demonstrate practical ways to correct the system's failings, to transform environmental governance as a whole.

Each of the previous chapters of this report focused on one part of the nation's environmental management system: the relationships between regulators and businesses; the marketplace; watersheds; the interface between EPA and the states; and strategies for organizational change. Each chapter described promising innovations, documented how some had been frustrated by business as usual at EPA (and in some cases in state environmental agencies, businesses, and NGOs as well), and called for renewed, more effective efforts to make change. Together those chapters present a case for the transformation of EPA, state environmental agencies, and the system within which they operate.

The Academy Panel summarizes that case in the findings listed below. The section following the findings reprises the scenarios that opened this report and draws from them a strategy to

tune the nation's environmental protection system to the problems and opportunities of the 21st Century in America. The chapter closes with the panel's recommendations to the next EPA administrator, the next Congress, and those businesses and NGOs that must help lead the transformation. Those recommendations synthesize and expand upon the recommendations at the end of the previous chapters.

Summary Findings

Finding 1: The United States needs—and will continue to need—a strong national environmental regulatory agency.

- *EPA must have the capacity to set national environmental goals and regulatory standards, particularly for problems that cross state or national borders, or that pose risks to future generations.* Congress must provide EPA and other federal environmental agencies the capacity to identify and manage environmental problems of national and global significance. The system in which the agency operates must give states and municipalities latitude to set their own environmental goals as well. It should encourage technological innovation, civic engagement, and the spread of knowledge. EPA and Congress must set the direction and assess the performance of the entire system.
- *Vigorous enforcement by EPA and states has been the foundation of the nation's regulatory system and will continue to be indispensable.* The status quo, however, will not deliver the environmental quality Americans want. As the nation addresses other problems besides pollution by large, highly visible facilities, and encourages businesses to redesign their products, services, and production processes to reduce negative impacts on the environment, EPA and states need to develop additional information about market-based tools, and to develop integrated strategies that balance those new tools with traditional regulation. They must also determine ways to make the most of civic capacity and public opinion.

Finding 2: EPA and the states have demonstrated the potential and challenge of performance-based management.

- *Federal and state regulators have made serious efforts to incorporate more environmental information into their decisions.* Those efforts have shown that redefining success in environmental terms makes sense to agency officials, businesses, and the public. They have also demonstrated that environmental measures alone are insufficient for agency management. The states have not done enough to make “core performance measures” work and EPA has not encouraged them to do better. State commissioners and EPA need to renew their efforts to define measures that each will use to set priorities, measure success, and improve the environment.
- *Neither EPA nor most of the states has made the changes necessary to realize the full potential of the National Environmental Performance Partnership System.* The fundamental principles of NEPPS are sound: that EPA's regional offices and the states should negotiate performance objectives based on thorough analyses of the environmental and management problems they face. The states should acknowledge that it is fair and appropriate for EPA to compare their programs' performance using some form of “core performance mea-

tures.” EPA’s program offices and regional offices should acknowledge that EPA’s oversight of states that are doing their jobs should focus at the program level, not at the activity level or on individual permits.

Finding 3: EPA’s statutory framework and its conservative culture inhibit innovation both within the agency and in the states.

- *Pilot projects have demonstrated the potential of new policies and tools to improve the environment.* For a number of years, EPA, states, businesses, nonprofits, and other entities have developed and tested new tools in a series of innovative efforts. Several of those—cap-and-trade systems, and collaborative approaches, for example—have proved that they can deliver environmental improvements more effectively or efficiently than traditional tools.
- *Neither EPA nor its state counterparts has transformed its core programs to use new tools to address effectively or efficiently some of the most serious environmental problems facing America.* Innovation at EPA and the states is still of marginal significance. There is no system to identify and sustain the most productive innovations.
- *EPA’s successful innovations and management reforms have been those it could carry out within a single national program office. Most efforts to innovate across programs have failed.* The agency made a significant improvement in the management of the Superfund program, in OECA’s use of its audit policy and “integrated enforcement” tools, and in the development of trading systems in air pollutants. The agency’s efforts to coordinate its national program offices through Project XL, priority setting through NEPPS or GPRA, the Common Sense Initiative, or ecosystem protection, however, have demonstrated that EPA’s media-based organizations remain fundamentally unable to work together.

Finding 4: Reducing the damage to surface waters and estuaries caused by nutrient runoff is within reach.

- *A shift to TMDLs and standards based on ambient water-quality poses particular challenges and opportunities. Implementing TMDLs is most likely to succeed in places where civic institutions are strong, extensive environmental data are available, and citizens have a relatively sophisticated understanding of environmental problems and management.* In such locations, TMDLs should yield environmental benefits far superior to those that could be achieved by traditional regulation of point sources alone.
- *Optimal approaches will vary by watershed, so EPA and other federal agencies will need an exceptionally flexible approach.* Cap-and-trade systems, and even open-market trading systems, will work in some areas. In others, state and federal agencies may need to target public funds to produce the largest possible gains.

Finding 5: The federal government must be a source of credible, authoritative, and useful environmental data.

- *Information technologies may fundamentally change how federal and state governments regulate or hold firms accountable for meeting environmental requirements.* Information-rich “environmental management systems” at the facility level can help plant managers identify problems and opportunities for waste-reduction. More facility-level caps, whole-facility regulation,

and cap-and-trade systems within airsheds or watersheds are possible in part because of better monitoring systems to hold firms accountable to the public and one other. Such trading systems provide incentives for firms to find their own best ways to reduce environmental harm at the lowest possible cost. Those attributes may make cap-and-trade systems an essential component of any national effort to reduce greenhouse gas emissions.

- *No institution will be able to control the information on “the green web,” and a diversity of sources will probably strengthen environmental awareness.* Nevertheless, Americans and American policymakers will need a source of credible, comparable environmental information they can trust and use. The government should be that source.
- *EPA’s Office of Environmental Information lacks the authority it needs to achieve its mission.* As it exists today, the office suffers from the same organizational weakness that has impaired Project XL, NEPPS, and the Common Sense Initiative: the office needs the authority to reshape and integrate the agency’s media-based data systems.

Finding 6: Environmental policy and direct action must continue to flow from Americans’ individual and collective values and goals. Civic involvement in environmental protection is important, particularly in addressing problems at the local level. Collaborative watershed-management projects demonstrate the potential for locally driven action. The challenge of reducing environmental threats to large interstate bodies of water illustrates the need for state and federal action as well.

For the 21st Century

The nation’s economy, technical capacity, and environmental conditions have changed dramatically in the three decades since Congress passed most of the laws that have framed environmental governance. Although they have served the nation well, today their inadequacies manifest themselves in the numerous ways identified in the previous chapters. Adopting legislation—or adapting institutions—for the economy, technology, and environment of 2020 or 2030, however, remains a difficult task. To help readers imagine how a new system of environmental governance might evolve over the next two or three decades, the Academy Panel framed three scenarios of the future: the Green Web, Old Glory, and Local Option. They illustrated how choices made by Congress, EPA, states, businesses, and ultimately, by American voters and consumers, could influence the future of the nation’s entire environmental protection efforts.

The Green Web imagined a world where businesses, consumers, and NGOs used the power of the Internet to generate environmental gains. The highly desirable features of the scenario—its reliance on information and individual choice—were tempered by the lack of a stabilizing rudder: EPA had lost much of its authority, both as a regulator and as a provider of reliable information. The resulting system was so volatile that it appeared at risk of degenerating: information could become mere noise; individual choice could become anarchy. Without a strong national regulatory program, environmental protection would be a game of chance.

Old Glory described a world in which Americans vested their trust and authority in federal institutions. Those institutions had developed sophisticated tools to maximize their capacity to achieve public purposes with minimal direct control. Instead of inflexible technical standards

and complex regulations, EPA relied more on financial incentives, market drivers, and the power of information to ensure that individuals, companies, and communities did their part to protect the environment. The scenario described a world less chaotic than the Green Web, but also one less connected to the American people, the real source of national authority. The scenario described a technocracy—well meaning and effective—but at increasing risk of losing its public mandate by creating a citizenry without the environmental understanding it would need to respond to a crisis.

Local Option presented America as a nation of committed citizens acting through local and state institutions—both public and private. Communities of interests fought for their values, which were increasingly measured in environmental terms. Some communities and states achieved their environmental and economic goals and celebrated their ability to use local democracy to connect people, action, and results; others, however, remained victims of circumstance: of depleted natural resources, cross-border pollution, and a downward cycle of poverty. The federal government provided a valuable service—good information and research—but it neither sought nor assumed a national consensus on environmental quality. National NGOs focused their actions locally as well. Some businesses flourished in those conditions; others found it difficult to manage national operations under such varied circumstances.

Three visions of the future of environmental governance: three worlds somewhere between utopia and dystopia. The panel's preferred vision of the future diverges from each of those scenarios, however. The strategy outlined below is intended to foster an environmental protection system that can address environmental problems—including those caused by many small sources—effectively and at the lowest possible cost to society, one that can exploit the power of new information technologies, particularly in ways that will help strengthen informed connections among voters, the environment, government agencies, and businesses.

In the panel's vision, which we might call *environment.gov*, EPA or another federal agency will be a trusted and reliable source of information about the environment, enabling citizens, companies, and public agencies to make informed choices about the environment. EPA will remain a strong regulatory force, the agency that guides nationwide action on problems of national or global significance. The agency will be using a broader range of tools to mobilize action than it uses today, however. Market-based mechanisms, such as allowance-trading systems, will drive companies, communities, and individuals to innovate, to find their own best ways to meet the public's environmental targets. States with aggressive, successful environmental programs will lead the way in many areas, and EPA will respond with appropriate technical support, even working for change on the states' behalf in Congress when authorizing statutes inhibit state innovation. In *environment.gov*, systems are in place to monitor the impacts of experimental efforts, and to modify them if they fail to work as planned. Thus experimentation and change will not be forced to wait for "consensus" among bureaucrats or stakeholders.

The environmental protection system evolves toward one based on performance, on achieving improvements in environmental quality and related social goals. The panel's vision, like environmental protection, will not "just happen." Rather, the next administrator must act strategically to *make* it happen, building on initiatives already underway in states, companies, and in the agency itself, and challenging entrenched constituencies to do more, to take risks to achieve environmental goals.

The next EPA administrator should be America's chief advocate for environmental protection, the definer of EPA's national purpose. Part of the administrator's leadership challenge will be to keep reminding Americans of the work that the nation—the American people—still needs to do to protect the environment. Another part will be to listen to Americans and build a pragmatic political agenda

that moves the nation forward. The administrator's success will ultimately depend on his or her ability to work with Congress, the states, and individuals to define national environmental goals, and to focus the nation's energy on achieving them. A truly gifted administrator will accomplish that without acting as if he or she is at the pinnacle of the only institution concerned with environmental protection. On many issues, after all, activists in NGOs, communities and the private sector and any number of state and local agencies will be ahead of EPA.

The administrator should focus the nation's attention on a small number of significant environmental problems that are not being addressed by the current regulatory system. The panel has recommended that those include smog, nonpoint water pollution, and greenhouse gases, though other problems that resist end-of-pipe solutions certainly fit on that list. Because addressing such problems will require immense institutional change, the list should be small enough to enable the administrator to stay focused. Of course, EPA will have to continue most of its conventional work even as the administrator helps it adjust to new ways of doing business. As the agency develops strategies to reduce nonpoint pollution or climate change or smog, however, its personnel will discover more effective ways to manage the old problems as well.

The administrator should use the new tools of environmental protection to address those problems. The administrator should help the nation adopt the most effective management strategies available, even when doing so will require new authorization from Congress, new relationships with the states and regulated entities, and new attitudes and activities within the environmental protection system. Generally, the new environmental agenda will require an increased use of:

- information: better measurement of environmental conditions and trends to help define problems, maintain accountability, and measure the success or failure of innovations;
- market tools and other approaches that create strong incentives for states, companies, and individuals to find the cheapest ways to reduce pollution;
- place-based management strategies encouraging multimedia problem solving.

To make progress in reducing nutrient runoff into surface waters, for example, the administrator should: encourage states or regions to implement dynamic trading systems among point and nonpoint sources, strengthen the water-monitoring network among the states and raise the quality of data used for decision-making. He or she should work with the regional offices to find the most effective management structures in each region to work with other federal agencies, states, communities, and watershed councils in addressing the runoff problems in specific places. The administrator should ensure that innovative approaches are evaluated as they unfold, providing decisionmakers and the public with the information they need to keep improving programs. In places where local institutions or state agencies are already making significant headway, the administrator should ensure that the agency provides technical and political support—and captures lessons for others to learn.

The administrator should develop a comprehensive strategy for change. The innovations discussed in this report illustrate the complexity of the administrator's challenge: the system of environmental governance in America is so complex and so rooted in statutes and relationships that it seems actively to resist change. The next administrator will need a strategy to overcome that inertia. The strategy must include ways in which the administrator will allow the agency to mobilize its talents, and will infuse its culture with an appreciation of what EPA and others could accomplish with the new tools. The strategy must include a means of cooperating with Congress on the statutory reforms and financial resources that will be necessary to more effec-

tive and efficient environmental protection. The strategy must also involve the states, or at least those states that are firmly committed to environmental protection and prepared to invest the time and resources necessary for testing new ideas. The administrator should also support alliances of environmental organizations and business groups as they recognize mutual advantages in securing the nation's environmental future.

A strategy to tackle nonpoint pollution, for example, might start with approvals of state initiatives to create allowance-trading systems in the Upper Midwest. The agency might encourage those states to institute trading ratios favoring credits verifiable through some kind of direct monitoring system, thus creating incentives for the private sector to develop better technologies to detect changes in nonpoint runoff and water quality. The plan should include a significant partnership with the Department of Agriculture, as well as bipartisan coalition building among the members of congressional committees handling agricultural and transportation issues. The focus of the congressional action would be authorization to EPA and the states to implement more sweeping allowance-trading programs, funding for the development of new monitoring technologies, funding for data-gathering and reporting, as well as for farm subsidies to secure nonpoint reductions in the absence of allowance-trading systems.

Continuing the nonpoint example, the administrator's internal-management strategy would need to reward personnel from the Office of Water, OECA, the Office of Policy, Economics, and Innovation, and the regional offices that prove themselves able to work together with states and watershed councils to solve problems expeditiously. The strategy should strengthen the capacity of the agency's traditional programs to address place-based problems, while also testing new organizational models at the regional offices and headquarters. The strategy should ensure that the agency's personnel office is hiring new staff capable of working in communities, with market systems, with advanced data communication technologies, and with some of the uncertainty that will accompany the transition to market-based and information-rich approaches to environmental protection.

At the heart of the nonpoint strategy, however, would be a public commitment to reduce nutrient runoff, to improve water quality and reverse the damage to fisheries and ecosystems in rivers, lakes, and estuaries. The administrator should carefully frame that national goal, and build public legitimacy for it, then ensure that the nation's and the agency's progress is measured and reported, that particular efforts are evaluated for their efficacy and cost-effectiveness, and that all the myriad actors in the drive for cleaner water have access to reliable, up-to-date information. Simultaneously, local and state leaders should frame goals for their own watersheds. EPA and the states should reconcile their goals, responsibilities, and work plans through a robust negotiation structured as part of the National Environmental Performance Partnership System.

In the 21st Century, the U.S. Environmental Protection Agency must be capable of responding rapidly to changing economic and environmental conditions, regardless of the particular problems it tackles. The agency must be able to adapt its policies and programs over time and for particular places. It must have a relationship with Congress—and a statutory base—that fosters innovation and adaptation. And EPA must help create the systems that will encourage each state, each company, each farm, to be equally dynamic, inventive, and motivated to find the best, least-expensive way to fulfill its social and environmental obligations. The agency and Congress must replace the nation's traditional emphasis on compliance with a focus on performance.

Summary Recommendations

The Academy panel offers the following recommendations with the hope that readers will see them as a summary of this volume and the recommendations that conclude Chapters 2 through 6. Indeed, the following recommendations build on and reaffirm the work of the Academy panels that published *Setting Priorities, Getting Results* in 1995 and *Resolving the Paradox of Environmental Protection* in 1997. Because this report is being published during the transition to a new administration in Washington, the panel addresses its first recommendations to EPA's new administrator. In a broader sense, though, all its recommendations are intended for the entire community of Americans that shapes environmental policy through their jobs, their civic engagement, and their passions.

The next EPA administrator should:

1. Tackle the big environmental problems

- a. Select two or three of the most difficult remaining environmental challenges and engage the nation and Congress in developing strategies to address them. By necessity, such an undertaking will require the administrator to adopt innovative tools to address those problems. The panel suggests three environmental issues as worthy of a national commitment of energy, resources, and innovation:
 - reducing nutrients in watersheds
 - reducing smog
 - preparing to reverse the accumulation of greenhouse gases
- b. Define the challenges in terms of measurable environmental improvements.
- c. Commit the agency to deploy the most cost-effective tools to achieve those results.
- d. Build the nation's familiarity with the market-based tools that will eventually reduce greenhouse gas emissions.
- e. Encourage states to experiment with bold forms of regulatory and non-regulatory management, such as facility-wide permits, performance-based management contracts, cap-and-trade systems, pollution taxes or fees, information requirements, collaborative approaches to setting goals and designing strategies for protecting watersheds, and compliance-assistance tools of various kinds.
- f. Work with Congress to secure the authority and appropriations necessary to make those innovations work. The administrator should seek explicit congressional authorization to use cap-and-trade systems to reduce nutrients in watersheds and the components of smog in air. That authorization should enable EPA to issue group permits in airsheds and watersheds where states or EPA regions are capping pollution allowances, and using trading systems rather than traditional permits.

2. Invest in information and assessment

- a. The administrator should work with Congress to create an independent, well-funded bureau of environmental information. In the meantime, the administrator should strengthen the existing Office of Environmental Information by leading efforts to integrate and rationalize the data systems of the media programs, and to develop other objective data of high quality. In addition, the administrator should strongly support the office's efforts to work with the states to create a cooperative federal-state data system based on uniform definitions and comparable scientific methods.
- b. The administrator should invest money and political capital in building a credible and comprehensive system to monitor the quality of the nation's surface waters. That could be done by insisting that all the states have delegated authority to implement federal water-quality standards, and that they bring their monitoring networks and report protocols up to high, consistent standards that would provide sufficiently detailed water-quality data to make sound management decisions.
- c. The administrator should *use* environmental data in decisionmaking at the national level, and when negotiating with states on National Environmental Performance Partnership System (NEPPS) agreements. The administrator should hold political and career managers accountable for achieving measurable environmental improvements.
- d. The administrator should build the agency's capacity to improve federal and state programs by investing in an external, peer-reviewed evaluation network.

3. Hold states accountable for results

- a. The administrator should redefine EPA's expectations of states in terms of environmental results, rather than only of process.
- b. The administrator and the state commissioners should revitalize NEPPS, requiring that states and regional offices base priorities and work plans on serious self-assessments informed by public participation. EPA should provide to those states with effective environmental programs substantial discretion in how they manage and deploy those programs. Regional offices should audit the effectiveness of such state programs, rather than review individual permits or activities.
- c. The administrator should also complete the transfer of routine regulatory functions from regional offices to the states.

4. Use all the tools available to change management cultures and practices to focus on achieving critical environmental goals

- a. Revamp EPA's planning and budgeting systems to move the agency towards strategic, performance-based management consistent with the intent of the Government Performance and Results Act (GPRA), eliminating those practices that reinforce fragmented programs and relationships.

- b. Develop and implement a strategy for addressing the outdated organizational structure of the agency, starting with reorganization of the regional offices. If necessary, EPA should seek statutory changes to allow reorganization that would end the fragmentation of the agency into separate media offices. In the meantime, the administrator should delegate more decisionmaking authority and management flexibility to those offices, while holding regional administrators responsible for achieving environmental progress. The administrator should give regional administrators budget-implementation authority to facilitate regional accountability and flexibility.
- c. Delegate decisionmaking authority clearly and demand expeditious, thoughtful decisions. Ensure that disagreements among program offices or among regions and headquarters are identified promptly and resolved. Replace the agency's casual demand for "consensus" with an explicit bias for action. Make certain, however, that actions are coupled with evaluation and accountability.
- d. Build EPA's management skills now to avoid a crisis as senior employees retire. The next cadre of managers will need new skills: expertise in place-based, cross-media management; economics and business; information technologies and communication; biotechnology; and international trade.

Congress should:

5. Authorize EPA and the states to use the tools they need to tackle the big problems

- a. Authorize EPA and the states to implement allowance-trading systems to reduce pollution in air and water, explicitly liberating such systems from the constraints of traditional facility-based permitting, provided that trades would not result in unacceptable risks in local areas.
- b. Empower EPA to let states try new approaches to address water quality and related problems in watersheds, including alternatives to total maximum daily loads (TMDLs) where those alternatives appear likely to improve the environment more effectively or efficiently than TMDLs could.
- c. Authorize and encourage state experiments with performance-track systems that replace traditional permits with whole-facility agreements or "beyond-compliance" strategies.
- d. Work with the administrator to create a statutory basis for continued experimentation and innovation in the nation's environmental system. Support innovation through the appropriations process.

6. Invest in information

- a. Appropriate sufficient funds for major improvements in environmental data and in program assessments.
- b. Authorize establishment of an independent bureau of environmental information and assessment.

- c. Direct EPA to redesign its implementation of GPRA to provide more information about the nation's overall progress toward meeting critical environmental goals.

7. Put aside partisanship because America wants Congress to solve serious problems.

- a. Members should use the environment to demonstrate that political parties can come together to set aggressive public-policy goals and provide the means to achieve them.
- b. Share with EPA a willingness to try new approaches that hold promise of better performance, and must refrain from unfair criticism of EPA if some innovations fail.
- c. Become an environmental leader. Members of Congress should join the administrator and the state commissioners in explaining to Americans why action on the big environmental problems is necessary and why innovation is essential in making progress. Members should help business leaders, environmental advocates, and governors find common ground on approaches that will achieve the nation's environmental goals at the lowest possible social cost.

State regulators and legislatures should:

8. Challenge EPA, Congress, and one another to transform environmental governance

- a. Continue to develop and deploy approaches to environmental protection that can deliver measurable results more effectively or efficiently, and be models for implementation across the nation. States should build evaluation into the design of innovative programs.
- b. Commit to environmental improvement, reject a rollback of environmental standards, and increase the political pressure on one another to deliver environmental results as well as efficient programs. Accept the challenge of reporting on a meaningful set of core performance measures, and being judged in relation to comparable states.
- c. Commit to build adequate environmental monitoring systems.
- d. Make the next iteration of NEPPS work by investing in better self-assessments, expanding public participation in setting priorities, and vigorously negotiating roles and responsibilities with the regional offices, particularly on problems of interstate significance.
- e. Equip communities and regions within the states with the tools and incentives to make land-use decisions that protect or enhance environmental values.

Business leaders, NGOs, and foundations should:

9. Embrace more effective and efficient policies for environmental protection

- a. Reject calls for a rollback in environmental protection at the state or federal level.

- b. Work with EPA and states on trading networks; building credible environmental management systems (EMSs) and International Organization for Standards (ISO) 14001 registration.

10. Help build a national system for gathering, disseminating, and using environmental information.

- a. Provide better information about firms' environmental performance to the public: both local communities and regulatory agencies.
- b. Nongovernmental organizations (NGOs) and foundations should support efforts to use environmental data and to evaluate environmental programs.
- c. The leaders in the information-technology revolution should lend their support and resources to help EPA and the nation build a dynamic information system. Their technical, financial, and political support could accelerate the transformation of EPA by a decade.

The next EPA administrator will have much good work to build on within the agency and among the states. Individuals, companies, communities, NGOs, and states have been testing new methods for making environmental progress. They are ready—even eager—for thoughtful, committed, consistent leadership to help them make even more progress.