Overall, EPA is participating as a partner in 14 designated e-Gov projects and is the lead agency for the government-wide Online Rulemaking Initiative to make the rule-making process more transparent to individuals and businesses.[14] By implementing this information strategy, EPA will keep pace with the rapid advances in information technology and meet the growing demand for reliable, quality environmental information.

In addition, the Federal Financial Assistance Management Improvement Act of 1999 mandates that federal agencies work together to streamline grant application and reporting requirements for all grants and to develop a central electronic portal for grant application and reporting. EPA continues to deploy the Integrated Grant Management System that is moving the Agency from a paper-based grants culture to an electronic culture by fully automating the grants process within the Agency. The system will also be capable of exchanging data with the E-Grant electronic storefront for recipient application and reporting, creating an all-electronic grant process. Grant information will be available online to every grant manager and project officer in the Agency for better decision-making. The system, which supports tracking of grant milestones, products, and post-award management activities, will save time and resources by eliminating duplicate data entry, avoiding mail and photocopy costs, and reducing the time it takes to track grants or build and maintain separate grant tracking systems.

INNOVATION

EPA and many other environmental policy leaders see a critical need for environmental innovation.[15] The U.S. environmental protection system is widely recognized as one of the strongest in the world. For more than 30 years, this system has succeeded in cleaning up some of the most visible and egregious forms of pollution and has provided Americans with strong environmental and public health protection.

But that legacy of progress is challenged by an increasingly complex set of environmental problems, such as global climate change and polluted runoff, that will require a broader set of tools than we have relied upon in the past. At the same time, EPA and other agencies are experiencing the reality of tight budgets and pressure to be more accountable for results. Other factors spurring environmental innovation include the availability of powerful new information technologies that can advance environmental knowledge and public and private interests in making environmental management a value-added endeavor. Yet another factor is the need to address sustainability, environmental justice, and other issues with interwoven social, economic, and environmental dimensions. Together, such challenges make environmental innovation an absolute imperative.

In 2002, EPA released a strategy to strengthen environmental protection through the power and promise of innovation. *Innovating for Better Environmental Results: A Strategy To Guide the Next Generation of Environmental Protection* is designed to drive innovation in environmental programs and provides a vision for what our environmental protection system should be.[16] That vision—one that is now widely shared in the environmental policy community—is for a system that puts more emphasis on results;

EPA's Innovation Strategy

- Enable state and tribal innovation
- Use innovation to solve priority problems
- Develop problem-solving tools and approaches
- Create a culture and organizational systems to foster innovation

that focuses on environmental responsibility, not just pollution control; and that uses multimedia approaches to address problems comprehensively rather than piecemeal. The system envisioned would rely more on incentives to motivate better environmental performance and on partnerships that help to leverage ideas and resources for greater environmental gain.

The Strategy's Four Elements

Developed in consultation with states, the Innovation Strategy consists of four interconnected elements that will enable progress toward this long-term vision and, in the shorter term, progress under EPA's *Strategic Plan*.

Promoting State and Tribal Innovation

The first element of the Innovation Strategy is designed to strengthen our partnership with states and tribes. With shared responsibilities for environmental programs, states and tribes are EPA's most important partners, and they share our interest in innovations that can improve results. The Innovation Strategy lays out a set of actions designed to enable state and tribal innovation. These include finding ways to improve the National Environmental Performance Partnership System and the Joint State/EPA Agreement to Pursue Regulatory Innovations—two policy tools that provide a means for jointly advancing innovation initiatives. Another priority is providing states with opportunities for earlier, more meaningful input in EPA's planning and budgeting processes, where decisions about resources for innovation are made.

Using Innovation to Solve Priority Problems

The second element of the Innovation Strategy focuses on using innovation to solve a set of priority environmental problems—greenhouse gases, smog, degrading water quality, and deteriorating water infrastructure. While there is a need for innovation in solving many environmental problems, these are especially important because they are persistent, widespread problems that are not being adequately addressed with the tools and approaches that exist today. From partnerships with industry sectors, to market-based trading programs that create an economic incentive for environmental improvement, to new information tools that support decision-making, the Innovation Strategy calls for a suite of creative approaches for making progress on these priority problems.

Developing Problem-Solving Tools and Approaches

The problems described in the previous section highlight the importance of continuously developing new tools and approaches that can expand and enhance environmental problem-solving. The third element of the Innovation Strategy focuses EPA on the continued development of tools that have already proven effective on a limited scale and that have applicability across many environmental programs. They include information tools that can improve our understanding of problems and solutions, environmental management systems (EMSs)[17] that can foster a more comprehensive approach to environmental protection, incentives that can motivate better environmental performance, environmental technologies that can improve results and lower costs, and performance measures that show how well innovations are working.

Creating a Culture and Organizational Systems to Foster Innovation

Finally, the Innovation Strategy focuses on what may be the most important element of all—creating a culture and set of organiza-

tional systems that foster innovation throughout EPA. The goal is to have each individual within the EPA workforce view his or her job more broadly, as an environmental problem-solver, a partner, a facilitator, and a leader, as well as a program implementor. Communicating results from innovations, rewarding the innovators, and ensuring that successful approaches are considered for broader replication are just some of the ways we will work to realize our innovation potential.

Innovative Approaches For Achieving National Goals

With its comprehensive focus and detailed plan for implementation, EPA's Innovation Strategy identifies a number of actions that will drive innovation throughout the Agency and ensure progress toward each of our national environmental goals.

Clean Air and Global Climate Change

From indoor environments to global climate change, EPA faces the challenge of developing air strategies that are workable on very different scales and for very different circumstances. We will meet this challenge by innovating in air programs, policies, and regulations. For example, our strategy for reducing smog calls for national leadership—creating new inherently innovative programs such as the Clear Skies Initiative, a new market-based cap-and-trade program modeled after the acid rain trading program.18 We will continue to develop new regulations where needed, but those regulations will be crafted in innovative ways to improve results, ease implementation, and decrease costs. Outside the regulatory arena, we will work to reduce smog and greenhouse gas emissions by developing new cleaner technologies and promoting the use of those developed by others. We are also creating a range of partnership and information programs to catalyze improvements across the Nation.

But federal government actions alone are not the solution. That is why we will continue to work at the international, regional, state, tribal, and local levels, providing information and tools to empower individuals, community groups, air quality officials, and other interested stakeholders who want to work for cleaner, healthier air.

The Innovation Strategy also calls for management actions that will lead to more efficient and effective regulatory approaches to clean air. One action is to evaluate pilot projects that can show whether an innovation has value. For example, in the mid-1990s, EPA launched a series of innovative air permitting projects designed to streamline the regulatory process and foster pollution prevention. The results show that flexible air permits can help companies achieve equal or greater environmental protection, improve competitiveness, and encourage pollution prevention, while still retaining practicable, enforceable capabilities.[19]

Over the years we have developed a number of innovative programs and new tools to achieve environmental improvements. Now the key is to learn from these innovative approaches and use our experience to create additional options for cleaning the air. In this way, we can tailor clean air strategies, using new and traditional tools, to ensure that we are using the approach that will achieve the best possible results.

Clean and Safe Water

The national water program focuses on watersheds—those naturally defined areas that encompass and affect our rivers, streams, and lakes. By looking at watersheds as a whole, rather than as a set of unrelated components, watershed management offers a more advanced and effective approach for

improving water quality. To support this approach, the Innovation Strategy commits EPA to issuing a national policy on water-quality trading. This policy, along with a new policy on watershed-based permitting, will lead to more cost-effective approaches to meeting water quality goals. In addition, EPA has launched a new national Watershed Protection Initiative that, in its first year, awarded $15 million in grants to support protection and restoration activities in 20 priority watersheds.[20]

Another priority for the national water program—and one that can clearly benefit from innovative solutions—is water infrastructure. A 2002 EPA study revealed a critical funding gap for meeting U.S. wastewater and drinking-water infrastructure needs.[21] Recognizing this gap, the Innovation Strategy called for a national forum to discuss innovative management mechanisms, such as EMSs, that can reduce the life-cycle costs of infrastructure and more flexible financial mechanisms to fund improvements. EPA held that forum in January 2003,[22] and many of the ideas that emerged are reflected in this *Strategic Plan*.

Preserved and Restored Land

The Innovation Strategy's emphasis on testing, evaluating, and implementing innovative approaches to environmental problems; fostering a more innovation-friendly culture within EPA; and working through partnerships and stakeholder collaboration will promote better waste management and cleanup of contaminated waste sites. In particular, innovative tools and approaches will be used for land revitalization; consistency and enhanced effectiveness in site cleanups; and waste minimization, recycling, and energy recovery of hazardous and nonhazardous wastes.

Building upon the success of its Brownfields Program, EPA will pilot projects that integrate land reuse into all land cleanup processes, explore the use of innovative public and private property reuse and stewardship mechanisms, and actively seek out opportunities for policy reforms. We will do so by working with partners and stakeholders to enhance coordination, planning, and communication across the full range of federal, state, tribal, and local cleanup programs. These efforts will improve the pace, efficiency, and effectiveness of site cleanups, as well as more fully integrate land reuse into cleanup programs.

Recognizing that many changes have taken place since the Resource Conservation and Recovery Act[23] was passed, EPA is launching a national Resource Conservation Challenge that is designed to find flexible, yet more protective, ways to conserve our natural resources through waste reduction and energy recovery.[24] This new program will take a comprehensive, integrated approach that includes traditional waste management programs and lesser recognized avenues, inside and outside of EPA, for promoting waste minimization and natural resource conservation. This approach will involve forming diverse partnerships to test innovative approaches to waste reduction and to stimulate development of new environmental management infrastructure and technologies.

Healthy Communities and Ecosystems

The Innovation Strategy recognizes the value of community-based approaches that integrate environmental management with human needs, consider long-term ecosystem health, and highlight the positive correlations between environmental well-being and economic prosperity. Many actions planned under the Innovation Strategy demonstrate this kind of comprehensive, community-based focus. For example, the national air program is supporting the development of a regional strategy to comprehensively address multiple air quality problems, as well as economic growth, land-use patterns, transportation, and energy issues, in a growing urban area along the North Carolina-South Carolina border. Likewise, the national water program's watershed strategy will enable a more comprehensive, stakeholder-driven approach to achieving water quality goals.

The Innovation Strategy also calls for environmental protection tools and approaches that can be used to protect people, communities, and ecosystems. For example, improving the use and deployment of information resources and technology means we will have more powerful tools to make environmental management decisions. It will also enable us to give citizens information they can use in their own lives, and if they choose, to become more involved in environmental decision-making. The emphasis on developing results-based performance goals and measures will have similar consequences, creating information that agencies can use to manage programs and provide public accountability.

Finally, the plans for strengthening our partnership with states and tribes are designed to improve the environmental and public health effectiveness of our individual levels of government. Engaging states earlier in national planning and budgeting processes; facilitating state innovations; and reaching out to build working relationships with agriculture, transportation, and other agencies with environmental interests are just some of the means through which we will enhance protection for people, communities, and ecosystems.

Compliance and Environmental Stewardship

The vision described in the Innovation Strategy would raise the bar for environmental performance by creating an environmental protection system that encourages greater environmental stewardship across all parts of society. Getting there means finding ways to bring together compliance, pollution prevention, and environmental leadership initiatives in a way that facilitates environmental management and maximizes environmental results. It also means meeting the various needs that exist along the environmental performance spectrum, from the leaders who are pursuing advanced environmental improvements to those enterprises, such as small businesses, that require assistance in meeting regulatory responsibilities.

One way toward these ends is working in partnership with industry sectors on tailored environmental management strategies that recognize the unique issues affecting their operations. Through its Sector Strategies Program,[25] EPA works with industries to address sector-specific barriers to improving performance and develop EMSs and other innovative tools that are designed with each sector's needs in mind. Sector-based programs enable EPA to better understand the industries we oversee and to tap into the creative thinking of others who can help us devise new and better ways of improving environmental and economic results.

The Innovation Strategy calls for more support and encouragement for environmental

leaders by expanding the National Environmental Performance Track.[26] This unique program offers rewards and recognition for strong environmental performance. The Innovation Strategy focuses on making membership even more valuable by offering additional regulatory incentives and a higher level of membership for the very top performers. While the program clearly benefits members, its greatest value is in creating role models and mentors from whom other facilities can learn as they pursue their own environmental improvements.

The Innovation Strategy also recognizes the value of smart and strategic compliance assurance in helping companies meet their environmental responsibilities. To this end, it focuses EPA on using the full range of compliance assurance tools and combining them in ways that improve environmental management by regulated entities, maximize compliance, and address the needs of environmental justice communities. These integrated approaches include voluntary compliance incentives, such as the Audit, Small Business, and Small Communities Policies[27] to encourage self-auditing, reporting, and correction; the use of EMSs in enforcement settlements to address serious environmental management problems; and creative supplemental environmental projects that return significant, tangible benefits to communities harmed by noncompliance.

The award-winning environmental results program represents another successful approach.[28] Pioneered by Massachusetts, this program merits expansion because it improves the performance of small businesses, results in savings for those businesses, and allows EPA and states to focus resources on priority environmental problems.

Providing smart, strategic compliance assurance also means providing additional tools to help facilities understand environmental laws and regulations. EPA partners with compliance assistance providers to provide easy access to compliance information through the National Compliance Assistance Clearing-house and "virtual" compliance assistance centers that support specific industry sectors and national environmental program priorities.[29] These innovative resources harness the power of the Internet to meet small business needs. The Innovation Strategy will direct more attention to small business needs, starting with a national small business environmental summit and development of a comprehensive small business assistance strategy.

Managing Innovation at EPA

The complexity of today's environmental challenges, coupled with the need to achieve environmental results more cost-effectively, make environmental innovation an imperative. But innovation brings its own set of challenges. As EPA pursues new approaches for improving environmental results, we are faced with the difficulty of crafting multimedia solutions within a single-medium-based organization, the complexity of sharing responsibilities across several layers of government, and the need to maintain baseline environmental protections while still creating room for experimentation.

EPA's Innovation Action Council provides experienced leadership for addressing these and other challenges. This group of EPA's most senior career managers provides overall direction for innovation, demonstrated most recently through the development of the Innovation Strategy. The Innovation Action Council also helps resolve policy issues that invariably arise when exploring new approaches.

EPA is also making strategic organizational changes to support and facilitate innovation. In 2003, EPA formed a National Center for Environmental Innovation to advance innovation in environmental pro-

grams.[30] Combining staff who have led some of EPA's most innovative initiatives, the Center has several unique roles. First and foremost, it is a focal point for strategic thinking on innovative approaches to environmental management and provides a point of contact for organizations that share EPA's interests in environmental innovation. The Center acts as a partner with organizations that want to test and evaluate innovative approaches and as a proponent for replicating innovations that prove successful. The Center also stays at the forefront of scientific, economic, and other social trends to bring the value of new developments to EPA's strategic thinking, planning, and management.

While the National Center for Environmental Innovation will foster innovation throughout EPA, there have been additional efforts within EPA's national programs. The national air program has established a Center for Excellence on Air Innovations/Futures to enhance information-sharing among EPA's regional air divisions. And the national solid waste and emergency response program has realigned staff in a new innovation office that will help drive innovation in its programs and policies.

Together, these moves will ensure that EPA has the innovation leadership it needs to achieve better environmental results.

HUMAN CAPITAL

Protecting human health and the environment requires a diverse, highly skilled, and motivated workforce that seeks creative solutions to environmental problems and is committed to achieving excellence. To develop and retain such a workforce, EPA was among the first agencies to publish a human capital strategy. Issued in 2000, *Investing in Our People, EPA's Strategy for Human Capital, 2001 - 2003*[31] has guided our human capital efforts over the past few years.

EPA will integrate workforce planning, employee development, and targeted recruitment with Agency processes for strategic planning and resource management.

We are now updating our human capital strategy to address the President's Management Agenda and to better integrate human capital issues into EPA's strategic planning for the coming 5 years. *Investing in Our People II, EPA's Strategy for Human Capital, 2003 - 2008*[32] (our updated "human capital strategy") will ensure that the Agency's workforce is high-performing, results-oriented, and aligned with our strategic goals and objectives for air, water, land, communities and ecosystems, and compliance and environmental stewardship.

Our updated human capital strategy will help us integrate workforce planning, employee development, and targeted recruitment with our ongoing strategic planning and resource management processes. By promoting strong national leadership and effective planning and implementation of human capital programs across the Agency, the human capital strategy addresses both our current and future workforce needs to accomplish our goals and objectives.

As part of the President's Management Agenda, the Office of Personnel Management (OPM) is leading the federal government's Strategic Management of Human Capital Initiative. New Human Capital Standards for Success,[33] developed