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ENVIRONMENTAL PERFORMANCE MEASURES IN A FEDERAL SYSTEM

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Learning *from* Innovations *in* Environmental Protection:

THE RESEARCH PAPERS

This report is one in a series of independent evaluations of innovations in environmental management commissioned by the National Academy of Public Administration's Center for the Economy and the Environment. The entire series is available at the Academy's website, www.napawash.org, and will be available in print in late 2000.

The U.S. Congress initiated this study in FY 1998 when it asked the Academy to undertake an independent evaluation of some of the most promising innovations in environmental management. A panel of Academy Fellows and other experts is guiding the project. The panel selected the research topics and researchers, and encouraged the researchers to offer their own findings and recommendations. The reports in this series are the work products of the research teams; neither the Academy nor the project panel endorses their findings and recommendations. The panel will use the research reports as a foundation for its own report and recommendations to Congress and the U.S. Environmental Protection Agency later this year.

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ABOUT THE ACADEMY

The National Academy of Public Administration is an independent, nonprofit organization chartered by Congress to improve governance at all levels: local, regional, state, national, and international. The Academy's membership consists of 480 Fellows with distinguished careers in public management as practitioners, scholars, and civic leaders. Since its establishment in 1967, the Academy has assisted hundreds of federal agencies, congressional committees, state and local governments, civic organizations, and institutions overseas.

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Executive Summary

In recent years, many governments in the U.S., including the federal government, have attempted to institutionalize performance measurement as part of a larger quest for greater accountability. In environmental policy, performance measurement received a boost from the National Environmental Performance Partnership System (NEPPS), a 1995 initiative that sought to make state environmental agencies more accountable to the federal government by shifting federal oversight somewhat from processes to results. In some states, efforts to institutionalize performance measurement, including environmental performance measurement, were already underway or were just beginning.

This paper reports on progress towards environmental performance measurement in Florida, New Hampshire, Oregon, and Virginia, each of which is in a different EPA region. Florida and Virginia have relatively well-established performance-budgeting systems, and New Hampshire is establishing such a system. Since 1990, Oregon has had a benchmarks system for measuring progress in several policy sectors. Florida, New Hampshire and Oregon have negotiated Performance Partnership Agreements (PPAs) with the EPA; Virginia has not.

Environmental performance measurement faces technical, political, and administrative challenges in those and other states. Technically, it is not easy to measure desired outcomes, much less the impacts of government activities on such outcomes. Politically, state environmental agencies find themselves under pressure from a wide variety of overseers and interested publics, each of which favors different values, regulatory strategies, and measurement approaches. Administratively, state environmental agencies have trouble overcoming the skepticism of career civil servants, who may regard performance measurement as an unnecessary burden or a significant threat.

Despite growing efforts to measure outcomes, all four states continue to emphasize outputs such as permit and inspection counts in their published reports. They pay scant attention to actual impacts; only Oregon systematically lists causal factors that affect desired outcomes. In addition, data—quality and comparability problems persist. For example, states differ dramatically in how often they assess water bodies, which water bodies they assess, and how they define "fishable" or "swimmable" waters.

On the other hand, all four states have improved their measures in recent years. Oregon has developed a water-quality index with an innovative weighting scheme. New Hampshire has

adopted a number of pollution-prevention measures developed in concert with neighboring states. Florida has improved what was already a well-organized, comprehensive, and comprehensible quarterly report. Even Virginia has made some modest progress, though its baseline was weak. Another positive development has been the approval of "core performance measures" by the Environmental Council of the States (ECOS) and the EPA in April 1999. Of the four states, New Hampshire and Oregon are definitely committed to the core performance measures, Florida is somewhat committed, and Virginia is not committed.

Governors have been active promoters of performance measures in all four states. State legislators and legislative staff members support performance measures in theory by overwhelming margins but do not use such measures much, if at all, in their decisionmaking. In Florida, two parallel measurement systems limit legislative use of either set of measures. In Oregon, the perception that the state's benchmarks are an executive branch initiative has diminished legislative interest. In Virginia, a paucity of measures and legislative distrust of the state environmental agency has limited use of measures. In New Hampshire, legislators have used policy-relevant data (but not necessarily performance measures) to fine-tune or promote environmental legislation.

The EPA has successfully advanced the development of performance measures through PPAs, but problems remain. In particular, the inclusion of performance measures in PPAs does not guarantee use. The EPA has also promoted a common set of measures, but states prefer homegrown measures. Environmental group leaders in the four states were surprisingly unfamiliar with existing performance measures, although such measures could be quite useful in efforts to inform and mobilize citizens.

Like state legislators and legislative staff members, state environmental agency officials support the theory of performance measurement but sometimes balk at its practice. Some senior program officials in Florida, Oregon, and Virginia voice sharp reservations about performance measurement, while New Hampshire's managers are generally more enthusiastic.

Still, state environmental administrators occasionally use performance measures in all four states. In Florida, the Department of Environmental Protection (DEP) used data on controlled burning in state parks to reallocate resources and purchase new equipment. The DEP also improved its regulation of petroleum storage tanks and shellfish processing plants after learning some lessons from performance measures. In New Hampshire, the Department of Environmental Services used data on waste management backlogs to reallocate resources and redefine criteria for accepting complaints. In Virginia, the Department of Environmental Quality improved its permitting speed and the Department of Conservation Resources increased the number of nutrient-management plans issued after these measures became official indicators of agency performance. In Oregon, the Department of Environmental Quality used data on shifting sources of air pollution to reallocate resources and devote more attention to area and mobile source pollution.

Environmental policymakers are not unique in wrestling with the challenges of performance measurement. In comparison to education and health care, environmental protection is characterized by relatively weak interstate performance measurement systems. In comparison to all policy sectors, environmental protection is about average in the quality of its intrastate measures.

In 1995 and 1997 the National Academy of Public Administration called for "accountable devolution" as the best way to achieve superior environmental results. The case for devolution rests on the premise that the states deserve greater trust because their technical capacity and political support for environmental protection have improved. The case against devolution

rests on the premise that even evolved states are less enthusiastic than the federal government about enforcing federal environmental laws. The case for devolution would be strengthened by the presence of a national database systematically comparing the performance of the states. But the concept of accountable devolution is incomplete unless it specifies the form that accountability should take.

The Government Performance and Results Act (GPRA) and NEPPS both promote political accountability but not necessarily the same kind of political accountability. For example, data standardization is fully consistent with GPRA but may be somewhat inconsistent with the spirit of NEPPS. Ultimately, the federal government must decide which form of political accountability is more important: the EPA's accountability to Congress or state environmental agencies' accountability to their respective governors and state legislatures. Furthermore, the federal government must decide how to reconcile political accountability with legal accountability, as exemplified by federal court decisions.

Which state has the best system for measuring environmental performance? Florida has the best overall system: an excellent quarterly report and a Focus/Watch designation approach, which enables the secretary of the DEP to designate a limited number of environmental problems as warranting special attention every quarter, which ensures that performance measures do not simply gather dust. But New Hampshire has the best culture for environmental problem solving. In comparison to their counterparts in other states, New Hampshire's program managers are more positive and more pragmatic. Absent good comparative data, it is thus difficult to know which state is actually doing the best job of protecting the environment.

Although some progress has been made, additional steps are needed if the U.S. is to develop a viable environmental performance measurement system. This report makes the following recommendations to those concerned with environmental performance.

Recommendations for States

- Streamline and integrate parallel sets of performance measures.
- Encourage environmental agencies to adopt mechanisms that force action to ensure that bureau chiefs take performance measures seriously.
- Offer their environmental agencies greater funding as performance improves.
- Foster collaboration among kindred agencies to identify new measures for environmental protection.

Recommendations for EPA

- Publish core performance measure data for each of the 50 states, as well as territories and tribes, as quickly as possible.
- Invest in an improved water-quality measurement system, in collaboration with the states, so that water quality measures are comparable across states.
- Utilize data from the Office of Enforcement and Compliance Assurance and other sources to conduct research linking outputs and outcomes.

- Continue to promote PPAs and PPGs, through regional offices.

Recommendations for Congress

- Encourage use of EPA performance measures by authorizing committees, not just appropriations committees.
- Provide additional funding to improve the EPA's water-quality measurement system and to support research on linkages between outputs and outcomes.
- Instruct the General Accounting Office to conduct a study of state performance acts and their implementation by various state agencies, including environmental agencies.

Recommendations for Environmental Groups

- Participate in performance-measurement development workshops conducted by federal and state agencies.
- Use EPA data to develop "report cards" on selected topics, and disseminate those reports to the media and the public.

Taken together, those steps would enhance political and professional accountability. And the creative powers of state program managers, if unleashed, could trigger a new wave of policy innovations and reforms. But strong delegation of authority requires strong feedback mechanisms to ensure that the public interest is served. A credible environmental performance measurement system is the indispensable lynchpin for intergovernmental devolution and administrative decentralization, but it requires significant and unceasing effort from all stakeholders.

CHAPTER 1

Introduction

In recent years, all levels of government in the U.S. have demonstrated considerable interest in the concept and practice of performance measurement. The premise is that governments, like private firms, should be able to measure progress towards certain goals and that those measures should be used to guide policymakers and managers in their resource allocation and program implementation strategies. Those developments are not unique to the U.S. New Zealand and Australia have been among the world's leaders in governmental performance measurement; other countries have moved in the same direction.[1]

According to its strongest supporters, performance measurement has the potential to revolutionize governmental decisionmaking, shifting attention from inputs and processes to outcomes and results. According to its strongest critics, performance measurement is little more than the latest fad—a largely symbolic exercise that will not fundamentally alter the choices that politicians or civil servants make. In between is an intermediate perspective—that performance measurement has the potential to promote greater accountability at all levels of government, but only if it is designed and implemented intelligently. That perspective led the National Academy of Public Administration to endorse a combination of devolution, accountability, and performance measurement in two reports on the state of environmental protection in the United States.[2]

Accountability is the touchstone of a republican form of government, but it is also a highly ambiguous concept. With respect to a state environmental agency, it could mean that the agency must satisfy the governor, the state legislature, the president, Congress, the EPA, or the general public. If those multiple principals tug in the same direction, accountability has a clear operational meaning. If, however, they tug in different directions, as they usually do, then accountability means satisfying some principals at the expense of others. To invoke the concept of accountability is not to solve difficult problems of governance.

Nevertheless, performance measurement systems have the potential to convert accountability from a vague slogan to a concrete management tool. For example, the National Environmental Performance Partnership System (NEPPS), a 1995 Clinton administration initiative, emphasizes a particular kind of accountability (from state environmental agencies to the federal government), shifts the desired focus from processes to results, and offers flexibility as the inducement to make a voluntary system work.[3] The catch is that NEPPS was grafted onto other

systems of accountability, including state-level systems that sought to make state environmental agencies—as well as other state agencies—more accountable to state politicians. To understand NEPPS, it is first necessary to understand those state-level systems.

Like performance measurement in other policy domains, environmental performance measurement is challenging technically, politically, and administratively. The successful implementation of an environmental performance measurement system requires careful attention to the construction of valid measures for which good data can be gathered; the development of a system of intergovernmental and intragovernmental controls that is effective without being oppressive or dysfunctional; and a positive orientation towards performance measures among managers.

Those are not easy tasks, singly or in combination. In fact, advocates of performance measurement have struggled to create viable performance measurement systems in other prominent policy domains, such as education and health care. On the other hand, it is fair to say that environmental performance measurement has lagged behind performance measurement in these other fields. In particular, better systems have been designed for measuring the performance of public schools, hospitals, and health maintenance organizations.[4]

Although there are many reasons for slow progress in environmental performance measurement, three stand out: it is particularly difficult to measure the impacts of decisions made by environmental agencies; intergovernmental conflict has undermined efforts to standardize data collection and performance measurement; and strong fiefdoms within environmental agencies, such as the persistence of medium-specific administrative units, have limited the success of efforts to use performance measures as a managerial lever.

Despite these obstacles, some progress has been made. The purpose of this paper is to assess the extent of progress, to explain why progress has been relatively slow, and to identify some conditions for institutionalizing a successful environmental performance measurement system.

Research Methodology

To better understand the technical, political, and administrative challenges of environmental performance measurement, I have studied four states in depth: Florida, New Hampshire, Oregon, and Virginia. A state focus makes sense because the U.S. EPA has steadily devolved authority over major environmental programs to state governments, and because states are responsible for a substantial amount of all government spending on environmental regulation.[5] Although the EPA retains important statutory responsibilities and some financial leverage, the success or failure of environmental performance measurement will depend considerably on the states.

Florida, New Hampshire, Oregon, and Virginia are diverse states, though not a random sample. They were selected because they have considerable interest in performance measurement, environmental performance measurement, or both. Florida and Virginia have relatively well-established performance-based budgeting systems, and New Hampshire is beginning such a system, with the state Department of Environmental Services playing a lead role. Oregon has developed a widely discussed benchmarks system for measuring progress in health care, education, economic development, environmental protection, and other sectors; letter grades are now awarded for progress towards programmatic goals.

Environmental agencies in those states report to four different EPA regional offices: Florida to Region IV; New Hampshire to Region I; Oregon to Region X; and Virginia to Region III. Florida, New Hampshire, and Oregon have developed partnership agreements with the EPA;

the New Hampshire and Oregon PPAs actually include a list of performance measures, while the Florida PPA alludes to a separate list. New Hampshire has worked closely with other New England states and with the EPA's Region I office in developing a common set of performance measures for the New England region. Virginia has declined to draft a performance partnership agreement with the EPA, but its relationship with the EPA has improved somewhat from the contention that existed in the mid-1990s.

To gather evidence on the evolution of environmental performance measures, I visited each state for approximately one week. In each state, I interviewed top officials at the environmental regulatory agency (and, occasionally, other environmental agencies) as well as legislators and legislative staff members with an interest in environmental or budgeting issues. I also interviewed officials in the governors' offices—or the budgeting offices—and leaders of policy-oriented environmental groups. If key players were not available during the week of my visit, I made an effort to speak with them later by phone.

In addition to state-level officials, I spoke in person with EPA officials at headquarters, and by phone with those in the regional offices.

Framework

As stated earlier, this report discusses the technical, political, and administrative challenges that make it difficult to develop a successful environmental performance measurement system. *Technical* challenges refer to the measures themselves and the data on which they are based. A key question is whether the impacts of administrative agency actions on environmental quality can in fact be measured. *Political* challenges refer to both intergovernmental and intragovernmental disputes. A key question is whether state administrators can work cooperatively with federal administrators and state politicians at a time when they are being asked to do more with less. *Administrative* challenges refer to the attitudes and incentives of political executives and career civil servants, especially at the state level. A key question is whether political executives can overcome the skepticism of career civil servants, many of which regard performance measures as an unnecessary burden or a significant threat.

If those challenges can be overcome, it is possible to imagine a system of accountability that is more flexible and less coercive. Federal officials and state politicians would not need to micromanage state environmental programs to ensure that laws are faithfully implemented. Instead both federal officials and state politicians could use performance measures to gauge progress towards important environmental goals. If performance improves, state program managers would enjoy even greater discretion; if performance deteriorates, federal officials and state politicians would intervene with tighter controls. In theory, such a system could enhance program outcomes by encouraging innovation, allowing adaptation, and facilitating organizational learning.[6]

In a well-functioning performance-based system, many actors would use performance measures but in different ways:

- State agency heads would use performance measures to design strategic plans, to enhance their leverage over bureau chiefs, and to reallocate resources
- State legislators would use performance measures as instruments for adjusting broad policy directions and as justification for budgetary adjustments that advance their policy preferences

- The EPA would use performance measures as a tool for differential oversight, rewarding superior performance with more flexibility and less supervision
- Congress would use performance measures to evaluate and improve programs and to sharpen its oversight investigations
- Environmental advocacy groups would use performance measures as the basis for occasional report cards on state environmental agencies
- The general public would use performance measures as a basis for policy interventions, persuasive appeals, and voting decisions.

Technical Issues

In considering the performance of a public organization, such as an environmental agency, it is useful to think about four different types of measures: *outputs,* which measure an agency's activities, such as inspections, the issuance of permits, the provision of technical assistance, or the imposition of monetary penalties; *intermediate outcomes,* which measure the environmentally relevant behavior of regulated firms or citizens; *terminal outcomes*, which measure trends in environmental conditions (e.g., air quality or water quality) or human health; and *impacts,* which measure the effects of outputs on outcomes. Each of those can be viewed as a measure of agency performance, though each has undeniable strengths and weaknesses.

Two key advantages of outputs are that they are relatively easy to measure, and that they are relatively easy for managers to control. The latter is an important point, in that many managers believe it is unfair for them to be judged on the basis of measures that they cannot influence directly or substantially. Nevertheless, it is frustration with outputs—and, even more obviously, inputs—that triggered the Government Performance and Results Act (GPRA)[7] and similar state initiatives, such as performance-based budgeting and benchmarking.[8] Though measurable and controllable, outputs do not tell policymakers or managers whether progress has been made towards achieving an agency's stated goals. At its worst, "bean-counting" becomes an end in itself, with outputs or "beans" displacing statutory goals as values to be maximized. Such behavior is highly dysfunctional. Even if that does not occur, outputs can be problematic. For example, inspections differ in their thoroughness and their effectiveness.[9] Yet the implicit assumption behind inspection counts (or permit counts) is that all inspections (or permits) are created equal. If outputs are to be meaningful as performance measures, some connection to valued indicators must be demonstrated, and some consistency in the norms of "street-level bureaucrats" (inspectors, permit-writers) must be maintained.

At the other end of the performance spectrum are terminal outcomes, which managers and street-level bureaucrats hope to improve. Terminal outcomes can be extremely useful if they indicate progress toward achieving goals: whether, for example, water quality is improving. Every state has water-quality networks, but they are incomplete, unstable, and problematic: some states have few facilities and inexperienced volunteers do some monitoring. In many cases, then, water-quality monitoring is merely troubleshooting, not a way to document change precisely. In addition, many terminal-outcome indicators are relatively crude attempts to measure a complex phenomenon, as is certainly the case with water quality. If terminal outcomes are to be meaningful as performance measures, they must be based on good, reliable data and they must be finely calibrated to capture important changes over time.

In between outputs and terminal outcomes are intermediate outcomes, which agency offi-

cials hope to influence because of their sometimes-strong putative connection to terminal outcomes.[10] Emissions levels, for example, are a good measure of intermediate outcomes, because numerous studies show a connection between emissions and environmental quality.[11] Compliance rates are a weaker measure of intermediate outcomes, because there is less evidence that they predict terminal outcomes. Measures of substantial compliance are probably superior to measures of raw compliance because they focus more on the kind of corporate behavior that is likely to be linked to environmental quality.

Of all the performance measures, the most alluring and the most vexing are impacts. Impacts tell us the marginal contribution of administrative activity to something of value, such as lower industrial emissions, or improved air quality. Unfortunately, it is difficult to disentangle the effects of administrative activity, economic activity, meteorological activity, entrepreneurial innovation, cultural change, and other factors on environmental outcomes, whether intermediate or terminal. Nevertheless, impacts remain beguiling to both politicians and managers, and they have been successfully measured in other fields, such as education and health care.[12] To politicians, they offer the prospect of holding managers accountable for their successes and failures. To managers, they offer the prospect of tying flexibility to good performance. If measured properly, impacts have the potential to hold agency officials accountable for activities that really matter—as well as for situations that can truly be controlled. Given that potential, the status quo is a bitter pill to swallow. Genuine measures of environmental impact are practically nonexistent.

An Emphasis on Outputs

The states in this study differ dramatically in the number of performance measures they have selected, in the labels they affix to these measures, in how they package and present them. But all are alike in one key respect: most of their performance measures are outputs.

The Florida Department of Environmental Protection groups its measures into four categories or tiers: environmental and public health outcome indicators; behavioral and cultural measures; departmental outputs and activities; and resource efficiency. Of 162 measures in the March 1999 quarterly report, 62 percent were outputs (Tier 3), 20 percent were terminal outcomes (Tier 1), and 18 percent were intermediate outcomes (Tier 2).[13] Tier 4, under development in early 2000, consists of text and charts, in lieu of performance measures.

Though its categories differ, the Oregon Department of Environmental Quality demonstrates the same emphasis on outputs. In its performance partnership agreement, the DEQ distinguishes between outcomes and outputs. Of 156 performance measures for hazardous waste contained in the 1999-2000 PPA, 76 percent were outputs, while 24 percent were outcomes.[14]

In contrast to Oregon, New Hampshire does not draw a clear distinction between outputs and outcomes in its performance partnership agreement. Instead New Hampshire includes both types of measures under the heading "indicators of progress."[15] Of 74 measures for waste contained in the 1998-1999 PPA approximately 64 percent can be categorized as outputs, 36 percent as outcomes.

Virginia's performance measures are easy to summarize because there are so few of them. Under rules adopted by the Virginia Department of Planning and Budget, each state agency must submit three to five performance measures for approval by the DPB. Although some agencies do submit additional measures, most merely meet the requirement. Of five measures proposed by the Virginia Department of Environmental Quality in the spring of 1999, four are

outputs.[16] The remaining measure, of pollution prevention, is best described as an outcome.

An exception to that preference for outputs is the Oregon benchmarks project. Spearheaded by the Oregon Progress Board, the venture deliberately eschews outputs in favor of outcomes, especially terminal outcomes. Of 15 environmental measures, only one (the percentage of air/wastewater permits issued within the target time period or less) is an output.[17]

Scant Attention to Impacts, Causal Factors

As noted earlier, impact measures are the most challenging to construct. A valid impact measure disentangles the effects of administrative agency activities (efforts) and other variables on corporate behavior, citizen behavior, or environmental quality. Few if any of the measures reported by the four state agencies meet that standard.

When states report on air quality, for example, they do not control for weather conditions, economic activity, traffic volume, or other relevant variables. When states report on water quality, they do not control for levels of rainfall, population growth, or accidental spills, all of which can adversely affect water quality. Without such controls, trend data offer a crude and possibly misleading proxy for the performance of private firms and state regulators.

It is important to note that the production of authentic impact measures would be both complex and expensive. The failure of the four state agencies to produce such measures reflects resource constraints, as well as the state of the art. Even the U.S. EPA, with much larger research and planning staffs, has not developed a battery of good, reliable impact measures. We have much better statistical models for isolating the effects of government interventions in education and health care on desired outcomes in those areas.[18]

Although none of the four states has made much progress in developing impact measures, Oregon has at least taken a significant step towards clarifying the problem. In its 1999 Benchmark Performance Report, the Oregon Progress Board includes a mix of 15 environmental indicators, five of which are labeled "key" benchmarks. Accompanying each key benchmark is a list of factors influencing the benchmark. For example, the wetland preservation measure includes the following factors: state wetland regulations and unregulated or illegal wetland alterations; voluntary wetland restoration; local government land use plans and strengthened state rules requiring wetland planning; continuing population growth; and shifts in agricultural crops that may require increased soil drainage. Although the Oregon Progress Board has not attempted to model or quantify those variables—a formidable task at best—a list of causal factors helps to place each benchmark in perspective.

Improved Measures

All four states have improved their measures in recent years, some more noticeably than others. A noteworthy achievement for Oregon was the development of a new Water Quality Index in 1996. Prior to that time, the Oregon DEQ and the Oregon Progress Board measured water quality by counting the number of stream miles assessed as not meeting state water quality standards. In 1996 the DEQ's Laboratory Division developed a water quality index based on eight subindices and ten parameters: temperature; dissolved oxygen (saturation and concentration); biochemical oxygen demand; pH; ammonia and nitrate nitrogen; phosphorus; solids; and fecal coliform.[19] The index is constructed through the use of an unweighted harmonic square mean formula, as opposed to a weighted arithmetic mean or weighted geometric mean formula. That allows the most-affected variable to have the greatest influence on the

value of the index. In other words, the index is more sensitive to changes in any one parameter than would otherwise be the case. By specifying the percentage of monitored stream sites with significantly increasing and significantly decreasing trends in water quality, the Oregon DEQ and the Oregon Progress Board present a more precise and more accurate picture of changes over time. Although the measure is more useful as a measure of drinking water quality than as a measure of habitat quality—because it emphasizes chemical rather than biological parameters—it does offer useful information to managers, policymakers, and citizens.

Florida's first quarterly performance report, issued in March 1997, was widely recognized at the outset as an impressive document. Michael Stahl, deputy administrator of the EPA's Office of Enforcement and Compliance Assurance (OECA), hailed it as "a breakthrough in management of environmental agencies and their relationship with the public" and "a powerful tool for analyzing the state of the environment and government's efforts to preserve and protect it."[20]

In addition to that strong beginning, Florida has managed to make some noteworthy improvements. Since the first quarterly report was issued, Florida has added several measures of compliance assistance. It has also developed a new section on "environmental citizenship," which includes: volunteer hours donated to Florida state parks; the average residential consumption of electricity; per-capita consumption of fresh water supplies; and average daily vehicle miles traveled by Floridians.[21] Those measures help to underscore the important role that citizens must play in protecting the environment, and also serve as a reminder that the Department of Environmental Protection has a significant educational role to play.

New Hampshire, in conjunction with several other Northeastern states, has developed a battery of 40 pollution prevention measures. Although these measures are not binding, each state's pollution prevention program director has agreed to "use the pollution prevention metrics, where appropriate, for collecting data on program activities and outcomes."[22] Fourteen of the measures focus on outcomes, such as the total amount of hazardous waste reduced through pollution prevention by program clients. Because the measures do not compare the behavior of program clients with that of other polluters, it is impossible to know to what extent improvements are traceable to pollution prevention efforts by state environmental agencies, as opposed to economic conditions or independent pollution prevention initiatives by private firms. Nonetheless, the measures represent a significant step forward.

Virginia has also improved its measures, though its baseline was unimpressive. When the Virginia Department of Environmental Quality first submitted five measures to the state Department of Planning and Budget in 1995, it included only one outcome measure: the percentage of permitted facilities in compliance with applicable rules and laws (an intermediate outcome).[23] The connection between its other measures and environmental protection was speculative at best. The percentage of regional staff satisfied with the level of service from headquarters, as well as the number of participants in workshops, teleconferences, presentations, and other compliance assistance forums, were basically process measures. The remaining measures—the number of general permits issued by each medium that conformed to statutory requirements, and the percentage of environmental permits meeting statutory standards issued within processing-time goals—reveal more about administrative efficiency and convenience to regulated parties than about environmental protection. When Dennis Treacy took over as director of the Virginia DEQ in 1998, he expressed dissatisfaction with those measures and began to change them. In 1999, he proposed a more-balanced menu of performance measures, including a measure of pollution prevention and a measure of the percent of enforcement cases resolved within the targeted time. Thus, although Virginia's performance

measures pale in comparison to those of the other three states, they are an improvement over the state's previous efforts.

Data Quality and Access Problems

Several data problems have plagued state environmental agencies and the U.S. EPA, which depends on accurate, timely data to perform its oversight role properly. Are data trustworthy? Are they based on a sufficient number of data points? Are the data-gatherers skilled professionals with strong credentials and up-to-date equipment? Are the data and associated measures verified before they are published? Are the data available to legislative overseers, interest groups, and academic researchers who wish to reanalyze or audit them? Unfortunately, the answer to those questions is sometimes no.

Some of the most frequent complaints concern water-quality data. In a recent report on water-toxicity problems, the Virginia Joint Legislative Review and Audit Commission (JLARC) reported that a key database on water toxics was put in storage by the Virginia DEQ in 1994 and, despite repeated requests by the EPA and others, was not released until 1999.[24] The most charitable explanation of the lapse is that resource constraints made it difficult to manage the data and supervise access to it. It is also possible that a DEQ manager misled those making inquiries. In any case, federal regulators and citizens were denied access to a valuable database during a critical period. In the same report, JLARC found that it took DEQ three years to analyze PCB-contaminated fish samples from the Roanoke River, and that it took the Virginia Department of Health an additional two years to issue a fish-consumption advisory. During the interim, people consumed fish from the river, blissfully unaware of the data or their implications. On the positive side, JLARC noted that the Treacy administration, when confronted with those problems, took steps to improve data quality and data access through computerization.

Due to a technical snafu, the Oregon DEQ furnished incorrect numbers to the Oregon Progress Board on the timeliness with which water permits are issued. Based on the numbers it received from DEQ, the Progress Board reported that 60 percent of wastewater permits issued in 1997 were issued within target time, as opposed to 37 percent in 1996.[25] Such performance received an "A" grade. Subsequently, however, an internal inquiry by DEQ revealed that the measure had been incorrectly calculated for both years—the denominator should have been the number of new or existing permits, not the number of new permits. Once the numbers were corrected, it became clear that DEQ had made no progress on the indicator. In 1997, 15 percent of wastewater permits were issued on time, the same figure as for 1996. To its credit, DEQ promptly informed the Oregon Progress Board after discovering the mistake.

There is a broader problem with water-quality data: they are not truly comparable across states. A report on New England's environmental indicators found that water quality reports required by section 305(b) of the Clean Water Act varied sharply across states in their methodologies and underlying databases. For example, Rhode Island assessed all waters in the state every two years; Massachusetts and Connecticut assessed one-fifth of their waters every year; and New Hampshire focused on particular problem sites.[26] Such variations are also evident in Florida, New Hampshire, Oregon, and Virginia. In addition, the states differ in their definitions of "fishable" and "swimmable" waters. For example, Oregon measures fishability by focusing on temperature, dissolved oxygen levels, pH, and habitat, while Florida uses a wider variety of indicators, some of which are not available for all streams being assessed. In Oregon, fishability and swimmability are measured differently, while in Florida they are treated as synonyms. Such different metrics make it very difficult to compare performance in water quality.

Core Performance Measures

On April 1, 1999 the Environmental Council of the States approved a set of "core performance measures," jointly developed with the EPA, designed to help measure progress towards protecting the environment and public health. On April 22, 1999 ECOS and the EPA signed a joint statement clarifying the use and applicability of the core performance measures.[27] The measures include outputs, intermediate outcomes (dubbed "program outcomes") and terminal outcomes (called "core environmental indicators"). Of 30 measures for air, water, and waste, 12 are outputs, 12 are intermediate outcomes, and six are terminal outcomes. Of seven measures for enforcement and compliance assurance, sometimes referred to as accountability measures, three are outputs and four are intermediate outcomes.

The core performance-measures,[28] reflect a series of uneasy compromises among states and between the states and the EPA. As such, they suffer from a number of technical flaws. For one thing, they include no pollution-prevention measures *per se*, despite the fact that a cross-media committee of ECOS was charged with developing some. Unfortunately, the committee failed to report any suggestions to the larger body.

The air measures are probably the best of the lot. They were also the easiest to develop, because air-quality monitoring is well established at the state level, thanks in part to strong federal guidance and support over the years. For example, ambient air-quality standards (Air CPM # 1) are more consistent across states than water-quality standards, and are based on more-consistent monitoring practices. To a considerable degree, that stems from historic differences in relevant statutes. Whereas clean-water laws focused primarily on technological requirements for discharges into streams, clean air laws required the development of attainment plans, with corresponding data on air quality. Thus water-quality experts envy air-quality data.

Another disappointment is that of the 13 water measures, eight are outputs, despite the stated intent to shift toward outcomes. Moreover, some of the water-output measures are unusually soft. For example, the sole measure of nonpoint-source pollution (Water CPM # 13) is the number of EPA approvals of state-submitted upgraded nonpoint-source programs. Instead of measuring the percent of river miles and lake acres with fish-consumption advisories, the water group features the percent of river miles and lake acres that have been assessed for the need for fish-consumption advisories, as well as a compilation of state fish-consumption-advisory methodologies.

Some of the water outcome measures are more impressive. For example, Water CPM #5 gauges the number and percent of impaired, assessed river miles, lake acres, and estuary square miles that are covered under Watershed Restoration Action Strategies, and were restored to their designated uses during the reporting period.

The waste measures represent a stronger tilt towards outcomes—six measures—than outputs—one measure. But there is no measure of the amount of hazardous waste generated. Neither is there a measure of recycling, despite its high visibility to ordinary citizens. In addition, the term "cleanup site status" for leaking underground storage tanks (Waste CPM #5) is not defined very clearly; given definitional ambiguities, some states are likely to define cleanups more generously than others.

Thus, while there is some reason for rejoicing in the collaborative efforts, there is much work yet to be done in improving the technical component of performance measures in environmental protection.

CHAPTER 2

Political Environment

The technical merits of performance measures are important, but they alone do not determine the success of such efforts. If politicians believe in performance measure ment systems, they will be reasonably well funded and reasonably useful; if not, measures will quickly degenerate into "feel good" exercises. If interest groups and citizens care about performance measures, they have a better chance of being featured in ongoing policy debates; if not, measures may become irrelevant. If the U.S. EPA actively promotes performance measurement and enjoys a good working relationship with the states, environmental performance measures will become embedded in state policy systems; if not, progress is likely to be much slower.

The politics of performance measurement depends on how individual measures originated, as well as who developed them. It depends on how visible and comprehensible the measures are. It depends on whether the measures are closely identified with one branch of government or one political party. Above all, it depends on how the measures are perceived by the agency's overseers, which is covered in this section, and by agency officials, which the next section addresses.

Governors

Governors have been among the leading advocates of performance measures. Admittedly, few governors care as much about procedural innovations—performance measurement or performance budgeting—as about substantive policy choices—education, health care, or environment. Nevertheless, many governors have found performance measurement appealing precisely because it gives them a better handle on the substantive policy choices they must make. From a gubernatorial perspective, performance measurement can be useful in strategic planning, in priority setting, and in budgeting. In addition, it may have some useful public relations value, if it communicates the image of a vigorous chief executive moving state government steadily forward. Whatever their reasons, governors in all four states in this study have demonstrated some interest in the subject and have lent their support.

Governor Neil Goldschmidt, for example, launched the Oregon Benchmarks project in 1989, as a technique for evaluating the success of his strategic plan for a new information-based state economy. Following his recommendation, the Oregon State Legislature created the Or-

egon Progress Board, chaired by the governor, to manage the benchmarks. Goldschmidt's successor, Barbara Roberts, presided over a burgeoning benchmarks system. In 1993, the number of benchmarks proliferated to 259, as agencies became convinced that each major program required its own benchmark if it was to receive generous support in the governor's budget. Unfortunately, the benchmarks became closely associated with Roberts, whose popularity plummeted after an unsuccessful attempt to establish a state sales tax. Roberts' successor, John Kitzhaber, wisely cut back on the number of benchmarks when it became apparent that a leaner set of benchmarks would be more manageable.

Governor Lawton Chiles of Florida was another early advocate of performance measurement. In 1990, he appointed a gubernatorial commission, which recommended a performance-based budgeting system, among other reforms. In 1992, Chiles established a Commission on Government Accountability to the People (the GAP Commission) and in 1994 he signed into law the Government Performance and Accountability Act, which created a performance-based program-budgeting system, known as PB^2.[29] The GAP Commission encountered some legislative opposition, and collapsed when Jeb Bush became governor in 1999. Bush supported and continued to implement the PB^2 process however, which was already law.

In 1995 Governor George Allen implemented a performance measurement system for all state agencies in Virginia, following a successful pilot study conducted by his predecessor's Department of Planning and Budget. The Virginia State Legislature had already signaled its support for such a system, and the Joint Legislative Review and Audit Commission worked closely with the Department of Planning and Budget in an effort to improve the measures submitted by administrative agencies.[30] Following his election as governor in 1997, James Gilmore continued the practice of requesting three to five performance measures from every state agency.

During her first several months as governor of New Hampshire, Jeanne Shaheen focused her attention on substantive policy problems, especially education. In the summer of 1997, however, she instructed her budget director to develop a pilot project for performance-based budgeting. After some preliminary conversations, the governor's office invited representatives of six state agencies to a brainstorming session. Following that session, the Department of Environmental Services and the Department of Transportation volunteered to participate in the pilot project. In 1999, the legislature passed a budget bill authorizing the pilot project and establishing procedures for legislative review. Three of the four programs in the pilot project concern environmental issues.

Although performance measures might be of equal interest to governors (as chief executives) or state legislators (as overseers), governors have a special stake in such indicators. Performance measures are ultimately approved by those gubernatorial appointees who direct state agencies, and tell a fairly public story about whether a particular gubernatorial administration is succeeding or failing. For that reason, some executive branch officials have urged state agency heads to choose achievable targets or standards to accompany their performance measures. That appears to have happened in Virginia, where state agencies routinely exceed their performance targets. In contrast, Oregon officials seem more willing to let the chips fall where they may. In a recent benchmarks report, the Oregon Progress Board awarded 23 Fs, out of 100 letter grades.[31]

State Legislatures

State legislatures have played significant roles in creating, reviewing, and funding performance measures, but their interest in performance measures has waxed and waned. From a

legislative perspective, performance measures suffer if they are closely identified with the executive branch. Legislative review of performance measures enhances legislative awareness of performance measures, but does not guarantee use of such measures by legislators or legislative staff members.

Because performance measurement has typically originated with governors, legislators and legislative staff members usually regard performance measurement as an executive branch exercise over which they enjoy limited control. Some executive branch officials, acutely aware of that, have reached out to the legislative branch in various ways. Every year the Virginia Department of Planning and Budget supplies its performance measures to the Joint Legislative Audit and Review Commission (JLARC) for review. When those measures first appeared in 1996, a crisp dialogue over the merits of particular measures ensued. Since that time, JLARC's scrutiny of performance measures has diminished in intensity, but some consultation continues. The Florida Legislature must approve the official performance measures prepared by each agency as part of the budget process. In 1997, when the Florida DEP submitted its air, water, and waste measures for the first time, the review process became so acrimonious that no measures were approved. In 1999, a much-revised set of measures was approved without fanfare.

The close association of Oregon's benchmarks with the governor's office proved highly problematic for the Oregon Progress Board in the mid-1990s. In 1995, disgruntled Republican legislators decided to terminate the Oregon Progress Board by failing to reauthorize the agency. Governor John Kitzhaber revived the agency by executive order, but it was clear that the agency needed stronger political support to survive. Following the resignation of his predecessor, Jeffrey Tryens, the new OPB director, helped to restore confidence in his agency by streamlining the benchmarks and by conferring frequently with key legislators. Tryens' efforts and Kitzhaber's support were successful in winning over a majority of legislators in both houses, and the Oregon Progress Board was reauthorized in 1997 and 1999. Nevertheless, the OPB still suffers from lukewarm legislative support.

The problem is not that legislators oppose performance measurement in theory but that they are skeptical of it in practice. In each state I visited, I asked legislators and legislative staff members whether they agreed or disagreed with a series of statements on performance measures. Of 27 legislative respondents, 93 percent agreed that "states should use performance measures to assess environmental progress" and 93 percent agreed that "performance measures should play a major role in state environmental management decisions." Support declined somewhat when I asked about performance budgeting, but 74 percent agreed that "performance measures should play a major role in state environmental budgeting decisions."

On the other hand, many legislative respondents qualified their answers with caveats about the technical merits of existing performance measures. For example, a Virginia legislator said: "It's the implementation that may be worthless. If you've gotten the proper performance measures and monitoring, yes. But if you're fudging the performance measures, no." Similarly, an Oregon legislator expressed support for performance measures but complained that the Oregon Progress Board is "doing a lousy job of developing standards in all our natural resource areas." Legislative staff members who work for appropriations committees are especially skeptical about performance budgeting. From their vantage points, political considerations are likely to overwhelm efforts to reward superior performance through the budgeting process. A Florida staff member said: "Performance-based program budgeting has impacted the budgeting process only minimally if at all. Decisions on funding are based on other factors ... Performance based program budgeting is a threat to legislative prerogatives to do things they want to do." Another Florida staff member believes that the basic premise behind performance budgeting

is flawed: "Performance can't drive the budget. It makes no sense. If a teenage mother program fails, you're not going to cut that program. Performance-based program budgeting doesn't tell you how to allocate resources."

Those comments highlight the conceptual confusion that surrounds performance measurement. Many public officials subscribe to a fairly crude view of performance measures — namely, that programs whose measures go up should get more money, while programs whose measures go down should get less money. In fact, that norm would not make much sense, even if we enjoyed much better performance measures. If air quality is improving in a given state while water quality is declining, does it really make sense to shift more resources to the air division budget at the expense of the water division's budget? Perhaps the water division is doing a terrific job, against great odds, while the air division is reaping the benefits of favorable federal policies, technological advances, and helpful weather conditions. Even if authentic agency impact measures were available, would it really be wise to reduce water division funding in order to send a powerful message to that division? In fact, it might make more sense to try a different pollution reduction strategy, to shift resources within the division, to replace the division head, or to reorganize the agency. The proper role of performance measures is not to determine budget rewards but to help public officials ask better questions as they seek to pinpoint a problem and find a solution. Performance measures should not result in automatic budget shifts, but they should sharpen the thinking of legislative appropriators and other public officials, both inside and outside the state legislature.

Do legislators and legislative staff members actually use performance measures to assist them in their decisionmaking? The answer to that question depends on how broadly one defines performance measures, as well as how broadly one defines use. If one defines performance measures as the official measures prepared by agency officials, and defines use as a clear decisional impact, then legislative use of performance measures is virtually nonexistent. If, however, one defines both performance measures and use more broadly, it is possible to identify instances of use.

Consider first the implications of conservative definitions of performance measures and use. Virginia's DEQ, like other state agencies in Virginia, submits a maximum of five performance measures per year to the Department of Planning and Budget.[32] Given the technical limitations of Virginia's measures, discussed above, it would be surprising if those measures were used by the legislative branch. New Hampshire prepares a much larger list of performance measures for its strategic plan, but those measures are largely of interest to the executive branch and the U.S. EPA. Under Governor Shaheen's performance-budgeting pilot project, the New Hampshire DES will soon submit a small number of environmental performance measures to the legislature, but that process is too embryonic for any legislative use to be analyzed as yet. Virginia and New Hampshire officials confirm that legislators and legislative staff members have made limited use of official performance measures.

Florida and Oregon, with more-extensive and more-mature performance measure systems, are better candidates for legislative use. Even in those states, however, legislative respondents found it difficult to identify a single instance where an official environmental performance-measure had a decisional impact. One problem in Florida is the presence of two parallel measurement systems. The measures contained in the *Secretary's Quarterly Performance Report* date back to February 1997, but they are perceived as the agency's measures, not the legislature's measures—at least among those few who are aware of them at all. The measures submitted by the Florida DEP for air, waste, and water were not approved by the legislature until May 1999, which means that they are not yet useful for analysis. Another problem in Florida is that many

of the legislators who approved Governor Chiles' performance-based program-budgeting (PB^2) initiative in 1994 are no longer serving as legislators. As new legislators arrive, they must learn the rationale of using performance measures as a policy tool. A knowledgeable Florida legislator puts it this way: "We've had a hard time getting legislators to focus and embrace PB^2 because they just don't understand it ... The vast majority of legislators have a hard time grasping PB squared."

Oregon, like Florida, has two parallel measurement systems: a substantial number of environmental performance measures developed by the Oregon DEQ for its strategic planning process; and a much smaller number of environmental performance measures adopted by the Oregon Progress Board after consulting with various environmental agencies, including DEQ. As happened in Florida, the agency's own performance measures have barely caused a ripple in the legislature, although knowledgeable legislative observers praise the DEQ's strategic plan as an exemplary use of performance measures as a planning tool. The Oregon Progress Board's benchmarks, with annual statistics dating back to 1990 and explicit letter grades, would seem to be tailor-made for legislative use, but legislators and legislative staff members doubt they are used much, if at all. According to one knowledgeable staff member: "Benchmarks have no effect on the budget as a whole. If there is a connection between benchmarks and the budget, it's very subliminal." According to other legislative staff members, the same is true of authorizing legislation: "No agency has gotten into trouble for not reaching benchmark goals. Benchmarks don't have a whole lot of meaning. Only the bureaucrats talk about benchmarks." As noted earlier, even the Oregon Progress Board believes that its environmental measures need improvement. Thus the technical flaws of the measures themselves may limit legislative use. In addition, the checkered history of the OPB and high legislative turnover—accelerated by term limits—undermine legislative use of performance measures, narrowly defined.

A somewhat different picture emerges if one defines performance measures and their use more broadly. According to David Whiteman, there are three different ways in which legislators might use policy-relevant data, including performance measures: *substantive* use, where legislators use data to choose a particular course of action; *elaborative* use, where legislators use data to fine-tune a course of action already selected; and *strategic* use, where legislators use data to help persuade others to support their preferred course of action.[33] Although most discussions of use focus implicitly on substantive use, strategic use and elaborative use are actually more common, at least in Congress.[34] If one considers all three forms of use and looks beyond official performance measures to a broader set of performance-related statistics, legislative use becomes easier to document.

For example, a recently retired Virginia legislator, Tayloe Murphy, used data on nitrogen emissions from publicly owned wastewater treatment facilities (POWTFs) from the Chesapeake Bay program in Annapolis to help justify the Water Quality Improvement Act, which includes a grant program to reduce nitrogen emissions from POWTFs. That legislation was signed into law January 1999. Rep. Murphy also used water-quality data from the Virginia DEQ and poultry-waste data from the state poultry federation to help justify legislation requiring the DEQ to develop a regulatory program for runoff from farms. That legislation, introduced in January 1998, was signed into law July 1999. In Whiteman's terms, both of those examples illustrate "strategic" use of policy-relevant statistics. Murphy already knew what he wanted to do, but data helped him to persuade fellow-legislators to support him.

New Hampshire legislators have also used policy-relevant data to fine-tune or peddle environmental legislation. In 1999, the New Hampshire General Assembly passed a bill limiting mercury emissions at two trash-to-energy incinerators. DES data on the cost of those emis-

sions-reductions were useful to members of the Science and Technology Committee, especially Rep. Jeb Bradley, chief sponsor of the bill. In 1999 the General Assembly also passed a bill imposing a new pollution tax on small electric power generators, with a grandfather clause for existing generators. DES data on the extent to which small generators contribute to the state's nitrogen oxide (NOx) emissions problem were useful to members of the Science and Technology Committee and to Rep. Jeff McGillivray, chief sponsor of the bill. Those data helped legislators to sell the bill to colleagues (strategic use) and to determine an appropriate penalty level (elaborative use).

The use of environmental data in legislative policymaking varies across legislative committees. New Hampshire's General Assembly offers perhaps the best illustration of that phenomenon; its committees use data quite differently. The Science and Technology Committee, whose members include engineers and a meteorologist, is a data-hungry entity that analyzes numbers. In contrast, the Environment and Agriculture Committee, which comprises homemakers, a farmer, and a former postal worker, is less receptive to data, as is the Resources and Recreation Committee, which includes a motorcycle dealer and an arcade owner.

The use of environmental data by state legislators also depends on perceptions of data sources. During the Allen administration (1993-97), Virginia legislators and legislative staff members were reluctant to take DEQ numbers at face value. "You have to trust the agency before you interpret measures to mean the agency is doing a better job than before," a legislative staffer explains. "With DEQ ... that level of trust wasn't there." Although Dennis Treacy has helped to restore legislative confidence in DEQ, questions about data-veracity persist. In contrast, the New Hampshire DES has a much more favorable image in the state legislature. Asked to assess the performance of DES, one legislator puts it this way: "I'd give them an A! They've done an excellent job over the years. They've tried to solve problems without forcing people into corners ... They try to educate first without lowering the boom on anybody. But they're not loath to lower the boom when they have to." Another legislator, from a different political party, is equally enthusiastic: "I have been consistently impressed with Bob Varney ... He's really good."

Favorable perceptions of an environmental agency do not guarantee legislative use of performance measures or other environmental data, of course. If measures are flawed or inaccessible, or irrelevant to current issues, then legislators and legislative staff members are likely to ignore them. But trust facilitates use, as surely as distrust inhibits it. So long as environmental agencies are the principal sources of performance measures, the environmental agency's reputation will have a considerable impact on legislative use.

The U.S. EPA

In 1995 the U.S. EPA and the states, represented by a steering committee, launched a new initiative aimed at shifting the focus of intergovernmental relations from procedural requirements to better environmental results. That initiative, known as the National Environmental Performance Partnership System (NEPPS), authorizes the EPA's regional offices to work creatively with state environmental agencies to secure superior performance in return for greater state flexibility.[35] In concrete terms, the EPA works with individual states to forge a performance partnership agreement (PPA) or a performance partnership grant (PPG) or both. Under a PPA, states pledge to achieve certain results in return for fewer reporting requirements or other concessions; under a PPG, states may combine funds from several grant programs to address priorities.

Although NEPPS has its own unique origins and aims, it is roughly consistent with the Government Performance and Results Act (GPRA), which requires federal agencies to shift their attention from inputs and outputs to outcomes by developing strategic plans and performance reports which are submitted to Congress. If the EPA is to comply with GPRA, it needs to produce more data on environmental results. By enlisting states in the enterprise, PPAs in particular have the potential to facilitate the EPA's compliance with GPRA. That is especially true if PPAs explicitly specify outcome-focused performance measures the states will use.

In its dealings with state governments, the EPA, like other federal agencies, has an array of tools from which to choose. Although there are dozens of intergovernmental tools, three broad categories are illustrative: *catalytic controls*, which place an issue on the state agency's agenda but do not require a particular response; *hortatory controls*, which rely on incentives to encourage a response in a desired direction; and *coercive controls*, which require state agencies to adopt a particular course of action.[36]

State complaints notwithstanding,[37] the EPA seldom relies on coercive controls. The federal government does coerce the states from time to time, but such coercion almost always stems from tough statutory language or uncompromising judicial decrees; if the EPA is involved in such disputes, it is usually as an intermediary. More often than not, the EPA relies on hortatory and catalytic controls to influence state environmental agencies. That has been especially true as congressional sentiment against unfunded mandates has grown.

In its efforts to induce state environmental agencies to adopt PPAs and PPGs, the EPA has relied primarily upon hortatory controls. By promising reduced reporting requirements, greater spending flexibility, and other concessions, the EPA has encouraged states to enter into such agreements, for a one-year or two-year period. The EPA's efforts to promote PPAs and PPGs have been remarkably successful. As of December 1998, the EPA had PPAs with 33 states, PPGs with 43 states.[38]

In contrast, the EPA's efforts to promote "core performance measures" exemplify catalytic controls. In promoting those measures, the EPA has been dealt with states collectively through ECOS. After placing core performance measures on the states' agenda in 1995, the EPA struggled for several years to secure an agreement on which measures should be adopted. The states were stronger in their collective negotiations with headquarters than they were with their designated EPA regional offices. The final set of core performance measures approved by ECOS and the EPA in April 1999 is both leaner and less revolutionary than some public officials would have liked. For the most part, it converts a limited number of existing reporting requirements into performance measures that are not particularly threatening or revealing. On the other hand, existing reporting requirements, many of which were mandated by Congress, remain in effect. A few of the core performance measures "may require new data and reporting,"[39] and some could evolve into truly significant measures. For example, Water Core Performance Measure # 5, which gauges the number and percent of impaired waterways, could be extremely useful if state water sampling and measurement strategies converge.

Among the subjects of this study, Florida, New Hampshire, and Oregon have a PPAs, and Florida, New Hampshire, and Virginia have a PPG. (The Florida and Virginia PPGs, however, are with the state departments of agriculture, not the departments of environmental protection.) Getting those agreements varied by region. Region 1 vigorously promoted PPAs and saw all its states sign them. Region 4 faced greater resistance, and fought hard to convince Florida to sign its PPA in 1996. Although Oregon initially balked at a comprehensive PPA, the relatively positive experiences of neighboring states convinced Oregon to adopt a PPA for air, water, and waste in 1997. Relations between the EPA's Region 3 and Virginia's Governor Allen were too

frosty for any serious discussion of a PPA. Although relations are more cordial in 2000, Virginia has not signed a PPA. As a Region III administrator explains, "Our view on PPAs is that unless the state wants to do it, we don't push the PPA. We feel we can have a good working relationship without a PPA."

The PPA is the cornerstone of the NEPPS process, because it involves reciprocal obligations that apply to both the EPA and the states. Has the PPA promoted the cause of performance measurement and greater emphasis on results, as desired by the EPA? Has the PPA promoted the cause of burden reduction and fewer reporting requirements, as desired by the states? Based on the four states, the answer to both questions would appear to be yes.

Both New Hampshire and Oregon have included lengthy lists of performance measures in their PPAs. Those measures include core performance measures derived from early drafts of the measures eventually adopted by ECOS and the EPA, along with other measures selected by the respective states. Although there was some commitment in both states to performance measurement prior to the adoption of the PPA, the PPA has accelerated the institutionalization of performance measurement in both states. Neither of Florida's PPAs to date includes a list of performance measures, but the second PPA cites the *Secretary's Quarterly Performance Report* as evidence of the Florida DEP's efforts to "display the important linkages between agency actions, the regulated community's response to agency actions, and the resulting environmental outcomes.[40]"

Some progress has also been made in reducing the burden of reporting, though not as much as the states would like. In Florida, for example, the PPA paved the way for sizable reductions in RCRA reporting and some reductions in wastewater pretreatment reporting as well. The PPA also enabled Florida to shift resources from routine inspections of wastewater treatment plants to other priority areas.[41] In New Hampshire, reporting requirements have diminished, and programmatic oversight of certain programs, such as the Section 319 (nonpoint pollution) program, has become less stringent. It is difficult to know, however, whether this is directly attributable to the PPA.

PPGs have given states additional discretion to transfer funds across programs. For example, New Hampshire's PPG consolidated approximately a dozen programs, including air, water, and waste programs. New Hampshire's DES used the PPG to shift some Section 319 money to begin a bio-monitoring program for the state's surface waters and to supplement their wetlands initiatives.

Those are noteworthy accomplishments, and suggest that NEPPS has been worth the effort. On the other hand, there is much more to do. Florida has announced that it regards the core performance measures as voluntary; it has not pledged to report all the measures. Oregon's PPA includes a disclaimer that core performance measures need not be reported if the information is not readily available, and other states have similar language in their agreements. In addition, it is important to distinguish between lists of core performance measures and the actual use of such measures. As the next section details, statistics used thus far by state administrators have tended to be homegrown measures rather than the core performance measures developed by the EPA and ECOS. It is also important to distinguish between the EPA's willingness to allow grant flexibility and the states' willingness to use it. The strength of medium-specific program bastions often acts as a barrier to substantial fund transfers, even when the EPA would allow such transfers.

Although NEPPS is still a work in progress,[42] it has already:

- placed performance measurement on the agenda of state environmental agencies;

- encouraged technical improvements in performance measures, including a shift from outputs to outcomes;
- encouraged the EPA and its regional offices to review and relax certain reporting requirements;
- enabled participating states to consolidate certain grants and to transfer funds to where they are needed the most;
- established the foundation for a national assessment of state environmental performance.

Environmental Groups

Environmental groups have played a critical role in the evolution of environmental policy, at the federal, state, and local levels. They have lobbied legislators, participated in administrative rulemaking proceedings, and sued environmental agencies in court. They have mobilized public opinion and helped to expand the scope of conflict. They have held press conferences and staged demonstrations in order to attract the attention of the mass media. They have been vigilant, active, and productive on a wide range of environmental issues.

Thus it is surprising to learn that environmental performance measures have barely caused a ripple at environmental groups active in Florida, New Hampshire, Oregon, and Virginia. When asked about environmental performance measures, environmental group leaders in those states confessed to limited knowledge of such measures: some also expressed limited interest. Yet environmental performance measures could be quite useful to environmental groups as they seek to mobilize citizens, persuade legislators, and interest reporters. Environmental performance measures may not yet be completely reliable policymaking tools, but they are clearly suitable for use as ammunition in ongoing policy debates. Nevertheless, with the few exceptions noted below, they have not been used for that purpose.

A Virginia environmental leader sums up his group's views: "We don't focus on the performance measures. They've never been a big deal." An environmental leader in New Hampshire had not seen the state environmental agency's performance measures in its PPA; indeed, he did not know the state had a PPA. A Florida environmental leader was unfamiliar with the *Secretary's Quarterly Report,* though intrigued to learn of it. An Oregon environmental leader had heard of Oregon's decade-old benchmarks but had never used them. Interviews with environmental leaders revealed a curious disjunction between articulate, detailed commentary on numerous environmental problems, and virtual ignorance of environmental performance measures produced by state agencies.

What explains that information gap? First, state environmental agencies do not appear to have sought the views of environmental group stakeholders when drafting environmental performance measures. Not having been present when the measures were designed, environmental activists have been less attentive when those measures were released to the public, if indeed they were released to the public. (Florida's quarterly reports and Oregon's benchmarks are widely disseminated; other performance measures, embedded in PPAs or budgets or strategic plans, are less well distributed.) Then, too, environmental activists prefer substantive problems to arcane management issues. Environmental leaders would rather talk about mercury levels in watersheds, groundwater contamination by underground injection facilities, the release of nutrients and phosphorous into fragile ecosystems, noxious emissions from power plants, and

the survivability of threatened and endangered species, than address administrative challenges. That environmental performance-measurement bridges the gap between substantive policy and the administrative process needs to be better articulated by advocates of performance measurement. Finally, environmental activists often distrust self-assessments by agency officials, as well as data supplied by those same officials. Under such circumstances, performance measures may seem a sham, a transparent exercise in public relations.

Despite a jaundiced view of administrative performance measures, some environmental groups have recognized that raw data supplied by administrative agencies can be converted into organizational "report cards" that highlight the relative success or failure of state environmental agencies and the firms they regulate. For example, the Clean Air Network (national), Clean Water Action (New Hampshire) and the Mercury Policy Project (Vermont) collaborated to produce a report rating the mercury reduction efforts of each of the New England states.[43] Letter grades helped to underscore the coalition's appraisal of each state and its environmental agency (New Hampshire received a C). In Florida, the Legal Environmental Assistance Foundation (LEAF) and three other environmental groups used data from the Florida DEP and the U.S. EPA to rate the state's electric utilities, based on their pollution levels.[44] Such report cards can be extremely effective techniques for generating publicity and inducing reform. If more environmental groups were to produce such material, performance measures would have a much wider audience and would play a more prominent role in political debates.

CHAPTER 3

Administrative Responses

Environmental performance measures are of potential interest to governors, state legislators, federal overseers, interest groups, and citizens. They should also be of great interest to state environmental administrators, who determine whether state and federal policies are successfully implemented or not. Unless state environmental administrators actually use performance measures, the cost of developing the measures and gathering the information on which they are based may not be worth the effort.

Administrative Support

The views of three sets of administrators matter: those of the political appointees who head agencies; those of the senior managers who run agency programs; and those of the individuals who actually implement programs. For this paper, I interviewed political appointees and senior managers in each of the four states. (Time constraints precluded interviews with representatives of the third group.)

Based on those interviews, it appears that state environmental administrators embrace the concept of performance measurement, but have reservations about the technical merits of such measures, and believe that politicization undermines the extent of their administrative use. Support for the abstract concepts is relatively high, while support for the specific applications is relatively low.[45]

All 36 senior administrators interviewed in the four states agreed that "states should use performance measures to assess environmental progress" and 91.7 percent agreed that "performance measures should play a major role in state environmental management decisions." Although support for performance budgeting was somewhat weaker, 69.4 percent of the senior administrators agreed that "performance measures should play a major role in state environmental budgeting decisions."

Initially, that would appear to be a strong vote of confidence in environmental performance measures. But it is instructive to see how these numbers change when one allows respondents to qualify their responses. Among the interviewees, 63.9 percent strongly agree that "states should use performance measures to assess environmental progress;" 47.2 percent strongly agree that performance measures should play a major role in state environmental management

decisions;" and only 25 percent strongly agree that "performance measures should play a major role in state environmental budgeting decisions."

That lukewarm support for performance budgeting is particularly interesting, because performance budgeting was the basis for many states' initial forays into the world of performance measurement. One state administrator puts it this way: "Performance budgeting is good, like kissing children. If it's genuine, it holds great promise. But if it's window dressing, it doesn't." That is the "symbolic politics" argument: that performance measures amount to much ado about nothing. Another state administrator expresses a different concern: "If we show improved numbers in terms of performance, it is not in keeping with our plea for more resources." That is the "fairness" argument: administrators will be punished with smaller appropriations if their program are successful. Thus some administrators see performance budgeting as a paper tiger, while others see it as a menacing lion. The same arguments prevail in the broad definition of performance measurement.

In three of the four states, some senior program officials voice sharp reservations about performance measurement in general. Virginia officials complain about paperwork. Asked why the Virginia DEQ has developed no more than the five performance measures required by the state Department of Planning and Budget, a senior DEQ official replies: "We didn't want to create more work for ourselves."

Oregon officials express similar sentiments. Asked why his agency has not devoted more manpower to performance measure development, a DEQ official put it bluntly: "If it's more work, we'd rather not do it." Another concern in Oregon is that performance measures may be used by budget-cutters as a rationale for cutting successful programs because they are doing well. For example, DEQ director Langdon Marsh, a forceful advocate for performance measurement within ECOS, asked his air, water, and waste division administrators to allocate some FTEs to performance measurement in the DEQ's strategic plan, to augment the one FTE already allocated by the Division of Management Services. Their response was to allocate a combined total of one-half FTE for that purpose, a response that Marsh found "disappointing."[46] Another revealing episode arose when the water division discovered a technical error in the calculations for its benchmark on wastewater-discharge permits. Instead of an "F," the division should have received an "A," despite a significant permit backlog. Good news, one might imagine. But the water division, which was pleading for more legislative resources to reduce its permit backlog, feared that the new information might weaken its pleas for more funding. As one official explained: "In some ways an "A" is more of a problem than an "F!"

In Florida, senior officials are sometimes scathing in their criticisms of performance measurement. "We have been performance-managed to death," one official complains, citing the state's parallel efforts to measure results. Another official objects to performance measures that transcend DEP's jurisdiction, thus holding him accountable for developments well beyond his control. A third official keeps a computer file entitled "Initiatives du Jour" in which he stores information on reforms aimed at improving his agency's performance. With a touch of contempt, he lists approximately a dozen such efforts. None, he believes, has been successful, because of politics and rapidly changing environmental circumstances.

New Hampshire's senior managers are generally more enthusiastic about performance measurement than their counterparts elsewhere. Their criticisms of particular measures are more muted, and their stated fears about possible budget cutbacks are less pronounced. One reason for New Hampshire's greater support may be Commissioner Bob Varney's strong endorsement of performance measurement, as well as his equally strong reassurances that performance measures will not be used to justify large budgetary shifts across programs. A highly

regarded and durable administrator who has served under two Republican governors as well as the current Democratic leader, Varney has set a positive tone on performance measurement, which his administrators have by and large followed. Another factor may be strong support for performance measurement among New England's environmental agencies and at the EPA's Region I office in Boston.

Factors Facilitating Use

A key factor facilitating use of performance measures is strong support from an agency's head. A related factor is the reputation of the agency's head, especially among senior managers. If the agency head is well respected—even feared— by senior managers, and supports vigorously performance measures, their use is more likely. And, as Bob Varney's tenure demonstrates, longevity also helps, allowing an agency head time to institutionalize a performance measurement system.

A second factor facilitating use is the presence of some agenda-forcing or action-forcing mechanism that is linked to performance measures. An example of such a mechanism would be the Focus-Watch designation system created by Florida DEP Secretary Virginia Wetherell and continued with some modifications by her successor, David Struhs.[47] Under that system, the *Secretary's Quarterly Performance Report* triggers a review by the secretary or deputy secretary and key staff members. Based on that review, problems may be designated as "watch" areas (roughly equivalent to a tornado watch), or "focus" areas (roughly equivalent to a tornado warning). The process helps ensure that performance measures are taken seriously by senior managers, including those who would prefer to be undisturbed by such indicators.

A third factor facilitating use is support from state politicians such as a governor or key members of the state legislature. Either diffuse support for a system of measures or specific support for a particular measure can facilitate use. Diffuse support means that the governor or legislator in question believes that performance measurement is a useful exercise and that certain procedures are in place to ensure that agencies develop such measures. Specific support means that the politician in question cares so much about a particular issue that senior managers believe they can impress him or her by performing better in that area. For example, Virginia Governor George Allen favored the speedy issuance of environmental permits, while Governor Jim Gilmore supports pollution prevention. Governor Jeanne Shaheen's recent decision to establish a performance-budgeting demonstration project in New Hampshire, focusing especially on environmental performance, should encourage use so long as Shaheen remains governor, and perhaps beyond.

A fourth factor facilitating use is pressure from the U.S. EPA—and particularly from the relevant regional office—with which states must bargain on a wide range of issues. The establishment of a performance measurement system is a classic "bargaining chip" that can be used by either the EPA or a state when negotiating a PPA. In a typical bargain, the EPA promises flexibility or burden reduction, while the state promises to adopt a set of performance measures. That is, for example, what happened when the EPA and Florida negotiated that state's first PPA in 1996. As performance measurement systems mature, the EPA is likely to insist on more than a pretty set of measures; it may also insist on some evidence of use. The EPA's Region II office appeared to be doing so in its appraisal of the New Jersey Department of Environmental Protection in 1996.[48]

Transparency and accessibility combine to for a fifth factor. If measures are clear and understandable and the set of measures is widely disseminated, through newspapers, the Internet,

and other means, then use is more likely. Use or perceived use by the general public facilitates use by public managers. The *Secretary's Quarterly Report*, published by the Florida DEP, includes a wide range of relevant and current statistics, with good tables and graphics, and a helpful executive summary. Oregon's benchmarks, published by the Oregon Progress Board, present data from 1990 onward to capture trends and punctuate each indicator with letter grades. Both documents are available in hard copy form or via the Internet.

Examples of Use

In each of the four states, I identified one or more example of performance measures being used by senior managers to rethink a problem, formulate a new problem-solving strategy, or reallocate resources. The examples are discussed briefly here, more fully in the Appendix.

In Florida, the combination of a quarterly report and a Focus-Watch designation system enabled program managers to reassess several problems by using performance measures that had attracted the attention of the DEP. After petroleum storage tanks in two or three districts registered relatively low compliance rates in late 1997, the corresponding program was designated a Watch area by the Secretary. Following an analysis of noncompliance data, the Bureau of Petroleum Storage Systems improved its training practices, clarified its rules, and launched a major industry education initiative. When shellfish-plant compliance rates declined in 1998, DEP designated that program as a Focus area. Following an investigation, the Bureau of Marine Resource Regulation and Development sharpened the technical skills of its inspectors, arranged for voluntary training sessions at shellfish processing plants, and changed its inspection priorities. A sharp decline in controlled burning of trees and vegetation in state parks in 1997 led to that program's designation as a Focus area. The Division of Recreation and Parks responded by placing greater emphasis on prescribed burning at the district level and by purchasing enough new equipment to accelerate the burning process.

New Hampshire's PPA has many goals, milestones, and indicators, including the elimination of the complaint backlog.[49] When the Waste Management Division's complaint backlog had reached 1600 cases, Bob Varney instructed the special investigations staff to develop a complaint backlog reduction initiative. With his support—and new gubernatorial resources—the division reallocated resources and hired temporary staff to help close out old cases. To ease its future complaint burden, the division is now accepting written complaints, and is transferring some cases to the state Department of Justice.

Sometimes the data underlying a performance measure are more instructive than the performance measure itself. Oregon's PPA and Oregon's benchmarks report contain some useful air quality measures, but background documents are even more revealing. In 1996 the Oregon DEQ's Air Quality Division published an ozone maintenance plan for Portland, with emissions statistics that indicated a sharp shift in the causes of ozone, from point sources to area and mobile sources.[50] The historical numbers led DEQ to propose a reallocation of resources when it released its five-year strategic plan in 1997. Since that time, DEQ has taken advantage of some flexibility in federal funding to shift FTEs away from point source pollution and towards area and mobile source pollution.

In Virginia, the creation of a performance measurement system occurred approximately halfway through the term of Governor George Allen, in late 1995 and early 1996. Allen's strong support for expediting and consolidating the issuance of environmental permits helped persuade DEQ to direct attention to the permitting process. In addition to measuring permit-processing speed and the number of general permits issued, DEQ managers sought to improve

their performance in both categories. The Department of Conservation and Recreation's measures included the number of nutrient management plans issued, with an initial target of 200 plans per year. When the DCR failed to achieve its goal, for FY1997, it redeployed resources to ensure that the goal was met for FY1998. In doing so, however, it diverted resources from other valuable activities.

Patterns

Although the use of performance measures is idiosyncratic to some extent, it is possible to identify certain patterns from the cases summarized above.

First, output measures are still more likely to be utilized than outcome measures, and measures of intermediate outcomes are more likely to be utilized than measures of terminal outcomes, even in a fairly progressive cluster of states. The number of general permits issued, the speed with which medium-specific permits are issued, the number of nutrient management plans issued, the extent of prescribed burning achieved, and an agency's success in reducing its complaint backlog are all output measures. A program's compliance rate and private firms' emissions rates are best regarded as intermediate outcomes. The prominence of outputs in the examples cited above could be due to the greater proportion of outputs in the existing array of performance measures, the greater appeal of statistics that lie directly within the control of program managers, or both.

Second, elaborative and strategic use are more common than substantive use. Examples of elaborative use abound. When an agency uses performance measures to improve its training practices, alter its inspection schedules, or clarify its rules, that is elaborative use. Florida's use of prescribed burning statistics to extract additional resources from its legislature is an excellent example of strategic use, as is New Hampshire's use of complaint-backlog data to obtain additional funding.

Third, measures designed by an agency itself are more likely to be used than measures designed by an outside party, even if the latter were developed in collaboration with the agency. The measures used by the Florida DEP came exclusively from the *Secretary's Quarterly Performance Report*. According to Florida officials, measures developed for the PB^2 process are less likely to be utilized, because the agency has less confidence in them. The statistics used by the Oregon DEQ came from the agency's own archives, not from the Oregon Progress Board, which publishes the benchmarks. Asked whether her program utilized benchmarks, one manager replied: "I don't even think about them." In fact, she was surprised to learn that one of the state's benchmarks related directly to her program. It is instructive, and rather sobering, that none of the performance measures cited in the examples above is a "core performance measure" approved by ECOS and the U.S. EPA. Although those measures have been circulating for a few years and have been included, more or less verbatim, in the PPAs of both New Hampshire and Oregon, they were not explicitly mentioned by senior program managers asked to cite examples of use.

Efforts to Improve Performance Measures

Each of the four states is attempting to improve its performance measurements or its performance measurement system. In doing so, they begin from different starting points. Florida has two parallel systems: the secretary's quarterly report, which interests state administrators and the U.S. EPA, and the PB^2 measures, of primary interest to the governor's office and the

state legislature. Florida is unique in its Focus-Watch designation system that transforms each quarterly report into an action-oriented blueprint for senior managers. Oregon also has two parallel systems: the PPA's performance measures (of primary interest to state administrators and the U.S. EPA) and the benchmarks measures (of primary interest to the governor's office and the general public). Oregon is the only state is this study that has a multi-agency, multi-year performance measurement system with letter grades to maximize both embarrassment and bragging rights. New Hampshire has a substantial set of measures embodied in its PPA. as we;; as smaller set of measures developed in concert with other New England states. Both are of interest to state administrators and the U.S. EPA. Virginia has a multi-agency, multi-year performance measurement system without letter grades. The measures are of particular interest to the Department of Planning and Budget, cabinet secretaries, and the governor's office.

Building from a strong foundation, Florida is trying to consolidate its performance measurement systems. With two parallel systems, Florida runs the risk of information overkill. Should legislative oversight increase, state administrators would be under growing pressure to respond to two sets of measures, which might not point in the same direction. Aware of that, the Florida DEP has prepared a list of parallel measures that highlights measurement discrepancies for each of its program areas. Secretary David Struhs has indicated that he would like to see these measurement systems better integrated, or even merged.

To the naked eye, Oregon's benchmarks system seems tailor-made for extensive use in the political arena: the measures are well-organized, on subjects of undeniable importance (*e.g.*, environmental protection, economic development, education.); trend data facilitate use by political elites, while letter grades facilitate use by the general public. Despite those attractive features, the benchmarks do not yet seem to be driving policy. In environmental protection, that seems to be due in part to technical weaknesses of the measures themselves. With that in mind, the Oregon Progress Board and the governor's office have supported an effort to reconceptualize the environmental protection measures, with sustainability as the core anchoring concept. The Oregon DEQ and other environmental agencies have contributed ideas to that enterprise, which will take off if the governor issues an executive order extending the initiative.

Considering its small size and limited resources, New Hampshire has made remarkable progress in developing an impressive set of environmental performance measures. It has done so in part by pooling resources with environmental agencies in neighboring states. In concert with other New England states and EPA's Region 1 office, New Hampshire developed a set of 12 environmental performance measures, with corresponding commentaries on data sources and the methodologies employed by each state.[51] In addition, the state is trying to regionalize data collection and performance measurement by working with other New England states to develop a viable set of pollution prevention measures. The New Hampshire DES has also taken the lead within the state in developing measures for a new performance-based budgeting system.

Virginia has a well-established performance measurement system, with measures whose quality varies sharply across agencies. When Dennis Treacy took over as director of the DEQ in 1998, he inherited a relatively weak set of performance measures, only loosely connected to the ultimate goal of environmental protection. Treacy's strategy has been to improve the quality of his agency's measures and the quality of the data on which they are based. Meanwhile, the Department of Planning and Budget continues to coax agencies to submit more outcome measures, as opposed to output measures. In addition, the DPB hopes to establish a new set of 25 to 30 societal indicators that transcend individual agencies. Measures of air and water quality are likely to be among the indicators featured.

CHAPTER 4

Other Policy Sectors

Environmental policymakers are not unique in having wrestled with the challenges of performance measurement. Within each of the four states, public officials have attempted to measure outputs and outcomes for criminal justice, education, health care, revenue collection, social services, and other policy domains. Nationwide, there have been systematic efforts to compare governments and private firms that fight crime, educate children, manage health care, collect revenue, and promote economic development. In general, environmental protection falls within the middle sector of performance measurement efforts. In comparison to other policy domains, it is neither outstanding nor abysmal.

Intrastate Comparisons

There are several different ways to evaluate the maturity of performance measurement systems, but two are especially useful in this context: how is an agency's performance measurement effort regarded by knowledgeable observers within the legislative and executive branches? and how successful has the agency been in developing credible measures of outcomes, as opposed to outputs? Based on those criteria, state environmental agencies have not accomplished as much as departments of revenue, health, corrections, and social services.

Virginia's Department of Planning and Budget's website, for example, shows performance measures for every state agency. The Department of Taxation showcases three excellent outcome measures: the percentage of customers that registers an unsolicited complaint about service; the margin of error in revenue forecast; and compliance revenue collected. The Department of Medical Assistance Services also features good outcome measures; the percentage of Medicaid children fully immunized by the age of two; the percentage of pregnant Medicaid recipients who receive prenatal care that meets accepted standards; and the cost per eligible client in all Medicaid programs. The Department of Social Services, the Department of Corrections, and the Department of State Police have also developed some excellent outcome measures, including the percentage of children in the child support caseload born out-of-wedlock who have had paternity established (social services); the percentage of inmates engaged in work assignment averaging 20 hours or more per week (corrections); and the conviction rate for arrests for driving under the influence (state police). In contrast, the

Department of Environmental Quality's measures, though improved, still tilt to outputs.

In Florida, it is instructive to examine the so-called "enrolled implementing bill" (SB2502) that accompanied the FY2000 budget. The Department of Corrections includes such excellent outcome measures as: the number of escapes from the secure perimeter of major institutions; the number of physical assaults by inmates on staff or other inmates; the percentage of random inmate drug tests that are negative; the percentage of health care grievances upheld; and the percentage of participants in the Community Corrections Program who absconded within two years. The Department of Education includes such useful measures as: the percentage of fifth-, eighth-, and tenth-graders who attained proficiency in mathematics on the Florida Comprehensive Achievement Test; the percentage of recent high school graduates who are working, enrolled in school, or serving in the military within six months after graduation; the percentage of recent high school graduates who qualify for placement into college-level courses; and the number and percentage of incidents of violence, weapons violations, vandalism, substance abuse, and harassment on school buses, on campuses, and at school-sponsored activities. Agency for Health Care Administration measures, such as the percent of women receiving adequate prenatal care; the percent of vaginal deliveries with no complications; and the percent of eligible children who received all required components of Early Periodic Screening, Diagnostic and Treatment Services are also impressive. The Department of Environmental Protection's measures, though generally very good, are not quite as compelling. As the department's inspector general has noted, many of the measures warrant improvement.

In Oregon, the vast majority of benchmarks are explicitly linked to a particular "lead" agency.[52] Some of the better benchmarks fall under the jurisdiction of the Department of Human Resources. The Health Division's measures are particularly impressive. They include: the pregnancy rate per 1,000 females ages between the ages of 10 and 17; the percentage of babies whose mothers received early prenatal care; the infant mortality rate per 1,000; the percentage of two-year-olds who are adequately immunized, the annual percentage of new HIV cases with an early diagnosis; and the percentage of adults who do not currently smoke tobacco.

Which agencies are reputed to have the best performance measures in each state? Within Florida, the Department of Revenue and the Department of Law Enforcement are frequently praised not for the measures alone, but also for the zeal with which they have implemented their measures. For example, the commissioner of the Department of Law Enforcement, Tim Moore, has rewarded senior managers with superior performance records. Both agencies have secured additional flexibility from the legislature as a result of their performance measurement efforts. Within Virginia, several state agencies, such as the Department of Transportation, the Department of Medical Assistance Services, and institutions of higher education have developed more than the three to five performance measures required by the Department of Planning and Budget. The Department of Medical Assistance Services has also integrated some of its performance measures into contracts with service delivery organizations, such as health maintenance organizations.[53] Within Oregon, the Department of Human Resources is perceived to have done an outstanding job of developing benchmarks, and its Health Division has included several performance measures in contracts with Medicaid HMOs.[54] The Department of Transportation and the Department of State Police also receive accolades. Among environmental agencies, the Department of Forestry has excelled, the Department of Environmental Quality has done a respectable job, and the Department of Fish and Wildlife has lagged behind.

It is difficult to make comparisons within New Hampshire, because a statewide performance budgeting initiative has just begun. Nevertheless, the Department of Environmental

Services is clearly regarded as a pacesetter in performance measurement within the state. As noted earlier, three of the four pilot programs selected for Governor Shaheen's performance-budgeting initiative feature environmental measures spearheaded by the Department of Environmental Services.

National Comparisons

In comparison to other policy sectors, environmental protection is characterized by weak comparative performance data. Unfortunately, the huge amount of data the EPA possesses does not lend itself to explicit interstate performance comparisons. The EPA's data on regulatory enforcement actions, for example, are standardized and can be aggregated by state, but focus on outputs, not outcomes. The EPA's data on water quality do tap outcomes but they are not standardized. What about air quality? As the National Academy of Public Administration noted in 1997, "The data available to EPA are fragmented and difficult to use in painting coherent, detailed pictures of emissions and environmental conditions."[55]

It was precisely to remedy those inadequacies that the EPA promoted "core performance measures." The 1999 agreement between the EPA and ECOS on such measures represents an accomplishment (but not a major turning point. Several big problems remain. In the first place, the core performance measures suffer from numerous technical deficiencies. Secondly, many of the states have not consented to report all of the core performance measures.[56] Finally, EPA headquarters has not decided who will compile the core performance measures, how they will be disseminated, or how they will be used. Until those problems are resolved, the core performance measures will be neither precise nor terribly useful.

In contrast, other policy sectors have advanced more rapidly in the quest for comparative state performance data. Elementary education is a good example. Every two years the National Assessment of Educational Progress (NAEP) announces test scores, by state, for math, science, reading, or writing.[57] The project is fueled by a substantial appropriation from Congress—$36 million in FY1999.[58] Although state participation in NAEP is voluntary, the overwhelming majority of states now participate (e.g., 43 states participated in the 1996 mathematics test). Thus the National Center for Education Statistics can report on a regular basis how well the students of one state are doing in comparison to the students of other states. When such scores are reported, they generate considerable media attention(and occasional policy reform.

Health care is another good example. Working in tandem with private employers and the Health Care Financing Administration (HCFA), the National Committee on Quality Assurance (NCQA) has assembled a national database on the relative performance of HMOs. HCFA contributes more than $1 million a year to the effort, and provides additional funding to the Foundation for Accountability, which promotes managed care outcome measures.[59] Although participation is voluntary, HMOs representing 65 percent of all those persons enrolled in HMOs have chosen to participate in the NCQA's project by submitting data that may be disclosed to the public.[60] For such HMOs, data are available on as many as 70 performance measures, focusing especially on preventive care. Data are also available, from HCFA, on the number of (risk-adjusted) hospital deaths for patients undergoing heart surgery and other procedures, as well as on the number of substantiated complaints against nursing homes receiving federal funds, which includes almost all of them.

What is striking about education policy is the widespread use of a single widely accepted measure of performance—namely, student test scores. What is striking about health policy is the widespread use of multiple indicators of performance, including several outcome mea-

sures, such as the use of beta-blockers after a heart attack. Another positive feature of HMO performance measures is that they are often audited in advance of publication, thus guaranteeing the validity of the numbers.

Why greater progress in education and health care than environmental protection? First, there is greater consensus about outcome measures, such as student test scores and hospital mortality statistics. Second, there is greater evidence linking widely used output measures such as preventive medicine to desired outcomes. Third, powerful politicians and interest groups supported the development and use of performance measures in education and health care. Fourth, federal agencies such as the Department of Education and HCFA allocated funding to stimulate the development of more and better measures. Fifth, the organizations in charge of gathering the performance measures are either non- or quasi-governmental, not government agencies with regulatory functions.

CHAPTER 5

The Many Faces of Accountability

In 1995 the National Academy of Public Administration called for "accountable devolution" as the best way to achieve superior environmental results. More specifically, the Academy urged the EPA to devolve more authority to the states but to hold them accountable for results.[61] The NEPPS approach epitomizes that vision of greater state flexibility, differential federal oversight, and performance-based reviews. In 1997 the Academy reiterated its plea for accountable devolution, but complained that progress towards creating performance-based environmental data had been unduly slow.[62] The Academy also noted that NEPPS lacked a strong commitment from key EPA managers and state officials.

The case for devolution is rooted in three premises.

- States deserve greater trust because their technical capacity has improved significantly.
- States deserve greater trust because their political support for environmental protection has increased significantly (except when pollution can easily be exported to other states.
- States deserve greater trust because the next generation of environmental problems (e.g., nonpoint pollution and community-based initiatives) will require their creativity and their vigorous intervention.

Are these premises correct? To answer that authoritatively, one must know how important vigorous regulatory enforcement is as a policy tool, as opposed to, for instance, technical assistance. Recent EPA reports have documented a decline in state-level regulatory enforcement, especially in certain regions. The scholarly literature supports the proposition that state agencies are less likely to opt for vigorous regulatory enforcement than the EPA. For example, NPDES enforcement is weaker in states where state agencies are responsible for enforcement, stronger in states where the EPA has retained jurisdiction.[63] Thus even today the states cannot be fully trusted to enforce environmental laws as vigorously as the EPA would. But is that sufficient to rethink devolution? To place the situation in perspective, one would like to know whether states opt instead for more extensive technical assistance to regulated parties, as well as whether that technical assistance is more or less effective than regulatory enforcement.

In the absence of conclusive data on those points, what can one infer? First, the case for greater trust and greater devolution is greater with a strong national database that systematically compares state performance. Although some states have balked at efforts to develop core performance measures, such measures represent an indispensable prerequisite for further devolution. To justify continued devolution, Congress and the EPA need evidence that the states have figured out how to protect the environment without relying so much on stringent regulation and punitive enforcement.

Second, the sudden production of all 30 core performance measures (for air, waste, and water) and all seven accountability measures (for enforcement and compliance assurance) by all 50 states would not create the national database that federal officials need. That is especially true of water policy, where state monitoring practices are disjointed and erratic. So long as the states monitor different percentages of their waterways at different intervals and with different degrees of sophistication (e.g., chemical vs. biological parameters), one cannot learn much from state-level water-quality data. The more striking the data deficiencies, the greater the unfairness of interstate comparisons.

Third, debates over the relative merits of policy tools (e.g., regulatory enforcement vs. technical assistance) require the collection of both output and outcome measures for satisfactory resolutions. If states that opt for more technical assistance and fewer civil penalties against polluters experience greater environmental improvements than other states, that would be an extremely important finding. But we will never know that—or the reverse—unless states continue to collect output data on a regular basis. The ideal set of performance measures is a mix of outputs and outcomes, not outcomes alone.

A strong national database is needed if we are to have "accountable devolution[64]" rather than just devolution. But what kind of accountability do we seek to achieve? The concept of accountability has almost hypnotic powers, especially in an era of growing dissatisfaction with cumbersome rules that tie the hands of bureaucrats and prevent them from solving problems as quickly and cheaply as possible. But "accountability" is also ambiguous, incomplete. In fact, accountability is a multidimensional concept; one person's interpretation of what accountability means may differ strikingly from another's.[65]

Barbara Romzek addresses those concerns in a series of essays on accountability. Specifically, she argues that there are at least four different forms of accountability: *hierarchical,* characterized by low autonomy and internal sources of control; *legal*, characterized by low autonomy and external sources of control; *professiona*l accountability, characterized by high autonomy and internal sources of control; and *political*, characterized by high autonomy and external sources of control.[66]

In the context of environmental protection, Romzek's categories apply to both federal and state agencies. For example, GPRA, which applies to the U.S. EPA and other federal agencies, is supposed to promote political accountability because it allows considerable agency discretion to achieve results, tempered by congressional review. NEPPS, which applies to state environmental agencies, also promotes political accountability by giving states considerable discretion to achieve results, tempered by EPA review. On the other hand, one of GPRA's premises is that federal agencies must document their progress towards pre-specified agency goals, and devolution has left a good deal of enforcement and data-gathering in the hands of the states. If states fail to furnish timely and valid standardized data to the EPA, the EPA cannot in turn discharge its obligations to Congress. Thus the EPA is understandably tempted to tighten its control over the data gathered and the measures calculated by the states. For the EPA to retain a high degree of autonomy in its dealings with Congress, it may need to reduce the autonomy enjoyed by state

environmental agencies, at least in the performance measurement area. Consequently, the political accountability model at the federal level may not be fully compatible with the political accountability model at the state level.

But the problem is deeper than that. Even if GPRA and NEPPS can be reconciled, perhaps by substantial state compliance with the new set of core performance measures, political accountability is not the only form of accountability being promoted. Florida's highly praised set of performance measures, for example, illustrates not political but professional accountability, because the sources of control are not external to the state environmental agency but internal. Florida's senior managers would prefer professional accountability. But they find themselves confronting two forms of political accountability: the NEPPS process described above, as well as the political accountability system inherent in the PB^2 process invented and sustained by Florida's politicians. To add further to the confusion, both forms of political accountability threaten to become legal accountability, as EPA officials and state legislators reduce the state environmental agency's autonomy in pursuit of various goals.

Even if the EPA and the Florida State Legislature continue to favor substantial state autonomy (and there is some evidence that they do), legal accountability looms over the horizon every time a federal court interprets federal law. Thus federal courts in at least nine states have rebuked the EPA and state agencies for failing to protect water quality in selected watersheds. To comply with the Clean Water Act, the courts have ruled that the EPA must submit documents on "total maximum daily loads" for each watershed.[69] Prodded by the federal courts, the EPA has instructed state environmental agencies to provide the necessary documentation, which is extremely difficult to do. Thus the federal judiciary's preference for legal accountability may overcome the EPA's stated preference for political accountability, not just in water pollution but whenever the federal courts issue a ruling that compels the EPA and its agents to take concrete steps within certain deadlines.[67]

CHAPTER 6

Evaluation and Recommendations

Since 1995, state governments have made some progress in developing and implementing environmental performance measurement systems. Florida's Department of Environmental Protection has developed a sophisticated four-tiered measurement system virtually from scratch. New Hampshire's Department of Environmental Services and Oregon's Department of Environmental Quality have prepared detailed measures in conjunction with their Performance Partnership Agreements with the EPA. Virginia's Department of Environmental Quality has lagged behind, but its measures have improved somewhat.

Of the four states, then, Florida has the best system for measuring environmental performance. Its environmental performance measures are numerous and well organized; they encompass a substantial number of outputs, intermediate outcomes, and terminal outcomes; they are published quarterly, in a user-friendly format. Most significantly, the Florida DEP has developed a superb administrative device for translating measures into action. The fact that the secretary of DEP makes quarterly designations of particularly serious problems ensures that performance measures do not simply gather dust. Those actions are most significant, because they mean that state agencies actually use their performance measures.

Although Florida has the best system for measuring environmental performance, New Hampshire has the best culture for environmental problem solving. Whereas managers in other states often seem preoccupied with budget battles with legislators, intergovernmental conflicts, lawsuits, and turf battles with colleagues, New Hampshire's environmental officials seem more positive and more pragmatic. Instead of complaining about stingy legislators, meddlesome federal officials, or nettlesome colleagues, they have devoted their full attention to doing a better job. The world they describe is a world filled with problem-solving opportunities rather than a world of zero-sum conflicts. Much of the credit in New Hampshire undoubtedly belongs to DES Commissioner Bob Varney, who has avoided many of the poisonous internal and external conflicts that plague his counterparts in other states. Some of the credit also belongs to state legislators and environmental groups who prefer cooperative approaches to bureaubashing.

It is also interesting to note that Florida is not the state with the best environmental performance measurement system. That honor belongs to either Oregon or Virginia. Oregon's benchmark system zeroes in on big problems that transcend agency jurisdictions and assigns letter

grades. The overwhelming majority of Oregon's benchmarks are actual outcomes, but accountability is somewhat murky, because many benchmarks fall under the jurisdiction of more than one agency. Virginia's performance-based budgeting system focuses on how each state agency is performing and gauges each agency's progress towards predetermined goals. Virginia's indicators tilt more towards outputs than outcomes, but accountability is clearer, because each agency chooses its own three to five measures.

Which state is doing the best job of protecting the environment? That is impossible to say because the EPA lacks good comparative data on either intermediate or terminal outcomes. The problem is perhaps most evident in water quality, where variations in state monitoring and measurement practices make it extremely difficult to determine which states are excelling and which are lagging behind. If we are to shift from bureaucratic and legal accountability to professional and political accountability, we need better data on outputs, outcomes, and ultimately, on impacts—the relationship between outputs and outcomes. A national database, rooted in an improved set of core performance measures, would be an important step toward that goal.

A cultural shift from a reliance on procedures to a reliance on performance cannot occur overnight. But such a shift will occur more rapidly if several parties work together to accomplish that goal. In particular, implementing the following recommendations would assist greatly in developing a viable environmental performance measurement system.

Recommendations for States

- Streamline and integrate parallel sets of performance measures.
- Encourage environmental agencies to adopt mechanisms that force action to ensure that bureau chiefs take performance measures seriously, such as Florida's Focus-Watch system.
- Offer their environmental agencies greater funding as performance improves.
- Foster collaboration among kindred agencies to identify new measures for environmental protection.

Recommendations for EPA

- Publish core performance measure data for each of the 50 states, as well as territories and tribes, as quickly as possible.
- Invest in an improved water-quality measurement system, in collaboration with the states, so that water quality measures are comparable across states.
- Utilize data from the Office of Enforcement and Compliance Assurance and other sources to conduct research linking outputs and outcomes.
- Continue to promote PPAs and PPGs, through regional offices.

Recommendations for Congress

- Encourage use of EPA performance measures by authorizing committees, not just appropriations committees.
- Provide additional funding to improve the EPA's water-quality measurement system and to support research on linkages between outputs and outcomes.
- Instruct the General Accounting Office to conduct a study of state performance acts and their implementation by various state agencies, including environmental agencies.

Recommendations for Environmental Groups

- Participate in performance-measurement development workshops conducted by federal and state agencies.
- Use EPA data to develop "report cards" on selected topics, and disseminate those reports to the media and the public.

Taken together, those steps would enhance political and professional accountability. And the creative powers of state program managers, if unleashed, could trigger a new wave of policy innovations and reforms. But strong delegation of authority requires strong feedback mechanisms to ensure that the public interest is served. A credible environmental performance measurement system is the indispensable lynchpin for intergovernmental devolution and administrative decentralization, but it requires significant and unceasing effort from all stakeholders.

Endnotes

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[30] R. Kirk Jonas, "The Development of Performance Measures for Virginia Financial Management and Oversight," *University of Virginia Newsletter* 72: 2 (February/March, 1996).

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[46] Since that episode, Marsh has indicated that measures development is a high priority and has directed that more time and money be spent for this purpose in FY 2000.

[47] In general, Struhs has designated fewer "focus" areas than his predecessor. Two of his quarterly reports (Vol. 2, No. 3 and Vol. 3, No. 1) contained no new focus areas. Struhs gives the relevant division head the opportunity to recommend for or against a new focus area, but Struhs makes the final decision.

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[49] New Hampshire Department of Environmental Services, *op. cit.*, p. VI-28.

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[52] Oregon Progress Board, "1999 Benchmark Blue Book," Salem, OR, May 1999.

[53] For example, beginning in 1998, DMAS included in its Medicaid HMO contracts-language specifying the goal of immunizing at least 80 percent of all children enrolled.

[54] The measures include: the percentage of babies whose mothers received early prenatal care, and the percentage of two-year-olds who are adequately immunized.

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[57] The tests are scheduled and reported on a rotating basis. For instance, the mathematics and science tests were conducted in 1996; the reading and writing tests were conducted in 1998. See National Research Council, *Grading the Nation's Report Card: Evaluating NAEP and Transforming the Assessment of Educational Progress*. Washington, D.C.: National Academy Press, 1999, p. 18.

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[59] Source: Paul Ellstein, Office of Clinical Standards and Quality, Health Care Financing Administration, Baltimore, Md., March 19, 1999.

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[63] Susan Hunter and Richard Waterman, *Enforcing the Law: The Case of the Clean Water Acts.* Armonk, N.Y.: M.E. Sharpe 1996, pp. 157-198.

[64] National Academy of Public Administration, *Setting Priorities, Getting Results, op. cit*., p. 71.

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[66] Barbara Romzek. "Where the Buck Stops: Accountability in Reformed Public Organizations." In *Transforming Government: Lessons from the Reinvention Laboratories,* edited by Patricia Ingraham, James Thompson, and Ronald Sanders. San Francisco: Jossey-Bass Publishers, 1998, pp. 193-219.

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APPENDIX A

Performance Measure Use: Selected State Examples

Prescribed Burning in Florida's State Parks

Problem Awareness

For years, the Bureau of Natural and Cultural Resources (within the Division of Recreation and Parks) has recognized the need for periodic controlled burning of trees and vegetation in state parks. Of Florida's 44 land-based natural community types, 17 need such files for their continued existence, and 16 others benefit from an occasional fire. Without those fires, many endangered and rare species would eventually disappear because they cannot flourish when leaf litter is thick. In addition, uncontrolled fires sparked by lightning or careless use of matches could threaten large amounts of forestland. Thus a controlled fire is as beneficial as an uncontrolled fire is harmful. By reducing the amount of highly combustible pine needles and other debris, a controlled fire can lower the probability of a devastating fire that could threaten human, plant and animal life, as well as property. In the first half of 1997, the bureau achieved only 51 percent of its targeted burn. Concerned, the secretary of DEP prescribed burning on of the "focus" areas in December of that year.

Problem Clarification

Following the secretary's decision, the head of the Division of Recreation and Parks, Fran Manella, raised the burning issue at her weekly teleconference with the bureau chiefs and assistant directors. Without employing a formal problem-solving strategy, they identified areas to be burned, talked with biologists about how to do the burning, and discussed ways to secure additional resources.

Solutions

The bureau then took several steps. First the staff talked with district managers, encouraging them to emphasize prescribed burning more heavily. They then planned for controlled burns as soon as weather would permit. In June 1998, they purchased equipment: fire trucks

and water buffaloes(water tanks hauled by fire trucks(and all-terrain vehicles(for quick access to fires. They purchased geographic information system equipment to help them map fires more precisely. Finally, they allocated approximately one-third of an $800,000 grant from the legislature under a new land-buying program, to the purchase of 11 new fire trucks in March 1999.

Impact

Even before that purchase, the bureau's increased emphasis on prescribed burning was bearing fruit. Despite highly unusual weather conditions that limited burning during the first half of 1998, the bureau achieved 58 percent of its proposed burn that year. Nothing that, the secretary removed the "warning" designation, and characterized prescribed burning as a "watch" area. As it got additional resources, the bureau did even better. As of March 31, 1999, three-quarters of the way through its fiscal year, the bureau had burned more than 91 percent of its targeted acres. Clearly, it had made significant progress.

Petroleum Storage Tanks in Florida

Problem Awareness

Florida has more than 21,500 regulated petroleum-storage facilities. The prospect of leaks in such tanks is serious in any state, but especially in Florida, which depends on groundwater for 92 percent of its drinking water. The DEP was concerned, then, when the Bureau of Petroleum Storage Systems(part of the Division of Waste Management(reported low compliance rates for petroleum storage facilities in three of its districts. Based on that, Kirby Green, deputy secretary, designed petroleum tanks as a "watch" area statewide in February 1998.

Problem Clarification

The bureau responded to the "watch" designation by graphing noncompliance by category. That analysis revealed that more than 70 percent of significant noncompliance events were related to release detection. With the problem clarified, the bureau was able to design a series of appropriate remedies.

Solutions

The Bureau of Petroleum Storage Systems attacked the underlying problem on several fronts. First, staff provided additional training to both districts and counties (which handle most of the inspections and data entry for DEP.) That resulted in better data in the short run, and better data-entry practices in the long run. Second, they clarified rule requirements for leak detection, to avoid misunderstandings about what constitutes significant noncompliance. Third, they visited several cities to improve the understanding of regulated firms about relevant regulations. Fourth, they monitored district compliance data on a regular basis to ensure consistency over time(not in terms of severity, but in terms of types of violated noted. If certain violations increased in a given quarter statewide, it was less worrisome than a sharp deviation in one district only.

Impact

A "focus" or "watch" designation is not a mark of Cain; it is more likely an opportunity than a threat. Although the Division of Waste Management was initially skeptical that the "watch designation was warranted, the bureau realized it could be a valuable management tool. Armed with the designation, the bureau was able to mobilize resources, focus attention, and solve the underlying structural problems quickly. Based on that progress, the deputy secretary dropped the "watch" designation shortly after the fifth quarterly report published in September 1998. Another lesson from the case is the utility of combining internal and external reform strategies. By educating both district officials and regulated firms, the bureau was able to build a solid foundation for the future.

Shellfish Processing Plants in Florida

Problem Awareness

Florida is one of the nation's leading harvesters of shellfish, including oysters and hard clams. Those shellfish are processed at plants that must comply with federal and state rules and regulations. Federal regulations are promulgated and enforced by the U.S. Food and Drug Administration, while state rules are handled by the Bureau of Marine Resource Regulation and Development, within the Division of Marine Resources.

The secretary's six quarterly report, published in December 1998, revealed a statewide decline in shellfish plant compliance rated to 85 percent during July, August, and September of 1998, from 92 percent the previous quarter. Those statistics convinced Kirby Green to designate shellfish processing as a "focus" area. (It had previously been a "watch" area because of concerns about compliance rates.)

Problem Clarification

The Bureau of Marine Resource Regulation and Development used problem-solving strategies and a trained facilitator to diagnose the fundamental problems. At meetings held in January 1999, staff identified three areas of concern: continuous and recurring violations at certain plants, as well as the industry as a whole; the lack of an inspection audit process; and inadequate industry training in HAACP (hazardous analysis and critical control point) technologies, which specify good management practices for the industry.

Solutions

To correct those problems, the bureau institutionalized several new management practices. First, they arranged for a state microbiologist, based at the University of Florida, to conduct voluntary in-plant training. Second, that microbiologist conducted additional training for the state inspectorate. Staff also prioritized firms for inspection based on compliance records. And they lobbied behind the scenes for a new FDA inspector to replace one whose relationship with both the department and the industry had become strained.

Impacts

It is difficult to evaluate the impacts of those actions by studying compliance rates alone. During the last quarter of 1998, those rates plummeted to 42 percent because the bureau focused exclusively on problem plants during that time. The following quarter, when the bureau was able to inspect all plants, compliance climbed to 81 percent. While this rate is lower than that which originally triggered the "focus" designation, inspectors now are better trained to spot noncompliance. (On the other hand, plants are better trained to comply.) What can be said is that both regulators and the regulated have a better understanding of relevant rules and regulations. In addition, the bureau now targets firms with bad track records for earlier visits. Those practices should improve the safety of shellfish plants in the future.

Waste Management in New Hampshire

Problem Awareness

For years, the Waste Management Division of the New Hampshire DES has received numerous complaints about solid and hazardous waste problems or threats. Between 1989 and 1997, the division got approximately 300 complaints a year, but investigated and closed only about 100 of those complaints annually. As a result, of course, it had an enormous backlog of 1600 cases in 1997. Although some of those were undoubtedly not very serious, other more worrisome concerns, e.g., those involving abandoned drums, were not being handled promptly.

The division's Special Investigation Section, quantified the problem with charts and graphs, and forwarded its analysis to the senior managers of DES.

Problem Clarification

The DES commissioner took a personal interest in the problem, and instructed the special investigators to develop an initiative to reduce the backlog. After an investigation, those staffers identified the key problems: inadequate resources to investigate complaints; and limited ability to screen out frivolous or unsubstantiated complaints.

Solutions

The backbone of the initiative was a substantial reallocation of resources. With the approval of the governor and the Executive Council, $113,000 was allocated in the FY1998 budget. That permitted DES to hire a full-time complaint-resolution facilitator, the pay regular staff overtime for nights and weeks, and to hire temporary staff to assist in the efforts. That combined effort enabled DEP to closeout old cases where there was little evidence of continuing problems, and to investigate cases of more concern.

DEP also took two steps to make its workload more manageable in the future. To weed our frivolous complaints, it adopted a new policy that henceforth it would accept only written complaints. And it transferred responsibility for initial criminal investigations to the Department of Justice, freeing staff time for non-criminal investigations,

Impact

The initiative was highly successful. Of the 1,600 cases in the backlog, DES closed all but 459 by December 1998: 71 percent. In addition, the requirement for written complaints proved effective: incoming complaints declined by 65 percent. That should make complaints much more manageable in the future.

Air Pollution in Oregon

Problem Awareness

Since the passage of the Clean Air Act in 1970, the federal government has devoted considerable attention to air pollution, especially to point source pollution from large facilities such as power plants and manufacturing plants. Congressional statutes and EPA rules have also focused on area and mobile sources of pollution, such as dry cleaners and automobiles, but to lesser degree. Increasingly, however, the evidence suggests that area and mobile sources deserve more attention.

Problem Clarification

In 1996, the Oregon DEQ's Air Quality Division published an ozone maintenance plan for Portland, base on 1990 emissions data and projections extending to 2006. Those statistics indicated a substantial shift in sources of VOCs (volatile organic compounds), which are ozone precursors. While industry accounted for 51 percent of Portland's VOCs in 1980, it accounted for only 13 percent of them in 1990. The remainder was due to area and mobile sources. And projections indicated those contributions would continue to increase(to both VOCs and NOx. Based on that data, DEQ officials decided to rethink their allocation of resources for the strategic plan they prepared in 1997.

Solutions

Under federal air pollution statutes, state environmental agencies have some flexibility in allocating FTEs from one air program to another. Although Title V funding cannot be shifted, the Air Contaminant Discharge Permit (ACDP) program does contain some flexible funds.

Impact

Bolstered by the data of the Portland ozone-maintenance plan, the DEQ specified in its strategic plan that the area and mobile source FTE numbers would increase in relative terms. Beginning in the fall of 1997, DEQ engineered a resource shift away from point sources and toward area and mobile sources. By FY1999, DEQ was allocating 51 FTEs to area and mobile sources, 74 FTEs to point source pollution, and additional resources to automobile inspections. Though baseline statistics for earlier years are not available, air quality administrators insist there has been a gradual shift to addressing area and mobile source pollution, above and beyond the automobile-inspection resource trends.

Permit Speed and Consolidation in Virginia

Problem Awareness

As a candidate, Governor George Allen campaigned against what he called overzealous environmental enforcement, and vowed to topple obstacles to economic development in Virginia. Following his election in 1994, he appointed staunch critics of environmental regulation as secretary of the Department of Natural Resources, and director of the Bureau of Environmental Quality. He also stressed the need to speed up the permitting process.

Problem Clarification

In its initial performance-measurement exercise in 1995, the DEQ included a measure of permitting speed (the percentage of permits meeting statutory standards issued within processing-time goals), and a general permitting measure (the number of permits issued by each medium that conformed to statutory requirements). Those measures established a baseline for improvement.

Solutions

If the problem is defined as excessive delay in issuing permits to polluters, an obvious solution is to issue permits more quickly. Thus staff members scrambled to do just that. As one staff member recalled: "During the Allen years, the view was to get out of the way!" Staff members also accelerated efforts to issue general permits, which lessened the need to satisfy the concerns of the three separate offices concerned with air, water, and waste.

Impacts

The DEQ's emphasis on expedited permits led to noticeable changes in permitting speed. Specifically, the number of environmental permits meeting statutory guidelines climbed form 69 percent in 1996 to 78 percent in 1998. During that same time, general permits issued climbed from 14 to 20.

As permitting became easier, however, environmental protection suffered. In a blistering report in 1997, the Virginia Joint Legislative Audit and Review Commission (JLARC) concluded that Virginia's water quality had deteriorated, despite glowing reports from the Allen administration. For example, the number of impaired waters had increased, as had the number of fecal coliform bacteria violations. More broadly, JLARC berated the DEQ for recasting itself from a regulatory agency to a "service" agency. Positive feedback from regulated firms and environmental groups reinforced those conclusions.

Nutrient Management Plans in Virginia

Problem Awareness

Under Virginia's performance-based budgeting system, each department must submit three to five performance measures annually to the Department of Planning and Budget. Those measures typically persist over time, though they can be changed by mutual consent. In 1996,

the Department of Conservation and Recreation submitted several measures, including a double-barreled nutrient-management measure that encompassed the number of plans written, as well as the acreage covered by those plans. The department's goal for 1997 was to write 200 plans covering 40,000 acres. The Soil and Conservation Division surpassed that acreage goal by covering 56,000 acres. But it fell short of the plans goal by writing just 198 plans. The director, David Brickley, considered that a failure, and admonished the division to do better the next year.

Problem Clarification

The division's managers considered the number of acres covered a more valid and meaningful measure of nutrient-reduction activity than the number of plans written, but did conclude that it would be prudent to meet both acreage and plans goals in FY1998, even if that meant diverting resources from more-valuable activities.

Solutions

During the last four months of FY1998, the head of the Soil and Water Conservation Division, Jack Frye, instructed his staff to reduce farmer-training and education activities in order to write more nutrient-management plans. Those activities are vital, however, if farmers are to implement correctly the plans.

Impacts

The division's resource shift paid off. For FY1998, the department was able to report writing 252 nutrient-management plans that covered 63,000 acres. Division managers, however, were uneasy, because a questionable performance measure had come to dominate resource allocation.

Since that time, the department has eliminated the number of nutrient-management plans as a publicly reported performance measure, and has attempted to improve the acreage measure as well by recommending a ratio of acres under plans/total planable acres. The episode, however, constitutes a sobering reminder to advocates of performance measurement: both good and bad measures have the ability to influence management decisions and priorities.

APPENDIX B

Interviews

Ablowich, Michael
Budget Director, New Hampshire Office of the Governor
personal interview 7/8/99

Adams, Stephen
Senior Management Analyst, Florida Department of Environmental Protection
personal interview, 5/17/99

Anderson, Joel
Staff Member, New Hampshire State Legislature
personal interview 7/8/99

Arnold, Susan
Policy Director, New Hampshire Office of the Governor
personal interview 7/7/99

Ashey, Michael
Assistant Director, Division of State Lands, Florida Department of Environmental Protection
personal interview 5/17/99

Belle, Nina
Northwest Environmental Advocates, Portland, Oregon
telephone interview 6/28/99

Bisbee, Dana
Deputy Commissioner, New Hampshire Department of Environmental Services
personal interview 7/6/99

Blakeslee, Mary
Director, Information Management, Environmental Council of the States
personal interview 3/1/99

Bleakney, Leann
Policy Analyst, House Majority Office, Oregon State Legislature
personal interview 6/23/9

Bogen, Doug
Clean Water Action, Portsmouth, New Hampshire
personal interview 7/8/99

Bowman, Will
Program Analyst, Office of Congressional & Intergovernmental Relations, U.S. EPA
personal interview 5/26/99

Boudreau, Darryl
Program Administrator, Florida Department of Environmental Protection
personal interview 5/17/99

Bradley, Jeb
State Representative, New Hampshire House of Representatives
personal interview 7/7/99

Burnet, Paul
Special Projects Manager, Oregon Department of Environmental Quality
personal interview 6/22/99

Cohen, Burt
State Senator, New Hampshire State Legislature
personal interview 7/9/99

Colburn, Kenneth
Director, Air Resources Division, New Hampshire Department of Environmental Services
personal interview 7/6/99

Cude, Curtis
Laboratory Division, Oregon Department of Environmental Quality
telephone interview 7/20/99

Cunningham, Jr., John
Director, Administration Division, Virginia Department of Environmental Quality
personal interview 6/16/99

D'Agostino, Stefanie
Pollution Prevention Program Coordinator, New Hampshire Department of Environmental Services
personal interview 7/7/99

D'Angelo, Barbara
NEPPS Coordinator, EPA-Region III
telephone interview 5/27/99

Davies, J. Clarence
Director, Center for Risk Management, Resources for the Future
personal interview 5/11/99

DeLoi, Carl, USEPA Region I
telephone interviews 8/13/99 and 8/16/99

Diltz, Dotty
Bureau Chief, Division of Air Resources Management, Florida Department of Environmental Protection
personal interview 5/17/99

Dophelt, Robert
Center for Watershed & Community Health, Portland State University
telephone interview 6/9/99

Drew, Mimi
Director, Division of Water Facilities, Florida Department of Environmental Protection
personal interview 5/17/99

Evans, Darlene
Bureau of Budget and Planning, Florida Department of Environmental Protection
personal interview 5/18/99

Farber, Marty
Division of Legislative Services, Virginia State Legislature
personal interview 6/16/99

Faretra, Rosemary
New Hampshire Department of Administrative Services
personal interview 7/8/99

Feldvebel, Alexander
Policy Analyst, New Hampshire Insurance Department
personal interview 7/8/99

Ferguson, Martin
Water Division, Virginia Department of Environmental Quality
personal interview 6/17/99

Ferris, Julie
Office of Program Policy Analysis & Government Accountability, Florida State Legislature
personal interview 5/19/99

Findley, Chuck
Deputy Regional Administrator, USEPA Region X
telephone interview 8/25/99

Fox, Steve
Staff Member, New Hampshire State Legislature
telephone interview 8/31/99

Frye, Jack
Director, Soil & Water Conservation Division, Virginia Department of Conservation and Recreation
personal interview, 6/17/99

Gakstatter, Jack
Oregon Program Coordinator, USEPA Region X, Portland Office
personal interview 6/21/99

Galuszka, Michael
Supervisor, Waste Management Division, New Hampshire Department of Environmental Services
telephone interview 7/7/99

Garfein, Vivian
Director, Central District, Florida Department of Environmental Protection
telephone interview 6/1/99

Ginsburg, Andy
Manager, Air Quality Program Development, Oregon Department of Environmental Quality
telephone interview 7/13/99

Graham, Jim
Staff Writer, Concord Monitor
personal interview 7/6/99

Greene, Kirby
Deputy Secretary, Florida Department of Environmental Protection
personal interview 5/20/99

Gregg, Jeffrey
Chief, Office of Health Policy, Florida Agency for Health Care Administration
personal interview 5/20/99

Gregori, Jr., Harry
Director, Pollution Prevention Program, Virginia Department of Environmental Quality
personal interview, 6/3/99

Hadrick, Michael
Office of Air and Radiation, U.S. EPA
personal interview 5/27/99

Hammerschmidt, Ron
Director, Division of Environment, Kansas Department of Health & Environment
personal interview 3/30/99

Hand, Joseph
Division of Water Facilities, Florida Department of Environmental Protection
telephone interview 10/19/99

Heber, Margaret
Monitoring Branch Chief, Office of Wetlands, Oceans & Watersheds, U.S. EPA
personal interview 7/12/99

Hatry, Harry
The Urban Institute
personal interview 7/21/99

Heil, David
Division of Marine Resources, Florida Department of Environmental Protection
telephone interview 6/9/99

Hendon, Claude
Staff Member, Senate Fiscal Policy Committee, Florida State Legislature
personal interview 5/19/99

Hill, Jr., Herb
Manager, Virginia Department of Planning and Budget
personal interview 6/10/99

Hill, Lynn
Program Manager, New Hampshire Department of Environmental Services
personal interview 7/7/99

Hughes, John
Performance Measures Training Coordinator, Division of Air Resources Management, Florida Department of Environmental Protection
personal interview 5/17/99

Iles, Cathy
Community Partnership Team, Oregon Department of Human Resources
telephone interview 8/26/99

Irby, Jr., Edwin
Assistant Director, Division of Marine Resources, Florida Department of Environmental Protection
personal interview 5/18/99

Jonas, R. Kirk
Deputy Director, Joint Legislative Audit and Review Commission, Virginia State Legislature
personal interview 6/3/99

Jones, Doug
Bureau Chief, Florida Department of Environmental Protection
personal interview 5/18/99

Kanetsky, Chuck
305b Coordinator, EPA-Region III
telephone interview 6/4/99

Kapowich, Joan
Manager, Office of Medical Assistance Programs, Oregon Department of Human Resources
personal interview 6/24/99

Kent, Chuck
Office of Policy and Reinvention, U.S. EPA
personal interview 3/9/99

Kiger, Wayne
Staff Director, House Environmental Protection Committee, Florida State Legislature
personal interview 5/19/99

Kindig, David
Virginia Department of Conservation and Recreation
telephone interview 8/17/99

Kipp, Katrina
Region I, U.S. EPA
telephone interviews 4/22/99 and 7/1/99

Koprowski, Paul
EPA Region X, Oregon Operations, Portland, Oregon
telephone interviews 7/20/99 and 7/21/99

Kremer, Lorraine
New Hampshire Department of Administrative Services
personal interview 7/8/99

Latch, Mark
Environmental Administrator, Division of Recreation and Parks,
Florida Department of Environmental Protection
personal interview 5/18/99

Laurent, John
State Senator; Member, Natural Resources Committee, Florida State Senate
telephone interview 8/23/99

Lawson, Larry
Director, Division of Water Program Coordination, Virginia Department of Environmental Quality
personal interview 6/2/99

Liebe, Annette
Section Manager, Air Quality Division, Oregon Department of Environmental Quality
telephone interview 7/20/99

Liner, Blaine
The Urban Institute
personal interviews 3/25/99 and 7/21/99

Lottridge, Helen
Division of Management Services, Oregon Department of Environmental Quality
personal interview 6/21/99

MacDonald, Alan
Director of Strategic Planning and Administration, Virginia Department of Medical Assistance Services
personal interview, 6/17/99

Maloney Peggy
Senior Management Analyst, Division of Air Resources Management, Florida Department of Environmental Protection
personal interview 5/17/99

Maroon, Joseph
Executive Director (Virginia), Chesapeake Bay Foundation
personal interview, 6/16/99

Marquez, Ralph
Commissioner, Texas Natural Resource and Conservation Commission
personal interview 3/30/99

Marschner, Kenneth
Administrator, Waste Management Programs, New Hampshire Department of Environmental Services
personal interview 7/6/99

Marsh, Langdon
Director, Oregon Department of Environmental Quality
personal interview 6/21/99

Martin, Skip
Staff Member, Senate Fiscal Policy Committee
personal interview 5/19/99

McGillivray, Jeff
State Representative, New Hampshire State Legislature
telephone interview 7/12/99

Meiburg, A. Stanley
Deputy Regional Administration, Region IV, U.S. EPA
personal interview 4/28/99

Menkes, Neal
Legislative Fiscal Analyst, Virginia Senate Finance Committee
personal interview 6/16/99

Messerle, Ken
State Representative; Member, Stream Restoration and Species Recovery Committee, Oregon State Legislature
personal interview 6/23/99

Miller, Ray
Oregon Department of Forestry
personal interview 6/24/99

Morgan, Larry
Deputy General Counsel for Enforcement, Florida Department of Environmental Protection
personal interview 5/18/99

Murphy, Tayloe
Virginia State Representative, Virginia State Legislature
personal interview 8/3/99

Murphy, Michael
Director, Division of Environmental Enhancement, Virginia Department of Environmental Quality
personal interview 6/3/99

Murray, Bill
Joint Commission on Health Care, Commonwealth of Virginia
personal interview 6/3/99

Nelson, David
State Senator, Oregon State Legislature
personal interview 6/24/99

Nomura, Ranei
Policy Analyst, Water Quality Division, Oregon Department of Environmental Quality
personal interview 6/21/99

O'Brien, Paddy
Program Coordinator, Office of Medical Assistance Programs, Oregon Department of Human Resources
personal interview 6/24/99

Pagh, Karen
Oregon Department of Fish and Wildlife
personal interview 6/22/99

Parker, Tina
Assistant Director, Environmental Council of the States
personal interview 3/1/99

Peavey, Dwight
Small Business Ombudsman, Region I, U.S. EPA
telephone interview 8/31/99

Perelli, Vince
Senior Planner, New Hampshire Department of Environmental Services
telephone interview 8/25/99

Phillips, Michael
Director of Business Development, Image API, Tallahassee, Florida
personal interview 5/20/99

Price, Anne
Manager, Waste Management & Cleanup Division, Oregon Department of Environmental Quality
personal interview 6/21/99

Price, Annette
Senate President's Office, Oregon State Legislature
personal interview 6/23/99

Pruitt, Ken
State Representative; Chair, House Appropriations Committee, Florida State Legislature
personal interview 8/23/99

Pugh, Joyce
Staff Director, Florida House of Representatives
personal interview 5/19/99

Rayman, Brett
Chief Analyst, Office of Planning and Budgeting, Governor's Office, Tallahassee, Florida
personal interview 5/19/99

Regas, Diane
Deputy Assistant Administrator, Office of Water, U.S. EPA
personal interview 3/24/99

Renfroe, Jan
Section Manager, Water Quality Division, Oregon Department of Environmental Quality
personal interview 6/21/99

Roberts, Robert
Executive Director, Environmental Council of the States
personal interview 3/1/99

Rocco, Ken
Legislative Analyst, Oregon Legislative Fiscal Office
personal interview 6/24/99

Rosenberg, Nick
Green Mountain Institute for Environmental Democracy
telephone interview 5/13/99

Ross, Nancy
Florida Agency for Health Care Administration
personal interview 5/21/99

Rotz, Robert
Senior Division Chief, Virginia Joint Legislative Audit and Review Commission
personal interview 6/3/99

Ruhl, Suzi
Legal Environmental Assistance Foundation, Tallahassee, Florida
personal interview 5/20/99

Ruscigno, John
Legislative Liaison, Air Quality Division, Oregon Department of Environmental Quality
personal interview 6/22/99

Sanders, Tom
Department of Civil Engineering, Colorado State University
telephone interview 8/5/99

Seastrom, Patti
Air Quality Division, Oregon Department of Environmental Quality
telephone interview 8/16/99

Shook, Mike
Virginia Department of Planning and Budget
personal interview 6/16/99

Simmers, Chris
New Hampshire Department of Environmental Services
personal interview 7/8/99

Snow, Madeline
Acting Deputy Commissioner, Massachusetts Department of Environmental Protection
personal interview 3/31/99

Sole, Mike
Bureau Chief, Florida Department of Environmental Protection
telephone interview 5/25/99

Springer, Patricia
NEPPS Coordinator, USEPA Region X
telephone interview 8/16/99

Stahl, Michael
Deputy Assistant Administrator, Office of Enforcement & Compliance Assurance, US EPA
telephone interview 4/13/99

Stearns, Tim
Save Our Wild Salmon, Seattle, Washington
telephone interview 6/28/99

Stere, David
Oregon Department of Forestry
personal interview 6/24/99

Stewart, Harry
Division Director, New Hampshire Department of Environmental Services
personal interview 7/6/99

Stewart, Roger
Virginia Department of Environmental Quality
personal interview 6/17/99

Stosch, Walter
Virginia Senate Majority Leader; Chair, Subcommittee on Economic Development & Natural Resources
personal interview 8/4/99

Struhs, David
Secretary, Florida Department of Environmental Protection
personal interview 3/31/99

Treash, Anne
Office of Water, U.S. EPA
personal interview 5/11/99

Tryens, Jeff
Executive Director, Oregon Progress Board
personal interview 6/2/99

Turcotte, John
Director, Office of Program Policy Analysis and Government Accountability, Florida State Legislature
personal interview 5/19/99

Vakili, Hassan
Director, Division of Waste Program Coordination, Virginia Department of Environmental Quality
personal interview 6/2/99

Van Landingham, Gary
Deputy Director, Office of Program Policy Analysis and Government Accountability, Florida State Legislature
personal interview 5/19/99

Varner, Shannon
Division of Legislative Services, Virginia State Legislature
personal interview 6/3/99

Varney, Bob
Commissioner, New Hampshire Department of Environmental Services
personal interview 7/6/99

Voigt, Wayne
Staff Director, Natural Resources and Conservation Committee, Florida Senate
personal interview 5/21/99

Vortaggio, Tom
Deputy Regional Administrator, EPA-Region III
telephone interview 6/30/99

Wellman, Martha
Office of Program Policy Analysis and Government Accountability, Florida State Legislature
personal interview 5/19/99

Welsh, Jim
State Representative; Chair, Water and Environment Committee, Oregon State Legislature
personal interview 6/23/99

Wilson, John
Office of Program Policy Analysis & Government Accountability, Florida State Legislature
personal interview 5/19/99

Yocum, Jennifer
Division of Management Services, Oregon Department of Environmental Quality
personal interview 6/22/99

Zelazny, Julian
Policy Director, Audubon Society of New Hampshire
personal interview 7/7/99