

Hazardous Waste Management in the States

*A Review of the Capacity
Assurance Process*

National Resources Policy Studies
Center for Policy Research

National Governors' Association

Since their initial meeting in 1908 to discuss interstate water problems, the Governors have worked through the National Governors' Association to deal collectively with issues of public policy and governance. The association's ongoing mission is to support the work of the Governors by providing a bipartisan forum to help shape and implement national policy and to solve state problems.

The members of the National Governors' Association are the Governors of the fifty states, the territories of American Samoa, Guam, and the Virgin Islands, and the commonwealths of the Northern Mariana Islands and Puerto Rico. The association has a nine-member Executive Committee, a Task Force on State Management, and three standing committees—on Economic Development and Commerce, Human Resources, and Natural Resources. Through NGA's committees, the Governors examine and develop policy and address key state and national issues. Special task forces often are created to focus gubernatorial attention on federal legislation or on state-level issues.

The association works closely with the administration and Congress on state-federal policy issues through its offices in the Hall of the States in Washington, D.C. The association serves as a vehicle for sharing knowledge of innovative programs among the states and provides technical assistance and consultant services to Governors on a wide range of management and policy issues.

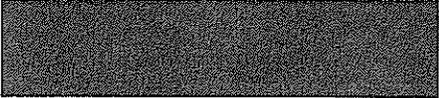
The Center for Policy Research is the research and development arm of NGA. The center is a vehicle for sharing knowledge about innovative state activities, exploring the impact of federal initiatives on state government, and providing technical assistance to states. The center works in a number of policy fields, including agriculture and rural development, economic development, education, energy and environment, health, information management, social services, trade, training and employment, and transportation. The priorities for the association's research are set by the Governors.

ISBN 1-55877-174-3

Funding for this publication was provided through a grant from the U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response.

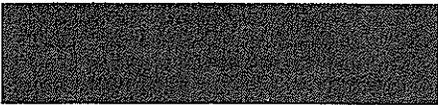
Copyright 1992 by the National Governors' Association, 444 North Capitol Street, Washington, D.C. 20001-1572. All rights reserved.

Printed in the United States of America.



Contents

Preface	5
Executive Summary	6
1. Introduction	10
The Superfund Law and Capacity Assurance Requirements	
2. Implementing the Law: EPA's Guidance for Completing the CAP	12
Current Waste Generation and Management	
Waste Minimization Activities	
Future Waste Volumes	
State Plans for Creating New Capacity	
Interstate Agreements	
EPA's Efforts to Assist States in Preparing Their CAPs	
Technical Reference Manual	
SARA Analytical Software	
The TSDR Survey	
CAP Submittal and Review	
3. Overview of Information Received from the 1989 CAPs	18
The Base Year Picture: What Waste Management Looked Like in 1987	
How Waste Was Managed	
Capacity Utilization	
How Much Waste Was Sent to Other States?	
Waste Minimization: Reducing Capacity Needs	
Projections: Future Generation and Capacity Shortfalls	
Capacity Shortfalls	
Facility Siting: Developing New Capacity	
Interstate Agreements: Accounting for Exports	
4. Problems with the CAP Process: What It Fails to Address	28
Benefits of the CAP Process	
5. Fixing the CAP: A Summary of the CAP Policy Group Discussions	32
Overview of Major Findings	
Summary of Major Changes Recommended	
Specific Recommendations Concerning the 1993 CAP Process	
Other Recommendations	
Follow-Up to the Policy Group's Recommendations	
6. The Next CAP Process	36
The Future of the Capacity Assurance Process	
Endnotes	38
Appendix A. Additional Data Tables, 1989 CAPs	40
Appendix B. CAP Policy Development Group Participants	50
Appendix C. Summary of CAP Policy and Guidance Review Meetings	52
Appendix D. Excerpt from NGA Policy Position on Hazardous Waste Management (D-17) August 1992	55
Glossary	56



Preface

In 1986 Congress passed the Superfund Amendments and Reauthorization Act (SARA), continuing the landmark federal program begun in 1980 to clean up abandoned toxic sites and uncontrolled hazardous releases. In addition to strengthening the cleanup provisions, the 1986 amendments also addressed what was perceived as a swiftly growing problem—public opposition to new hazardous waste disposal capacity. Believing this could lead to a shortage of suitable disposal sites in the future, Congress added a new provision requiring each state to assure the EPA that it could treat or dispose of all waste created within its borders over the next twenty years. The first state plans to assure capacity were due by October 17, 1989.

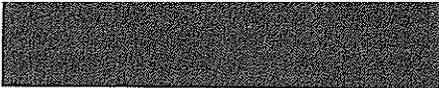
This report describes the information contained in these first plans, including the amount of hazardous waste generated, projected future volumes, and interstate shipments. It also describes a concerted effort between the states and EPA to address problems encountered in the 1989 plans and improve procedures for use in the first major plan revision scheduled for 1993. Finally, the law itself is critiqued.

Funding for this report was provided through a cooperative agreement with the U.S. Environmental Protection Agency's Office of Solid Waste and Emergency Response. The authors are particularly grateful to the help and participation provided by Michael Taimi and Matt Strauss of the agency's Capacity Assurance Branch. NGA appreciates their support of this project and the agency's efforts to include state concerns in its regulatory activities. The

authors also are grateful to Craig C. Huber of the Argonne National Laboratory for his help in obtaining much of the raw data used in this report.

The initial drafts of this report were prepared by Domenic Forcella, formerly of NGA and now executive officer of the Connecticut Hazardous Waste Management Service. The report was edited by Mary J. Houghton and published under the direction of Gerry Feinstein, NGA Office of Public Affairs.

John Thomasian
Director
Natural Resources Policy Studies
Center for Policy Research



Executive Summary

A long-time concern among policy-makers has been the increasing difficulty and cost of siting new hazardous waste treatment and disposal facilities. Many believe that public opposition to new disposal sites has severely limited suitable disposal capacity in some regions—perhaps even increasing interstate waste traffic—and may someday cause a national shortage. In 1986 to respond to these fears, Congress began requiring states to provide assurances that they could treat and dispose of all hazardous waste created within their borders over the next twenty years. States could demonstrate their ability to handle this waste by showing they had sufficient management capacity within the state or by showing they had access to it in other states through “an interstate agreement or regional agreement or authority.” If a state failed to provide an adequate assurance plan to the Environmental Protection Agency (EPA) by October 1989, the agency could withhold federal money for the nonemergency cleanup of toxic sites under the Superfund law. Congress believed this requirement would encourage states to properly plan for the long-term management of hazardous waste and overcome the barriers that were hindering the development of needed facilities.

Lessons from the First State Plans

All states submitted a capacity assurance plan for 1989. The plans provided information on current waste management practices, projected waste generation over the next twenty years, and described strategies for meeting future disposal needs.

The 1989 plans reported that roughly 236 million tons of hazardous waste were

generated in 1987 (the so-called “base year” for the reports). Most of the waste (more than 97 percent) was handled by the company producing the waste, either at the site of waste generation or in another facility owned by the company. The remainder (2.4 percent) was sent to commercial waste handlers. No state owned or operated an active waste disposal facility.

Only a small portion of waste—1.6 percent or 3.7 million tons—was transferred across state borders for disposal. However, all states were affected by this interstate trade: Thirty-six states were net exporters of waste and fourteen states were net recipients. Some states received more waste than others because they contained large commercial facilities that received waste from around the country. For example, five states—Alabama, Indiana, Louisiana, Ohio, and South Carolina—received almost three-quarters of all net waste imports.

Waste projections suggested that total volumes would decrease by almost 16 percent between 1987 and 1995, and then rise slightly by 2009 to just 4 percent below the 1987 level of 236 million tons. Waste minimization, among other factors, was expected to play a role in this waste decline. Thirty-six states claimed waste reduction effects ranging from 0.1 to 50 percent in their projections for 1995, predicting a 7.4 million ton drop from 1987.

The state plans provided little evidence of an impending national capacity problem for hazardous waste. In fact, for the 1987 base year, commercial national management capacity was abundant—all major treatment and disposal categories had between 50 percent and 90 percent

of total capacity available for hazardous waste, though much of this “unused” capacity was believed to be receiving nonhazardous waste. As new regulations alter how waste is managed, some technologies, such as the incineration of solids, might face increasing demand in the future, though predictions beyond five years are difficult to support.

Because few states could claim self-sufficiency in managing all types of future waste, almost all entered into an interstate or regional agreement with other states to ensure access to future capacity. The agreements called for the sharing of management capacity among the participating states, which usually involved a group of four or more states. To simplify the process of preparing an assurance, most agreements assumed no waste would enter into or leave the region. This was a sharp departure from actual market conditions.

By January 1990, all states submitted a capacity assurance plan (CAP) to EPA. No states had their plans disapproved, but several were asked to meet a number of supplemental conditions to maintain compliance with EPA’s guidance. To date, only North Carolina has had Superfund money withheld for noncompliance with the CAP.

Criticisms of the Initial CAP Process

A number of state officials criticized the first CAP process. Problems most frequently cited were the following:

- **Differing federal and state data systems made it difficult to prepare uniform, comparable information from all states.** Many states drew data from different sources and used

various techniques to translate the information into the CAP reporting tables. Frequently, states also had to estimate how waste was managed, since waste characterization data was limited. Both issues affected the ability to draw a reliable national picture.

- **Waste projection estimates could not be trusted because of uncertain future regulations and shortcomings in methodology.** Few experts believed the accuracy of any projection beyond five years, though management capacity had to be ensured through 2009.

- **The plans did not present a credible picture of future waste flows among states.** To satisfy the law’s requirements, states had to execute agreements with other states promising to share commercial waste management capacity. Although on paper these agreements balanced capacity supply and demand, they did not reflect the actual interstate waste market.

- **The capacity assurance process did not ensure that treatment and disposal capacity would be built when needed.** States were required to submit a plan, which frequently included promises or milestones to build more capacity or reduce waste. However, EPA did not sanction a state for not meeting its milestones, even if waste in the state greatly exceeded its capacity.

- **The CAPs did not resolve issues arising from the interstate disposal of waste.** Many states wanted to encourage major exporting states to be more self-reliant (i.e., become more responsive to the waste disposal needs of their industry). Some believed the

interstate agreements would encourage interstate planning and prevent states from relying on out-of-state capacity in lieu of meeting their own needs. However, states were given no legal authority to enforce the interstate agreements, and they became a difficult political exercise with no practical consequence.

Improving the Current Process

Recognizing the problems encountered in the first CAPs, EPA sought recommendations on how to improve the process and asked NGA to assemble an advisory group of state officials to suggest changes. Assuming continuation of current law, the group offered the following recommendations.

- **Make the data collection and analysis more accurate and simpler by using a standardized source and by requiring detailed projections to just five years after plan submittal.**

- **Focus waste reporting to just those wastes that leave plant property for disposal, thus eliminating the great majority of waste that is consistently handled by the companies that produce it.**

- **Make the CAPs and regional agreements more meaningful through a clear and consistent enforcement policy that would encourage states to take the planning process more seriously.**

- **Urge EPA to enforce implementation of the CAPs, including the promise to meet capacity milestones, to spur a serious review of the law.**

EPA adopted most of the recommendations as part of its guidance for the 1993 CAPs—the first major revision since 1989. Data analyses should be easier and will emphasize waste sent to off-site facilities. If disposal needs are projected to exceed future management capacity, states will need to address the shortfalls through waste reduction programs, agreements with other states to share capacity, and/or by demonstrating their plans to develop new capacity. Milestones outlined for creating new capacity or reducing waste will be taken seriously. States must meet at least one major milestone per year if milestones are part of the state's CAP. Failure to meet a milestone will result in loss of Superfund money.

Changing the Law

Notwithstanding the above changes, a chief finding of the NGA advisory group was that the capacity assurance process was conceptually flawed, and the law should be revised or repealed. Many believed it did not resolve the main issue it was supposed to address—namely, the failure by some states to meet the waste management needs of their industry. One solution frequently suggested was to have Congress grant states the authority to levy differential fees on waste received from other states. Some believed that this would make waste-generating industries urge their states to be more responsive to their waste disposal needs.

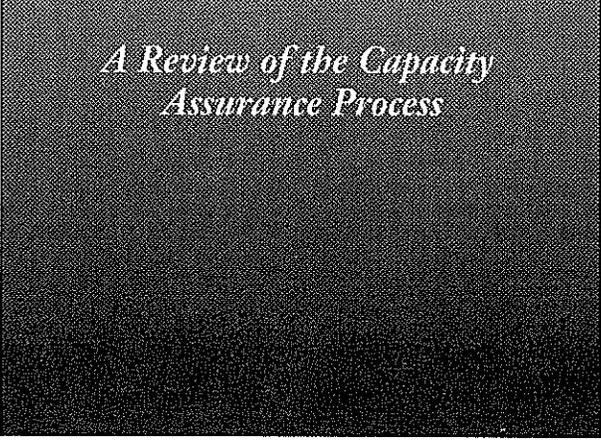
EPA plans to carefully review and enforce the 1993 capacity assurance

process. If states cannot assure capacity on paper or if they fail to meet a capacity milestone, they will face losing Superfund money. Until now, this sanction largely has been avoided, partly because of questions surrounding the accuracy of the first CAPs. However, the 1993 CAPs should provide better information. If information from the 1993 CAPs requires EPA to enforce the sanction—and Superfund money is withheld from cleanups—a renewed debate over the value of the process will ensue.



*Hazardous Waste
Management in the States*

*A Review of the Capacity
Assurance Process*



Introduction

The 1986 Superfund Amendments and Reauthorization Act (SARA) brought sweeping, new demands on states to plan for the management of hazardous waste. Among other provisions, the law required each state to assure the U.S. Environmental Protection Agency (EPA) that enough waste management capacity would be available to safely treat, destroy, or dispose of all hazardous waste created within its borders over the next twenty years. A state could "assure" capacity by demonstrating the availability of management facilities in the state, or by showing that it had access to capacity in other states through interstate or regional "agreements." States that failed to make such an assurance (or that failed to have their capacity assurance plans approved by EPA) would no longer receive Superfund money for nonemergency cleanups.

In adding these requirements to the Superfund law, Congress hoped to address what it saw as a failure by state and local governments to properly plan for and implement long-term management of hazardous waste. Congress was particularly concerned about the public's increasing resistance to the development of new management facilities. Legislators hoped that this law would spur better planning and, in turn, policies that would address the political and institutional barriers to developing new capacity. Otherwise, Superfund remedial action funds would be withheld from those states that did nothing to prevent the creation of new toxic dump sites.

With support from EPA, the National Governors' Association (NGA) in 1991 conducted a review of the capacity assurance plans (CAPs) and the process

used to develop them. As a first step, NGA collected the fifty state CAPs and examined data related to waste generation, projected waste quantities, interstate waste flows, and capacity utilization. NGA also conducted a fifty-state survey to help identify some of the key problems encountered. Finally, and most important, NGA assembled an advisory body of state officials (called the CAP Policy Development Group) to examine the 1989 capacity assurance process and suggest improvements.

This report describes the results of this review, including the recommendations of the CAP Policy Development Group. Included in this report is a brief summary of the EPA's guidance for preparing the CAPs and the agency's procedures for reviewing submissions (Chapter 2). Chapter 3 summarizes some of the critical information received from the CAPs, while Chapter 4 identifies some of the key problems associated with this information and the capacity assurance process. Chapter 5 describes the CAP Policy Development Group's recommendations for changes in the process. Finally, Chapter 6 addresses the future of the capacity assurance process. Unless otherwise noted, the states' 1989 CAP reports are the basis for all data used in this report.

Overall, the findings of this report suggest that the capacity assurance process as it is currently designed will never find much favor as a state planning tool or as a mechanism to reconcile interstate waste disputes. However, many believe that the changes recommended in this report could make implementation of the law less onerous while informing the debate on interstate waste.

The Superfund Law and Capacity Assurance Requirements

The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)—commonly known as Superfund—was first passed in December 1980 and amended in 1986. The law establishes the basic blueprints under which the federal government assists in the cleanup of uncontrolled hazardous releases and abandoned hazardous waste sites. The 1986 provision that requires states to demonstrate the availability of treatment and disposal capacity is known variously as the “siting” clause, the capacity assurance requirement, or Section 104(k). It amends Section 104(c) of CERCLA, and reads as follows:

“Siting. Effective 3 years after enactment of the Superfund Amendments and Reauthorization Act of 1986, the President shall not provide any remedial actions pursuant to this section unless the State in which the release occurs first enters into a contract or cooperative agreement with the President providing assurances deemed adequate by the President that the State will assure the availability of hazardous waste treatment or disposal facilities which—

(A) have adequate capacity for the destruction, treatment, or secure disposition of all hazardous wastes that are reasonably expected to be generated within the State during the 20-year period following the date of such contract or cooperative agreement and to be disposed of, treated, or destroyed,

(B) are within the State or outside the State in accordance with an interstate agreement or regional agreement or authority,

(C) are acceptable to the President, and

(D) are in compliance with the requirements of subtitle C of the Solid Waste Disposal Act.”

Implementing the Law: EPA's Guidance for Completing the CAP

In December 1988, EPA issued guidance explaining how states should prepare their capacity assurance plans. The guidance required states to answer five basic questions.

- How much waste is generated in the state and where is it managed?
- What is being done to reduce future waste volumes?
- How much waste is likely to be generated in the state over the next twenty years?
- What expansions to or development of waste management facilities in the state are anticipated?
- What arrangements have been made with other states to ensure that management capacity is available for waste sent outside the state?

To help the states complete their CAPs, EPA provided technical and financial assistance. Technical support through contractors helped states translate hazardous waste and management data into the uniform reporting categories required in the CAP. In addition, states formed working partnerships with other states to share information and to work out regional solutions for meeting future waste disposal needs. These regional CAP projects formed the basis of most state grouping for pooling waste management capacity as part of the interstate agreement process.

This chapter provides a brief overview of the EPA guidance requirements. Although seemingly simple and reasonable, many of EPA's information

demands proved difficult to meet, largely because of the varied data systems in use.

Current Waste Generation and Management

A primary objective of the capacity assurance process was to obtain a snapshot of each state's current waste generation patterns, waste management capabilities, and interstate waste transactions. Therefore, EPA sought details on the following.

- The type and quantity of hazardous waste generated within the state from both continuous industrial processes and one-time events, such as corrective actions.
- The type and quantity of hazardous waste shipped out of the state.
- The type and quantity of hazardous waste received from other states.
- The type and utilization of capacity within the state to treat, destroy, or dispose of hazardous waste.

The information requested was supposed to produce a clear, straightforward picture of each state's hazardous waste system in the base year; however, much effort was needed to develop this picture. The process required two different types of calculations to translate hundreds of chemical wastes into simple waste reporting and waste management categories (see Table 1). First, states had to translate approximately 700 different categories of waste (column 3 of Table 1) defined under the Resource Conservation and Recovery Act (RCRA) into seventeen reporting categories

Table 1

Examples of Industrial Hazardous Waste, by Origin, Waste Type, and Management Category

SARA Waste Type	Example Industry or Industrial Activity of Origin	Example of Industrial Waste and RCRA Codes	Typical SARA Management Categories
Contaminated sand, soil, and clay	Waste site cleanup activities	Excavated materials from closures and corrective actions. (RCRA codes depend on the type of contaminants.)	Landfill
Halogenated solvents	Industrial cleaners, metal finishing	Carbon tetrachloride (F001), trichloroethylene (F002)	Solvents recovery
Nonhalogenated solvents	Ink formulation, organic solvents	Solvent washes and sludges from formulation of ink pigments (K086), methanol (F003)	Energy recovery, solvents recovery
Halogenated organic liquids	Chemical production	Waste from production of 1,1,1-trichloroethane (K029) and toluene diisocyanate (K116)	Liquids incineration, energy recovery
Nonhalogenated organic liquids	Chemical production pesticides	Waste from production of phthalic anhydride (K023), thiofanox (P045)	Energy recovery, liquids incineration
Organic liquids, NEC*	Painting, printing	Paints, inks, dyes	Energy recovery, liquids incineration
Mixed organic/inorganic Liquids	Chemical production	Waste from production of methyl ethyl pyridines (K026) and acetaldehyde (K009, K010)	Aqueous organic treatment
Inorganic liquids with organics	Inorganic pigments, pesticides, secondary lead	Wastewater treatment sludge from pigment production (K004), waste from production of 2,4-D (K099), waste leaching solution from lead smelting process (K100)	Aqueous organic treatment
Inorganic liquids with metals	Electroplating, iron and steel, metal production	Spent cyanide solutions (F007), spent pickle liquor (K062), mercury (D009)	Aqueous inorganic treatment
Inorganic liquids, NEC*	Electroplating	Calcium cyanide (P021), cyanides, NEC* (P030)	Other treatment
Halogenated organic sludges/solids	Chemical production, pesticide production	Waste from vinyl chloride production (K020), wastewater treatment sludge from toxaphene production (K041)	Solids/sludges incineration
Nonhalogenated organic sludges/solids	Petroleum refining, chemical production	Tank bottoms from petroleum refining (K052), still bottoms from production of carbon tetrachloride (K016)	Landfill, solids/sludges incineration
Organic sludges/solids, NEC*	Wood preservation	Viscous resins or tars, acrylics, degreasing sludge	Landfill, solids/sludges incineration
Mixed organic/inorganic sludges/solids	Wood preservation, pesticide production, petroleum refining	Wastewater treatment sludge from wood preserving processes (K001) and phorate production (K040), oil emulsion solids (K049)	Landfill, land treatment
Inorganic sludges/solids with metals	Explosives, steel production, coking operations	Wastewater treatment sludges from explosives production (K046), air pollution control device sludges (K061), tank tar sludge (K087)	Sludge treatment, landfill
Inorganic sludges/solids, NEC*	Veterinary pharmaceuticals, inorganic chemicals	Wastewater treatment sludges (K084) and distillation tar residues (K101) from pharmaceuticals production, wastewater treatment sludge from chlorine production (K106)	Landfill
Other wastes, NEC*	Explosives, medical instrument manufacturing	Wastewater treatment sludges (K044) and spent carbon (K045) from explosives production, state-listed waste, hazardous waste mixed with radioactive waste, PCBs, or dioxin	Depends on specific waste

Note: *NEC = not elsewhere classified.

Source: Sharon N. Green, *Planning for Hazardous Waste Capacity: Lessons from the Northeast States* (Medford, Mass.: Tufts University, Center for Environmental Management, December 1990).

required for the CAP (column 1). Although most processing was accomplished through computer software—thus minimizing the amount of time spent on the exercise—differences in the reporting systems used by states led to numerous inconsistencies among the state reports.

A second calculation then required states to match the seventeen aggregate waste categories (column 1 of Table 1) to fifteen different waste management options listed in the CAP (column 4). For example, one state might show that its “nonhalogenated solvents” were used as fuel (energy recovery), while another state might show that they were managed in a solvents recovery facility. Unfortunately, neither state may have correctly portrayed what actually occurred. States generally knew the type and quantity of waste produced in the state as well as how much waste was handled at different management facilities, but they could not precisely identify what waste went to which facility. Hence, the fate of waste often became an educated guess based on technical judgment or national averages.

Each state also was asked to show how much of its management capacity was consumed by waste produced both within and outside the state. This effort was aided by EPA, which made available to the states a federal database called the treatment, storage, disposal, and recovery (TSDR) database (described later in this chapter). The data contained survey results from each state’s commercial and captive (i.e., owned by the company producing the waste) management facilities. Although originally collected by EPA for other purposes, this database

proved invaluable to states in preparing their CAPs. Nevertheless, many state officials discovered inaccuracies in the data and had to update or correct the information.

Finally, each state was asked to show how much waste left the state and where it went. This exercise was particularly difficult because few states had interstate waste shipment data that agreed with other states’ data. Consequently, state officials spent considerable time simply obtaining agreements on current interstate waste flow numbers.

Despite these shortcomings, most state officials believe that the efforts to develop a national uniform database were valuable. For some, the process offered the first opportunity to improve their state’s information system and to discuss waste planning efforts with other state officials in the region.

Waste Minimization Activities

Government and private programs to reduce waste can significantly affect future waste volumes. But it can be difficult to predict the outcome of these programs. Almost all programs rely on incentives and industry cooperation and few provide predictable regulatory targets. Nevertheless, EPA and the states wanted to account for these programs when determining future capacity needs.

To accommodate uncertainty, EPA granted states maximum flexibility in their calculations and a large “benefit of the doubt” in their assumptions. Under the EPA guidance, states were allowed to establish their own waste minimization targets as long as their estimates

were based on reasonable justification. Appropriate justification could include the following:

- state survey reports on waste minimization trends;
- waste minimization plans prepared by local industries;
- reports from advisory councils assembled by the state to develop waste reduction estimates;
- reports from federal agencies and trade and technical associations estimating trends in waste minimization applicable to local industry;
- engineering studies on waste stream changes applicable to local industry; or
- reported or anticipated effects of waste reduction programs maintained by nonpublic agencies, such as nonprofit waste minimization technical assistance centers or waste exchanges.

States also had to provide detailed information on their existing or anticipated waste reduction programs. Descriptions of legislative authority, types of assistance given (such as technical assistance or economic help to waste reducers), staff and funding levels, and measures of progress all were required in the CAP.

Future Waste Volumes

The EPA guidance required states to project waste generation and disposal capacity for 1989 (the year of submittal), 1995, and 2009. Each projection year was chosen for different purposes. The 1989

projections simply adjusted the most current data to reflect 1989 conditions. This would allow later comparison with the 1989 biennial report data (which was still being compiled and analyzed). The 1995 projections represented a longer term forecast that reflected the anticipated effects of regulatory changes, such as new land disposal restrictions. The projections for 2009, while typically dismissed as unrealistic by most waste planners, fulfilled the law's demand to provide a twenty-year assurance of capacity.

EPA provided only general guidelines on how states should make their projections. The guidance made the following suggestions.

- The underlying economic assumptions used in the projections should reflect official or reasonable assumptions of state economic activity unless "otherwise and substantially justified by the state."
- The projections should account for all waste-producing industries and possible changes in the economic behavior of these industries.
- The projections should account for nonrecurrent wastes, such as those from Superfund remedial actions and RCRA corrective actions (see glossary).
- The projections should incorporate, but not duplicate, the predicted effects of waste minimization.
- The projections should document all assumptions on waste imports and exports.

- The projection methodology chosen should not vary from that used by other states unless reasons for such variation are documented and justified.

Most states adhered to all of the above guidelines except the last. Although the use of common methods has clear benefits, few states were even aware of the methods used in other states. In fact, EPA itself did not suggest a preferred approach and informally suggested that it would accept most methods the states chose.

State Plans for Creating New Capacity

States showing capacity shortfalls in any future year (i.e., capacity demand not met by in-state or out-of-state capacity) were required to describe their procedures for facility siting, permitting, and expansion. The guidance first asked states to explain whether they planned to meet their projected shortfalls through construction of new facilities or through increased shipments to facilities in other states. They then were asked to supply general information on the state's siting procedures and to identify critical milestones by which future capacity development would be tracked. Such milestones could include the enactment of a new siting law, the date by which a construction permit for new capacity would be submitted, the expected permit approval date, and the expected start-up date.

Interstate Agreements

All states planning to use management capacity in other states were required to enter into an interstate agreement as part

of their capacity assurance submittal. The guidance document let states choose between two options in making an interstate agreement. Under the first, an importing state could explicitly agree, through a signed document with the exporting state, to accept the waste sent to it. Under the second option, states could simply show numerical agreement in their waste export and import tables, and thereby provide an implicit agreement. In many cases, states took this second concept further by using a regional approach: States within a regional agreement simply balanced all waste exported among states within the region against excess capacity in the region, thus ignoring actual state-to-state trading patterns. These analyses often assumed that no out-of-region waste would enter the area—a questionable assumption, but one that was instrumental for completing many state CAPs.

EPA's Efforts to Assist States in Preparing Their CAPs

EPA's technical assistance had two objectives: to help states develop common methodologies for preparing their CAPs (such as common data manipulation techniques and common assumptions on waste minimization); and to provide a forum to discuss regional approaches for meeting future capacity needs. Over time, six regional CAP projects formed out of the ten regions, with each project driven by the common interests of the participating states (see Table 2).

The regional projects became the main vehicle through which EPA channeled financial assistance to the states. Generally, each region hired a contractor

Table 2
Regional CAP Projects

Regional CAP Project	States Involved
Western States' Project (facilitated by the Western Governors' Association)	Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, North Dakota, Oregon, South Dakota, Utah, Washington, and Wyoming. American Samoa, Guam, and the Northern Mariana Islands also participated. ¹
Northeast Project (coordinated by Tufts University)	Connecticut, Delaware, District of Columbia, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont, Virginia, and West Virginia. ²
Region 4 Project	Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, and Tennessee. ³
Region 5 Project	Illinois, Indiana, Michigan, Minnesota, Ohio, and Wisconsin.
Region 6 Project	Arkansas, Louisiana, New Mexico, Oklahoma, and Texas. ⁴
Region 7 Project	Iowa, Kansas, Missouri, and Nebraska. ⁵

Notes: 1. In making a regional interstate agreement, California ensured capacity separately while New Mexico later joined the EPA Region 6 project. Arizona also planned to ensure capacity separately, but its plan was not approved. Kansas has indicated that it may join the western states in future CAP activities.
2. New York ensured capacity independently.
3. Florida, Georgia, and Mississippi were not included in the regional interstate agreement when it was originally submitted but have later sought admission. Florida's plan was approved, but Mississippi's and Georgia's plans were not.
4. New Mexico joined the Region 6 states as part of the submitted interstate agreement.
5. Missouri did not join the region as part of an interstate agreement but submitted an assurance separately.

Source: National Governors' Association.

to provide technical support. The contractors helped mainly with data manipulation, but they also facilitated information exchange among the states and helped resolve discrepancies in interstate waste data.

Technical Reference Manual

To help states present their generation and capacity data, EPA prepared a technical reference manual. The manual described how to convert state data on hazardous waste into the seventeen SARA waste types and fifteen SARA waste management categories.

The manual presented two options for developing the SARA reporting formats,

depending on the data collection method used by the state. The "high option" used the 1987 biennial report as a basis for data translation. States that had employed the 1987 report could make fairly accurate calculations using this approach.

The "low option" provided states with default values obtained from previous biennial reports. Once the waste was categorized by SARA waste type, the technical reference manual explained how to assign it to the SARA waste management categories using a series of national waste profiles. States with more detailed knowledge of their waste management systems were encouraged to use their own information. States had

to account for variations in the manner in which wastes were handled from those presented in the national profile.

SARA Analytical Software

The SARA analytical software was a computer-based system that performed many of the calculations described in the technical reference manual. It was designed to increase states' ability to prepare their CAPs while reducing demands on state resources. Unfortunately, it ran into a number of problems during development and remained unavailable to most users.

The TSDR Survey

EPA used the National Survey of Hazardous Waste Treatment, Storage, Disposal, and Recycling Facilities (TSDR survey) to provide information on capacity at waste management facilities in each state. The TSDR survey included information on all hazardous waste treatment, storage, disposal, and recycling capacity in the nation.

Using the TSDR data, EPA provided the following information to states:

- a listing of the facilities within the state;
- the type of management techniques used at each facility;
- the current capacity of each facility;
- planned capacity changes at each facility; and
- the life expectancy of each facility.

While this information served as a basis for state calculations, EPA encouraged states that had more detailed information to use their own data. Many states spent considerable resources updating the information for their CAPs.

CAP Submittal and Review

The law stipulated that a state could not receive Superfund remedial action funds after October 17, 1989, if it did not make the necessary assurance. While a state did not have to submit a CAP by that date, almost all did.

In many cases, EPA approved a state's CAP but placed supplemental conditions

on it that would need to be satisfied by a certain date (1992 in most cases) for approval to be retained. The supplemental conditions generally required additional information or a schedule of state actions to address the following: capacity shortfalls (and how the state was going to solve them); waste minimization (EPA wanted more information on assumptions); mixed hazardous and nonhazardous waste (accounting for amounts); and so-called exempt wastes (estimates needed on amounts).

EPA employed the following process to review and evaluate the plans.

- The review began at the EPA regional offices, where the CAPs were examined for completeness and conformance to the guidance. If the regional office decided more information was needed, it required the state to meet a set of supplemental conditions. The region then forwarded its findings to EPA headquarters with a recommendation for approval or disapproval.

- The Office of Solid Waste at EPA headquarters reviewed the CAPs, focusing on national consistency. EPA headquarters and the regional office then conferred before announcing a decision to approve or disapprove.

- The regional office prepared a letter informing each Governor of the outcome and of any supplemental conditions that the state was required to meet. By signing the letter, the state agreed to the supplemental conditions and the CAP was approved.

- States with supplemental conditions are subject to periodic reviews by EPA regional offices to determine whether progress is being made toward fulfilling the requirements. EPA can withdraw approval of a CAP if the conditions are not being met.

By January 1990, all states had submitted a CAP to EPA.

Overview of Information Received from the 1989 CAPs

At the time, the 1989 capacity assurance plans provided the most comprehensive national picture of hazardous waste management activity yet assembled. Despite shortcomings in data reporting and analysis, the “base year” picture of capacity supply and demand—and interstate waste flows—was quite thorough. By early 1990, all states had submitted a CAP to the EPA. Taken together, the CAPs portrayed a situation in which national capacity to manage hazardous waste was sufficient—even abundant in some cases—in response to market demands. They confirmed that most waste (more than 97 percent) was managed at privately owned facilities operated by the same company that produced the waste. They also showed that no state was completely self-sufficient in management capacity; a portion of waste from every state crossed at least one state boundary before disposal, though the volume of interstate waste was less than 2 percent of the total. But the CAPs also confirmed what many suspected: Commercial capacity is not uniformly distributed throughout the states. Some states tend to be large net exporters of waste while others are net recipients.

The Base Year Picture: What Waste Management Looked Like in 1987

States devoted a large share of their CAP preparation to describing how waste was generated and disposed of in 1987 (the so-called base year of CAP reporting). Data from the CAPs show that roughly 236 million tons of hazardous waste were generated that year (see Table 3). More than 96 percent of this total was considered “recurrent” waste, originating from day-to-day business operations; the remainder was considered “one-time”

waste, typically produced from cleanup activities under Superfund, RCRA, and related state laws. The two largest categories of generated waste reported in the CAPs were unspecified inorganic liquids (98.5 million tons) and inorganic liquids with organics (40.1 million tons). Because these wastes contain large amounts of water, their dominance is no surprising.

Individual state figures from the CAPs show that Texas reported the highest generation (60.1 million tons) and Alaska reported the lowest (989 tons). These figures are shown in Table 4 under the “CAP-reported figures” column.

Many waste planners have criticized the raw CAP generation figures as containing a substantial volume of waste not destined for management in hazardous waste facilities (i.e., these wastes are permitted to go to public treatment plants or are recycled on site). These so-called “exempt wastes” tend to be highly diluted, aqueous waste streams that can add substantially to total reported wastes. In an attempt to separate out this waste, the National Solid Wastes Management Association (NSWMA) published corrected figures that estimate only the hazardous waste streams destined for facilities regulated under RCRA (i.e., so-called RCRA-exempt wastes were removed).¹ The figures are shown under the column titled “NSWMA corrected figures.” A comparison of the CAP figures with the NSWMA values shows that the ranking of some states can change; for example, Virginia was the third highest state for waste generation in the CAPs, but only twenty-ninth when exempt wastes were removed. Many believe these latter rankings more accurately reflect total

Table 3

Generation by Waste Category (in tons)

Waste Category	Recurrent Waste	Percent of Category	One-Time Waste	Percent of Category	Total	Percent of Total
Contaminated soil	258,473.0	31.8	553,145.4	68.2	811,618.4	0.3
Halogenated solvents	1,014,824.4	99.5	5,123.5	0.5	1,019,947.9	0.4
Nonhalogenated solvents	1,572,255.6	99.1	14,054.6	0.9	1,586,310.2	0.7
Halogenated organic liquids	110,227.9	98.7	1,463.1	1.3	111,691.0	0.0
Nonhalogenated organic liquids	354,289.8	96.1	14,356.1	3.9	368,645.8	0.2
Organic liquids (unspecified)	4,073,600.2	99.8	8,626.7	0.2	4,082,226.9	1.7
Mixed organic/inorganic liquids	30,777,816.8	99.9	27,466.7	0.1	30,805,283.5	13.0
Inorganic liquids with organics	40,070,223.8	99.9	58,544.3	0.1	40,128,768.2	17.0
Inorganic liquids with metals	29,565,383.4	99.9	19,072.2	0.1	29,584,455.6	12.5
Inorganic liquids, NEC ^a	98,528,488.7	100.0	14,739.0	0.0	98,543,227.7	41.7
Halogenated organic sludges/solids	201,763.4	87.7	28,281.0	12.3	230,044.4	0.1
Nonhalogenated organic sludges/solids	1,765,695.0	86.7	270,112.7	13.3	2,035,807.7	0.9
Organic sludges/solids, unspecified	5,110,528.2	99.3	37,520.6	0.7	5,148,048.8	2.2
Mixed organic/inorganic sludges/solids	705,010.1	43.6	910,756.2	56.4	1,615,766.3	0.7
Inorganic sludges/solids with metals	5,633,818.9	97.1	170,370.0	2.9	5,804,188.9	2.5
Inorganic sludges/solids, NEC	430,710.2	83.8	83,301.7	16.2	514,012.0	0.2
Other wastes, NEC ^a	7,957,867.0	58.7	5,588,244.7	41.3	13,546,111.7	5.7
Correction ^b	142,000.0	89.1	17,288.0	10.9	159,288.0	0.1
Total	228,272,976.5	96.7	7,822,466.5	3.3	236,095,443.0	100.0

Notes: ^aNEC = not elsewhere classified.

^bCorrection = Values representing miscalculations and misclassifications from original CAP tables.

Source: National Governors' Association, adapted from EPA analyses conducted by Argonne National Laboratory.

Table 4

Waste Generation Reported in 1987

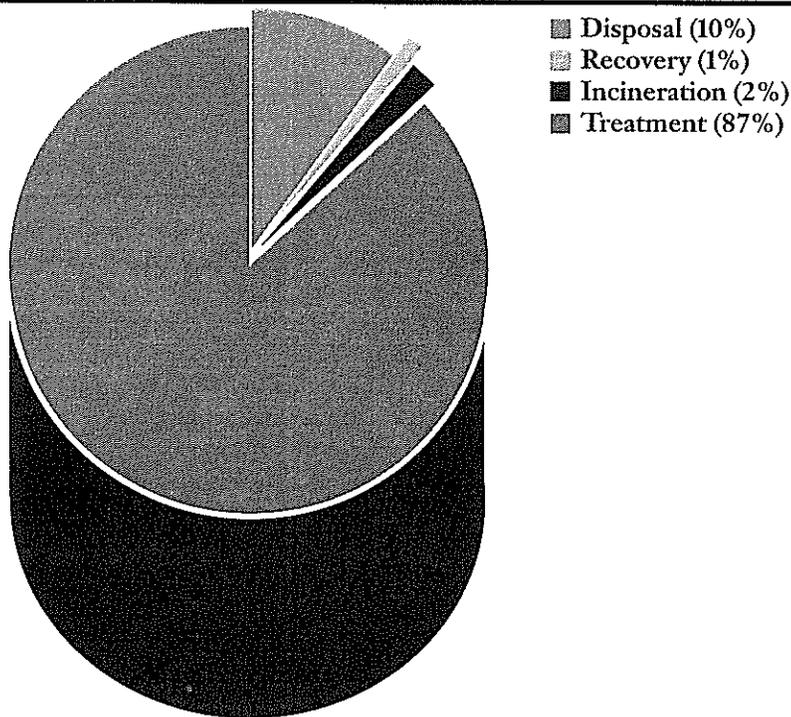
State	Waste Generation Reported in CAPs						NSWMA Estimates ^a	
	Total Recurrent	Percent of Total	Total One-Time	Percent of Total	Total Generated	Rankings	Total Generated	Rankings
Alabama	871,018.0	100.0	0.0	0.0	871,018.0	19	182,968.0	21
Alaska	931.0	94.1	58.0	5.9	989.0	50	989.0	50
Arizona	28,684.0	98.0	592.0	2.0	29,276.0	36	29,275.0	35
Arkansas	2,923,384.0	99.7	7,808.0	0.3	2,931,192.0	11	161,134.0	27
California	550,000.0	66.9	272,100.0	33.1	822,100.0	21	17,600,000.0	3
Colorado	43,403.0	95.6	2,012.0	4.4	45,415.0	34	45,415.0	33
Connecticut	150,050.0	83.2	30,370.0	16.8	180,420.0	30	180,400.0	26
Delaware	24,652.2	96.6	875.8	3.4	25,528.0	37	25,530.0	36
Florida	500,558.0	96.5	18,139.0	3.5	518,697.0	24	518,697.0	21
Georgia	39,926,747.0	100.0	17,288.0	0.0	39,944,035.0	2	39,944,035.0	2
Hawaii	1,324.0	90.7	135.0	9.3	1,459.0	48	1,456.0	48
Idaho	13,422.4	95.8	592.7	4.2	14,015.1	39	14,018.0	39
Illinois	1,579,581.0	83.5	312,048.0	16.5	1,891,629.0	13	1,891,629.0	9
Indiana	1,837,788.0	99.9	1,000.0	0.1	1,838,788.0	14	1,838,788.0	10
Iowa	315,543.0	97.5	7,936.0	2.5	323,479.0	26	323,529.0	22
Kansas	1,403,297.0	98.0	28,966.0	2.0	1,432,263.0	16	1,432,263.0	12
Kentucky	5,787,630.0	100.0	0.0	0.0	5,787,630.0	8	663,686.0	18
Louisiana	10,282,036.0	100.0	167.0	0.0	10,282,203.0	7	10,352,805.0	6
Maine	10,391.0	90.7	1,062.0	9.3	11,453.0	42	11,453.0	42
Maryland	84,566.0	90.4	9,004.0	9.6	93,570.0	32	93,570.0	30
Massachusetts	182,868.6	84.2	34,237.4	15.8	217,106.0	29	725,224.0	16
Michigan	3,433,495.0	99.6	14,277.0	0.4	3,447,772.0	10	3,302,300.0	7
Minnesota	53,113.0	90.4	5,652.0	9.6	58,765.0	33	58,785.0	32
Mississippi	1,493,406.7	98.4	24,984.7	1.6	1,518,391.4	15	1,518,392.0	11
Missouri	366,351.0	30.1	851,206.0	69.9	1,217,557.0	18	1,217,557.0	13
Montana	4,796.0	87.9	662.0	12.1	5,458.0	44	5,458.0	44
Nebraska	450,784.0	100.0	0.0	0.0	450,784.0	25	14,180.0	38
Nevada	1,016.0	100.0	0.0	0.0	1,016.0	49	1,016.0	49
New Hampshire	16,685.3	95.2	837.7	4.8	17,523.0	38	17,521.0	37
New Jersey	817,195.0	94.5	47,639.0	5.5	864,834.0	20	864,834.0	15
New Mexico	3,271.0	78.5	894.0	21.5	4,165.0	45	4,165.0	45
New York	16,098,246.0	99.5	76,767.0	0.5	16,175,013.0	5	12,994,122.0	5
North Carolina	1,378,719.0	98.6	19,629.0	1.4	1,398,348.0	17	76,941.0	31
North Dakota	3,363.0	27.8	8,728.0	72.2	12,091.0	41	12,092.0	41
Ohio	2,661,330.0	100.0	0.0	0.0	2,661,330.0	12	2,671,493.0	8
Oklahoma	509,190.0	83.4	101,194.0	16.6	610,384.0	23	610,384.0	19
Oregon	30,409.0	98.4	509.0	1.6	30,918.0	35	30,918.0	34
Pennsylvania	23,239,648.0	100.0	2.0	0.0	23,239,650.0	4	960,979.0	14
Rhode Island	10,051.0	79.0	2,676.0	21.0	12,727.0	40	12,728.0	40
South Carolina	5,314,907.0	100.0	0.0	0.0	5,314,907.0	9	583,981.0	20
South Dakota	1,804.0	73.3	656.0	26.7	2,460.0	47	2,460.0	47
Tennessee	627,903.9	91.9	55,361.7	8.1	683,265.6	22	683,226.0	17
Texas	59,979,437.0	99.8	113,546.0	0.2	60,092,983.0	1	53,368,983.0	1
Utah	226,595.0	99.5	1,181.0	0.5	227,776.0	28	264,094.0	23
Vermont	5,744.7	86.7	884.4	13.3	6,629.1	43	9,273.0	43
Virginia	36,260,574.0	100.0	4,100.0	0.0	36,264,674.0	3	101,541.0	29
Washington	170,453.0	72.6	64,258.0	27.4	234,711.0	27	234,538.0	24
West Virginia	8,210,486.2	59.5	5,582,308.0	40.5	13,792,794.2	6	13,798,663.0	4
Wisconsin	174,798.0	99.7	513.0	0.3	175,311.0	31	121,998.0	28
Wyoming	2,321.0	84.7	420.0	15.3	2,741.0	46	2,742.0	46
Total	228,272,976.5	96.7	7,805,178.5	3.3	236,078,155.0		169,582,228.0	

Notes:

^a NSWMA figures compiled from National Solid Wastes Management Association, Interchange of Hazardous Waste Management Services Among States (December 31, 1990). These estimates, compiled by NSWMA, have not been officially endorsed by the states.

Source: National Governors' Association, from figures compiled by Argonne National Laboratory for EPA.

Figure 1
How Waste Was Managed in 1987



Source: National Governors' Association, adapted from EPA analyses conducted by Argonne National Laboratory.

hazardous waste generation. Nevertheless, because states did not report these values directly, all figures in this report represent original CAP values, unless otherwise noted.

How Waste Was Managed

In addition to reporting the type and amount of hazardous waste generated in 1987, the states also had to report how that waste was managed. Approximately 394 million tons of waste went through various stages of treatment, recovery,

destruction, or disposal (see Figure 1). (More tons of waste are reported as managed than generated because management often involves several sequential steps for the same waste stream, thus "doubling" the amount of waste originally generated.)

The majority of waste managed (87 percent) went through some type of treatment (other than combustion), such as aqueous inorganic treatment or sludge stabilization. Two percent of the waste was either incinerated or burned to

recover energy, and 1 percent went through one or more recovery operations. Finally, of all the waste managed, 10 percent went to final disposal, which included landfilling and deep well injection.

The difference is striking between the amount of waste sent to commercial facilities and the amount managed by the companies that produce it (in either on-site or company-owned off-site facilities). Only 9.3 million tons of waste (2.4 percent of the total) went to commercial waste handlers. However, of this quantity, 3 million tons (32 percent) went to landfills. Companies that manage their own waste tend to bury less than 3 percent of it in landfills (see Appendix A).

Capacity Utilization

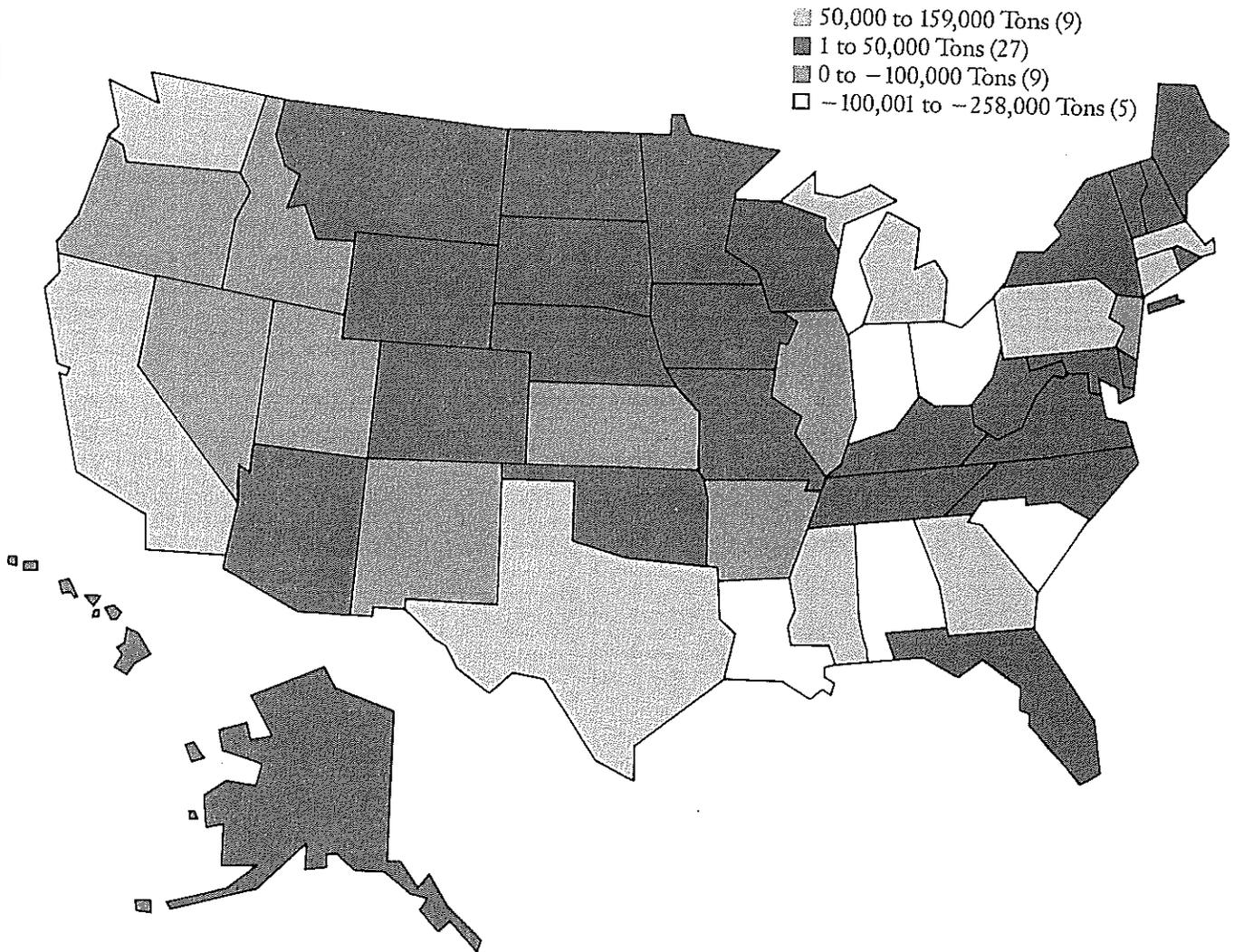
Each capacity assurance plan was supposed to provide a summary of how much hazardous waste management capacity was used by hazardous and nonhazardous waste in the base year and in the future. Three categories of management capacity were considered—commercial, captive, and on-site (see glossary). Unfortunately, states were inconsistent in reporting the total waste management demand on their facilities. For example, when reporting demand on in-state facilities, some states failed to include imported waste while others failed to subtract exports. The result produced a sometimes erroneous picture of how much capacity was actually used and what might be available in the future.

Despite these shortcomings, the CAPs did provide some insight into capacity

Figure 2

Interstate Flows of Hazardous Waste from the 1989 Capacity Assurance Plans

Exports/Imports (Importers are Negative)



Source: National Governors' Association.

Table 5

Waste Management Capacity Utilization Reported in the CAPs

Capacity Type	Maximum Capacity (in million tons per year)	Total Demand (in million tons per year)	Remaining Capacity (in million tons per year)	Percent Remaining
Commercial	88.2	9.3	79.0	89.5
Captive	253.4	63.7	189.7	74.9
On-site	999.6	320.8	678.8	67.9
Total	1,341.2	393.7	947.6	70.6

Source: National Governors' Association, adapted from EPA analyses conducted by Argonne National Laboratory.

utilization in 1987. Perhaps most striking was the relative abundance of management capacity available nationwide for hazardous waste. Even after accounting for all hazardous waste management needs, substantial excess capacity remains. As Table 5 shows, on-site capacity—the most utilized type—still has roughly 68 percent of its capacity unused by hazardous waste. Unfortunately, much of the total unused capacity for hazardous waste is thought to be consumed by nonhazardous waste.

The tables in Appendix A provide more detailed information on commercial capacity. They show that virtually all major management categories have a relative abundance of excess capacity, at least on a nationwide scale. However, many state officials have been quick to point out that these capacity excesses could evaporate during the 1990s.

How Much Waste Was Sent to Other States?

Of all the waste generated in 1987, only 1.6 percent (3.7 million tons) was sent across state borders for treatment or disposal. However, virtually all states sent some portion of their waste to another state, and at least thirty-six states exported more waste than they received (see Table 6 and Figure 2, which report waste shipments from the viewpoint of the receiving states).

As Table 6 shows, the top five waste exporting states were Pennsylvania (158,677 tons), California (119,978 tons), Washington (108,491 tons), Michigan (76,295 tons), and Massachusetts (71,109 tons). In general, net waste exports were relatively small compared with the total

amount of waste generated by each state. Of the top five exporters, only Washington and Massachusetts had export figures that exceeded 30 percent of their generation (these states exported 46 percent and 33 percent of their generated waste, respectively; see Appendix A for more details).

In contrast, the net waste importers tended to report net transactions on a more significant scale. The top five net importing states were Indiana (251,478 tons), Louisiana (230,300 tons), Alabama (199,859 tons), Ohio (183,005 tons), and South Carolina (108,985 tons). These top net importing states received more than 73 percent of all net imported waste and almost twice as much waste as left the top five exporting states.

Appendix A also includes information on net waste balances for incineration waste and landfill waste. Management facilities for these two types of waste are among the most difficult to site. An examination of the interstate market makes it clear that judging whether a state contains adequate capacity for waste produced within its borders is difficult. For example, New York is listed as a net exporter of total waste (ranked just under the top ten at 49,139 tons) but is a net importer of hazardous landfill waste (25,604 tons). Should New York be expected to “assure” the development of more in-state capacity to further reduce exports, or is it doing enough by taking excess (beyond the state’s own demand) landfill waste? Situations such as these reveal the complexity of interpreting interstate waste figures.

Waste Minimization: Reducing Capacity Needs

A number of states took great pains to include waste minimization estimates in their analyses. The fact remains it is often cheaper and more practical to implement programs to curb waste than to build new management facilities. At the time of the first CAP submissions (1989), forty-four states had waste minimization programs, up 22 percent from 1987. For most states, waste minimization played a crucial role in lowering projected management demand.

Waste Reduction Estimates

At least thirty-six states claimed a waste reduction credit for one or more of the CAP projection periods. For the 1995 projections, for example, thirty-six states claimed waste reduction effects of 0.1 percent to 50 percent, with half the states reporting at least 13 percent.

Unfortunately, the basis for many of these claims was weak, since little good empirical evidence existed to show the effectiveness of waste minimization programs, particularly in the case of programs that were planned but not yet implemented. While few dispute the need for including waste minimization in future capacity estimates, little could be done to prove the reduction claims given in the CAPs. Nevertheless, states drew from a variety of sources in an attempt to document the efficacy of their programs (see Table 7). Sources included industry studies, state-conducted analyses, and general published reports.

Table 6
Net Interstate Waste Flows

Net Waste Exporters	Tons Imported	Tons Exported	Net Exports
Pennsylvania	241,786	400,463	158,677
California	20,463	140,441	119,978
Washington	2,755	111,246	108,491
Michigan	171,958	248,253	76,295
Massachusetts	17,503	88,612	71,109
Mississippi	28,365	96,649	68,284
Texas	165,414	230,937	65,523
Connecticut	26,600	91,162	64,562
Georgia	8,049	69,498	61,449
North Carolina	33,346	83,195	49,849
New York	93,403	142,596	49,193
Tennessee	31,586	80,143	48,557
Kentucky	75,450	121,856	46,405
Maryland	25,282	70,196	44,914
Florida	19,253	62,752	43,498
West Virginia	11,304	47,946	36,643
Arizona	91	34,610	34,519
Iowa	5,071	33,994	28,923
Wisconsin	52,412	77,852	25,440
Missouri	76,107	100,658	24,551
Minnesota	12,809	35,974	23,165
Colorado	1,404	23,986	22,582
Delaware	11	17,233	17,222
New Hampshire	0	12,002	12,002
North Dakota	0	9,142	9,142
Maine	0	6,825	6,825
Vermont	0	5,146	5,146
Virginia	39,308	43,680	4,372
Rhode Island	5,868	9,318	3,450
Montana	0	2,694	2,694
Nebraska	9,957	12,463	2,506
South Dakota	0	2,445	2,445
Hawaii	0	1,978	1,978
Oklahoma	21,799	22,964	1,165
Alaska	0	697	697
Wyoming	0	322	322
Net Waste Importers	Tons Imported	Tons Exported	Net Imports
Indiana	439,131	187,653	251,478
Louisiana	331,894	101,594	230,300
Alabama	279,785	79,926	199,859
Ohio	475,336	292,330	183,005
South Carolina	136,106	27,120	108,985
Illinois	241,171	146,180	94,991
Oregon	100,094	7,315	92,779
Utah	70,577	7,177	63,400
Nevada	49,963	1,495	48,468
Idaho	34,381	1,553	32,828
Arkansas	75,116	54,073	21,043
Kansas	47,723	35,938	11,786
New Mexico	4,892	2,948	1,944
New Jersey	218,832	217,127	1,705

Source: National Governors' Association, from figures compiled by Argonne National Laboratory for EPA.

Waste Minimization Program Approaches

The CAPs generally contained descriptions of two basic types of state waste minimization programs—technical assistance programs, in which state staff provide on-site design consultation to industries seeking to lower waste generation (used in thirty-five states); and education programs, in which the state disseminates pamphlets, newsletters, and other information on waste reduction (used in thirty-three states). In addition, twenty-two states indicated that they had imposed some type of regulatory requirement on industry to encourage the use of waste minimization. Most of these rules required industry to report waste minimization plans before receiving a permit to operate.

Most states appropriated or planned to appropriate their own funds to support their waste minimization efforts. The CAPs reported that state general revenues comprise more than 75 percent of the total money used to support waste minimization programs. Roughly 7 percent of total funding comes from other state sources and less than 1 percent comes from state disposal fees. Federal grants supply only 17 percent of total funds.

The CAPs also reported that waste minimization programs usually are managed by the state environmental agency, with nineteen states' average staff ranging from one to two full-time employees. The numbers varied greatly, however. California reported 32.5 state professionals in its program, but five states with newer programs reported using less than one full-time employee. Several states contract out additional

resources to run their waste minimization programs by funding state university staff or consultants.

Projections: Future Generation and Capacity Shortfalls

The CAPs suggest that between 1987 and 1995, waste generation should decrease by almost 16 percent and then rise again by 2009 (to just 4 percent below the 1987 levels). The reason for the large drop in generation predicted between 1987 and 1995 is unknown (see Table 8). Most likely, part of it is due to expected changes in industrial activity and part due to anticipated reductions through waste minimization (more than 7 million tons in estimated reductions were reported in the CAPs for 1995).

Projections beyond 1995 show a much greater influence from waste minimization, but such estimates must be viewed with skepticism. In fact, most experts believe that waste generation projections beyond a five-year time horizon have little credibility because of changing regulations, new industrial processes, and general alterations in industrial mix and activity. States conducted twenty-year projections only because the law required them to do so. Most experts view the CAPs' waste generation predictions for the 1995 to 2009 period as nothing short of guesswork.

Capacity Shortfalls

The CAPs amply demonstrate that no state is self-sufficient in commercial management capacity—the crucial category of capacity serving most industries. This is to be expected, since commercial self-sufficiency in every

Source of Waste Minimization Estimate	Number of States Using Each Source as Basis for Estimate
General published reports	33
State-conducted analysis	11
Industry studies	7
Other sources	19

Source: National Governors' Association.

Year	Total Waste Generated (in million tons per year)	Percent Change From 1987	Estimated Reductions Attributed to Waste Minimization (in million tons per year)
1987	236.1	NA	NA
1989	228.4	- 3.2	- 4.0
1995	198.6	-15.9	- 7.4
2009	227.2	- 3.8	-24.0

Source: National Governors' Association.

state would be economically unsound and result in far more waste management facilities than needed. Few states have sufficient industrial waste to justify a management facility for each waste category. Thus, states—or, more accurately, the industries within states—often are dependent on capacity located outside their borders or region.

In comparing their waste projections with current management capacity, twenty-six states indicated a shortfall in one or more management categories (the most frequently reported shortfall occurred in incineration of solids, with

landfill shortfalls reported by twenty-three states). The number of states still expecting some type of shortfall in 1995 is expected to fall to twenty-one as some newer facilities come on line, but these same states still will need access to waste management facilities in other states to meet their disposal needs.

Unfortunately, inconsistent reporting among the states makes it difficult to obtain a complete picture of expected shortfalls; for example, some states included waste from other states in calculating total demand while others did not. The most likely scenario is that

Table 9

Site Selection Procedures Used by States

Nature of Siting Program Used by State	Number of States Choosing Approach
State relies on private developers to initiate site selection and permit approval process.	35
State maintains inventory of suitable sites, while still relying on private developer to initiate approval process. Developer can suggest alternative sites.	12
State selects specific sites for development and provides "fast track" permitting for developers planning to build facilities at selected site.	7
State has authority to purchase site for facility development.	8

Source: National Governors' Association.

individual state shortfalls and even regional shortfalls will continue to exist over the next several years. However, national capacity probably will remain adequate throughout the decade, though margins of excess capacity likely will shrink. At some point, regions with chronic shortfalls in key waste categories will need to increase management capacity or face growing resentment from other states.

Facility Siting: Developing New Capacity

All states were asked to describe the methods they use to develop new facilities. This information was used to develop a long-range picture of state siting policies, whether or not the state faced capacity problems. For states showing a shortfall in any projection year, additional information was required on siting procedures, plans, and milestones. This information was supposed to demonstrate that the states had a process to ensure the timely introduction of new capacity.

General Siting Description

All states were asked to provide a general description of the procedures in place or planned for granting new facility permits. Thirty-four states indicated that they have a formal hazardous waste management facility siting process that goes beyond the RCRA permitting process. These siting processes had been in place for an average of about five years. In addition, sixteen states indicated they have siting agencies that are distinct from the RCRA regulatory agency. These agencies had been in existence an average of 7.6 years at the time of CAP submittal. To enlarge state executive powers over siting, twenty-nine states had enacted legislation allowing override and/or preemption of local zoning authorities and other local powers that could prohibit or restrict capacity development.

Siting Procedures

States showing capacity shortfalls in the projection years were required to provide further details on their siting programs and policies. This information

addressed such topics as facility site selection, siting criteria, the use of compensation and negotiation, public involvement in the siting process, and state authority to build state-owned public facilities for managing waste.

States employ a variety of approaches in their siting processes (see Table 9). While some state agencies may take an active role in overseeing or even encouraging the siting process, the majority of states (thirty-five) still rely on private developers to initiate site selection. Nevertheless, in recent years, a number of states have become more involved in determining the location of a facility. The CAPs reported that twelve states maintain inventories of sites that are suitable for facilities, while seven states provide preferential treatment, or "fast tracking," for facility permit requests at those sites.

Finally, eight states reported that they have laws that allow the state to build and/or operate a hazardous waste management facility. However, few states

have chosen to exercise this authority, simply because they do not wish to become hazardous waste facility owners and operators. Arizona currently is the only state to own a potential hazardous waste management facility. The state became a full owner of the site and facility when it bought out the contract of the contractor it had hired to operate a full service management facility on state land. The facility currently remains inactive.

Giving the Public a Voice in Siting Decisions

States are using a number of methods to provide the public and affected communities a voice in the site selection process. Thirteen states allow or require the host community to negotiate with the facility developer. Negotiation provides the community an opportunity to exact certain agreements, including facility hours of operation, site inspection access and authority, prescribed routes for delivery, and use of protective landscaping.

To reduce the burden of hosting a facility, twenty-two states either encourage or require compensation to be offered to the host community by the state or facility developer. Compensation can include cash payments to the public or local government, emergency training for the police and fire departments, and guarantees to compensate local residents for loss in property values.

Siting programs also tend to include a significant number of opportunities for public involvement in the decision-making process. Forty-two states provide informational public hearings and at least thirty states include adjudicatory public

hearings. A newer method of involving the public is the local advisory committee (LAC), which usually reviews the facility proposal and submits a formal report to the decisionmaking authority. Nineteen states reported that they provide for the establishment of LACs in the siting process.

Interstate Agreements: Accounting for Exports

One of the clearest messages emerging from the CAPs is that virtually no state is self-sufficient in meeting all of its hazardous waste management needs.

All states have waste crossing their borders, and even with major attention devoted to waste minimization, waste still will be shipped among states because it is economically efficient to do so. For this reason, interstate agreements are crucial to the CAP process.

Unfortunately, the interstate agreements reached by several groups of states reflect more of a need to balance waste flows "on paper" for CAP purposes than any particular desired outcome in the actual market. In fact, most agreements envision such drastic shifts from current waste import/export patterns that they strain credibility.

Forty-four states participated in some sort of interstate agreement (see Table 2 in Chapter 2). Two states independently assured their own capacity (California and New York), three states are seeking admission to the Region 4 agreement (Florida, Georgia, and Mississippi), and one state (Nebraska) is pursuing agreements with states and private facilities.

The problem with the interstate agreements is that for the most part, they followed the configuration of the EPA regions and did not recognize actual interstate waste flows. Thus, for example, the approximately 470,000 tons of waste now exported out of the Northeast on paper would no longer leave the region and the 458,000 tons of waste now entering EPA Region 5 would no longer enter that region. But such shifts in the actual market place are highly unlikely. Even if capacity were created to accommodate these shifts, there are no enforcement mechanisms to uphold the CAPs.

Problems with the CAP Process: What It Fails to Address

The capacity assurance process tried to achieve several ambitious objectives that have eluded waste planners in the past. These included obtaining a good national picture of hazardous waste management, ensuring that states would develop the capacity needed to manage future waste, and discouraging states from relying on out-of-state disposal capacity in lieu of solving local siting barriers. Unfortunately, these objectives would be difficult to meet even under the best of circumstances, and the CAP process did not offer the best of circumstances. To meet the requirements of the law, EPA required that states prepare detailed, nationally consistent plans; however, the data systems and procedures were not in place to ensure the uniformity of the product or its quality. The process also required states to make agreements with other states on the use of disposal facilities within their borders—despite the fact that states do not control the interstate waste market and thus could not enforce these commitments. In short, the infrastructure was not in place to support the above objectives, and it was doomed to at least partial failure from the start.

On the other hand, some benefits resulted from the CAP process. Perhaps most important, both the states and EPA became more aware of the need for a nationally consistent database on waste generation and management. Many states examined their own reporting systems and found fault with them, choosing to adopt an improved federal system in the future. Another benefit included the opportunity to better understand some of the interstate commercial transactions that were occurring.

This chapter reviews problems and benefits associated with the 1989 CAP process and the resulting state plans. Issues most often identified by state officials include the following.

- **The federal and state data systems available at the time made it difficult to prepare uniform, comparable reports for all states.** Although the CAPs probably provide the best picture to date of how waste is managed in the United States, the picture is flawed. Many states drew their data from different sources and chose various methods to translate the information into the CAP reporting tables. Information on the quantity and types of waste flowing among states rarely agreed and a great deal of “engineering judgment” was necessary to create a full waste generation and management picture. While these flaws were not fatal, they made it difficult to have confidence in many of the details in the state reports.
- **Shortcomings in methodology and uncertainties about future regulations make twenty-year waste projections highly suspect.** Few experts attach any credibility to waste projections beyond five years. Nevertheless, the law and EPA’s guidance required states to project waste generation and ensure disposal capacity needs for all wastes through 2009.
- **The CAPs do not present a credible picture of future waste transactions among states.** The law required each state to obtain an agreement from other states that were likely to receive its waste. But state government has no control over the interstate waste

market, which is strictly a commercial venture, and the capacity assurance process did not alter this fact. Consequently, interstate agreements became a “paper exercise,” and the future interstate waste transactions portrayed in them are improbable.

- **The CAP process cannot ensure that treatment and disposal capacity will be built when needed.** Enforcement of the CAPs focused on the plan contents and not on implementation of the plans. Thus, the CAPs have little influence on facility siting, which remains a private market venture. The fact remains that the capacity assurance process is no more effective in addressing hidden siting barriers—such as the NIMBY syndrome—than was previous policy.
- **The CAPs fail to effectively address issues arising from the interstate disposal of waste.** The capacity assurance process required each state to obtain permission from other states before using the commercial disposal capacity in their borders (permission was to be granted by the Governors of each state by signing or otherwise giving approval to an interstate agreement). The purpose of these interstate agreements was to encourage interstate planning and ensure that no state could rely on out-of-state capacity in lieu of solving its own siting problems. But because the interstate agreements cannot be enforced, they are not taken seriously, and disagreements between net importing states and net exporting states persist.

I S S U E 1

The CAPs Provide a Comprehensive but Flawed Picture of Current Hazardous Waste Management Practices

In preparing the basic waste management information for their CAPs, states had to confront and overcome a number of technical difficulties. These included obtaining good, comprehensive data on in-state practices, translating it into the prescribed reporting formats, and comparing it with other states' figures. Problems arose at each step, including the following.

- **Data was drawn from various sources, which were not always comparable across the states.** A number of reporting systems were available for states to use in compiling generation data. These included EPA's biennial report (which collects data directly from industry and may be administered by the state), manifest data (which includes information on waste shipments), and other individual state reporting systems. At least half the states did not use a common source. Approximately twenty-five states used the federal biennial reports, fourteen used their own reports, thirteen used manifest information, and seven used other data sources (if available, most states used a combination of these data sources). This led to inconsistencies in the quality and content of data used to report current waste practices.
- **Waste characterization data was poor.** Most states relied on the 1985 biennial report form (or its equivalent) to obtain their basic waste values.

Unfortunately, this form did not provide adequate information on waste characteristics, making it difficult to properly categorize the wastes. Without good data, state officials also had to make assumptions about how wastes were managed and where. These assumptions may have produced significant errors in some of the CAPs.

- **A number of states used different reporting years when establishing their 1987 “baseline.”** The CAPs established 1987 as the reporting baseline from which all projections would begin. However, not all states were prepared to use 1987 data. Some went as far back as 1985 in developing a baseline picture. Consequently, the current or baseline picture often was out of date, requiring some adjustment.

While none of the above problems proved fatal—that is, states still were able to present a reasonable picture of waste management—they did affect the overall quality of this first-time CAP submittal. Many believe that states must participate in at least one additional cycle of CAP preparation before the major “bugs” are worked out.

I S S U E 2

Estimating Waste Generation and Management Demand Twenty Years From Now Was Not a Fruitful Exercise

From the outset, states questioned the validity of making twenty-year waste generation and disposal projections. Most argued that the system simply is too dynamic to justify such long-term estimates. Besides the long time frame

involved, different methodologies and assumptions across the states dramatically influence the results. Particularly sensitive are assumptions regarding waste minimization, state economic growth, new regulations, and cleanup activities from emergencies and abandoned waste sites. In addition, the methodologies used to link waste generation with economic activity differ among CAPs.

Waste minimization proved to be a major variable. As described in Chapter 3, state waste reduction estimates ranged from 0.1 percent to 50 percent. Because government waste reduction programs largely depend on voluntary responses from industry, it is difficult to judge the validity of these claims. In general, EPA accepted the claims of most state plans.

Regulations also play a major role in determining waste quantities and, hence, waste management capacity needs. Only imminent regulations were addressed in the 1989 CAP submittals, yet states were asked to plan future management capacity using the current regulatory environment. Given that regulations can dramatically alter technology options for specific wastes, estimating the type of management capacity needed twenty years from now strains analytical credibility. Most state officials involved in the process believe that only a near-term projection that does not exceed five years can be justified as a subject for detailed analysis. Anything beyond that time frame has been called "a paper exercise."

Finally, the methodology used for making projections differed considerably. An NGA survey found that nine states used some form of regression analysis, thirty-

four states used econometric modeling, one state used industry surveys, and three used other methods to estimate future waste generation. Moreover, the key economic index used to link waste with industrial activity also differed. Twenty-seven states used total employment figures, seven used production employees, nine based estimates on future wage growth, and four used some other index. While each of these differences probably had little effect on the short-term projections, they certainly increased the error of the long-range estimates.

I S S U E 3

The CAP Interstate Agreements Suggest the Existence of an Interstate Market that Sharply Differs from Current Reality

The CAP process placed a premium on each state obtaining an interstate agreement if it planned to include other states' capacity in its plan. Because the agreements could not be enforced, they mostly were used to balance capacity and waste management needs "on paper." EPA facilitated the process by providing assistance through the EPA regions and most interstate agreements tend to reflect the EPA regional boundaries.

Unfortunately, the waste patterns suggested in the paper agreements sharply depart from reality. For CAP purposes, most interstate agreements simply assumed that imports into their region would cease. The states involved then "pooled" the remaining capacity in their region—minus the imports—and balanced it against total regional waste management demand. Future capacity needs also were pooled, thus tending to

disguise where and in which state new facilities might be needed or built.

As a report on the balance of the nation's capacity needs, the CAPs do a reasonable job, providing figures on total waste generation and capacity utilization. As individual state plans, they fall far short. Most state officials indicate that their own planning efforts—conducted voluntarily before the CAP process was enacted—give a much more honest picture that recognizes both waste imports and exports and that more accurately estimates the type of capacity that might be needed in the state.

I S S U E 4

The CAPs Do Not Ensure that Treatment and Disposal Capacity Will be Built When Needed

A key objective of the CAP process is to ensure that new waste disposal capacity will be developed if needed. States must ensure this by listing milestones for facility development in their individual plans. What constitutes a milestone differs sharply among states. A few actually listed dates of expected development activities, such as initial permit request, approval, and construction. But more often, states simply described total capacity needs for the future and a regional process for obtaining it. Some plans simply promised to explore siting opportunities in the future.

In its guidance, EPA correctly stated that no model approach is available for developing capacity. The guidance thus gave states the latitude to create programs for developing capacity that

are best suited to their needs. States (and the regional agreements) with shortfalls were given flexibility to establish their own milestones and procedures. This has led some people to criticize EPA as being too lenient for accepting weak milestones and failing to track progress. Critics—often from the large net importing states—have insisted that states lacking disposal capacity establish meaningful milestones and meet them. If milestones are not met in states with shortfalls, EPA should not make Superfund money available, as the law requires.

But EPA faces a dilemma. The law itself appears to emphasize only the completion of a capacity assurance plan; it does not clearly state that compliance with the plan is necessary. Thus, EPA's primary justification for disapproving a CAP is if a state (with a shortfall) does not enter into an interstate agreement or is rejected from one (which is the situation in both Region 4 and the Northeast). While failure to complete milestones also may be a justifiable reason to withdraw Superfund money, EPA has been reluctant to do so as long as national management capacity is sufficient. Moreover, a number of state officials have argued that publishing expected approval dates for facility development presupposes an outcome, and exposes the state to lawsuits.

I S S U E 5

The Interstate Agreements in the CAPs Do Not Address the Current Problems Associated with Interstate Waste

Much attention recently has been given to interstate waste movements. While the volume of waste that crosses interstate lines remains below 2 percent of the total generated, the anger it causes often is significant. The fact remains that commercial disposal sites in some states receive far more out-of-state waste than in-state waste. Many contend this is the result of a NIMBY syndrome that some states chose not to address, thus forcing industries in those states to rely on out-of-state disposal.

Some officials wanted the CAP process to correct this. Proponents believe the CAP interstate agreements should be enforced so that—at the least—states that have failed to obtain an interstate agreement are denied Superfund money. However, most recognize this alone will not solve the problem. Absent a process that ensures the equitable development of disposal capacity throughout the states, concerns over interstate waste movements will continue. A number of state officials have suggested that states be allowed to levy fees on out-of-state waste as a means to discourage unwanted exports. Unfortunately, the desire to curb unwanted exports must be balanced with the recognition that state "self-sufficiency" in hazardous waste management probably is an uneconomical and undesirable outcome.

Benefits of the CAP Process

It is easy to point out the shortcomings of the CAP process, particularly because of inherent problems with the law itself. However, many believe that the intentions behind the process are good and that the process did produce some benefits. Chief among these was the recognition by state and federal officials that data systems used to report waste management must be improved. The CAP process exposed weaknesses in both the federal and state data sources. While many states used the CAP process to improve their own information, it was an expensive and time-consuming undertaking. In response, both EPA and the states have vowed to improve their own data systems, and to work together more closely to ensure the collection of nationally consistent and accurate waste data.

The CAP process also gave states an unprecedented opportunity to exchange information with other states in their region and to explore regional planning efforts. Simply reconciling interstate transaction figures was helpful to a number of states. Developing consistent regional waste minimization policies also was mentioned as a benefit. Finally, some states—particularly those in the West—believed that the process helped motivate serious regional planning for waste management. However, only time will tell whether such efforts will bear fruit.

Fixing the CAP: A Summary of the CAP Policy Group Discussions

As part of its overall examination, EPA asked NGA to identify options for improving the capacity assurance process for 1993. To accomplish this, NGA assembled a group of fifteen key state officials to examine the CAP process of 1989. The group—informally called the CAP Policy Development Group—met several times with the NGA staff throughout 1990 and 1991 to develop findings and recommendations. Consensus was a goal, but not a requirement. The result was a series of recommendations calling for a more streamlined CAP report, subject to consistent review and enforcement when appropriate. While few believed the CAP requirements reflected “good law,” all recommended that the law be taken seriously as long as it remained in force (if only to illustrate some of its shortcomings).

This chapter presents the results of the group’s discussions. Appendix B contains a list of the policy group’s participants.

Overview of Major Findings

The chief finding of the policy group was that the capacity assurance provision is flawed and Congress should revise or repeal it. Many believed that the law did not resolve the main issue it was supposed to address—namely, the failure of some states to adequately provide for their waste management needs. They contended that new laws were needed to control the amount of waste these states export for disposal. One option that appealed to the group was to have Congress grant states the authority to levy fees on waste received from other states.

The group had mixed opinions on whether the CAP process was an effective planning tool. Most agreed that the regional state groups formed to prepare the 1989 CAPs provided useful forums for discussing waste management needs and plans. Many also agreed that the CAPs provided a useful picture on current waste management nationwide. However, most also felt that the CAPs themselves did not represent realistic, individual state plans. In particular, the interstate agreements often contained artificial state groupings formed chiefly to balance overall capacity and waste demand on paper. Many felt that the states—outside the CAP process and through their own initiative—had been developing better individual plans to handle waste when the federal CAP requirements were adopted.

Finally, the group felt that EPA was not reviewing the CAPs in a consistent manner and that enforcement of the CAPs was not being treated seriously. Consequently, the group believed that lawmakers did not fully understand the problems underlying the law, leaving states subject to a demanding and sometimes contentious process without resolution. If the CAP process continued, the group wanted it enforced. Only then would sufficient motivation exist to review the merits of the law.

Summary of Major Changes Recommended

The CAP Policy Development Group made a number of specific recommendations designed to achieve the following improvements.

- **Data collection and analysis should be clearer and easier.** The policy group sought to reduce the scope and focus of data analysis. Revised reporting would focus on waste generated and sent to off-site facilities and detailed waste projections would emphasize the first five years from the date of CAP submittal. In addition, the biennial report would serve as the basis for all data used in the CAP, thus creating more standardized data. The lack of consistent data had made many state-to-state comparisons using the CAPs difficult.
- **The focus of waste reporting should be narrowed to off-site facilities.** By limiting detailed reporting to only those wastes going to off-site facilities, the CAPs would concentrate on the commercial waste market, interstate waste, and large, off-site captive facilities. States still would report the amount of waste sent to on-site facilities in a summary fashion, using SARA management categories, but would not report capacity utilization of those facilities. Moreover, states could assume that projected on-site waste would continue to be managed on site in the future. Major shifts of on-site waste to the commercial market would be captured in the regulatory analysis section of the projections.
- **EPA should implement an enforcement policy to make the CAPs and regional agreements more meaningful.** The recommendations urged EPA to enforce the CAPs, using clear and consistent criteria. In addition, the group wanted EPA to disapprove any CAP that was part of a "failed" regional agreement, unless the state itself could

certify that its own capacity was adequate for current and future needs. By disapproving all CAPs that comprise a failed regional agreement, EPA would encourage states to take the regional plans more seriously.

- **Enforcement should result in a serious review of the merits of the current law.** Few policy group members believed that the loss of Superfund cleanup money is the best—or even an appropriate—sanction to force states to ensure adequate capacity. Yet, members did not believe that a failure to enforce the law would solve the problem. Instead, the group felt the law should be carried out. By enforcing the law, the group felt that its flaws would become more evident to Congress and that a serious search for a better approach would begin.

Specific Recommendations Concerning the 1993 CAP Process

The goals of the policy development group were chiefly to suggest, in as much detail as possible, specific changes for the 1993 CAP process. The group made these recommendations in the form of an outline, representing a series of steps for the basic CAP process. All states would need to complete the following critical steps: (1) describe the current waste management picture, providing details on off-site waste; (2) calculate the impacts of waste minimization; (3) estimate future waste, focusing chiefly on the first five-year projection; and (4) determine expected shortfalls (again, focusing on the first five-year projections). At that point, states could either "self-certify" or enter into a regional agreement. The final step would

involve enforcement, the responsibility for which lay with EPA.

The following sections describe the process in an outline form (see next page).

Other Recommendations

The CAP Policy Development Group made other recommendations concerning the biennial report and federal facilities. The policy group felt that while it may not be possible to carry out these recommendations by 1993, EPA should seek to implement them as soon as feasible. For the biennial report, the policy group recommended that the following categories of waste going to a Subtitle C facility be reported, in addition to all RCRA hazardous waste: "other hazardous" waste (considered hazardous by states but not under the federal system); and nonhazardous waste (solid waste, medical waste, and all other waste not considered hazardous by state or federal law). In addition, the group requested that waste sent to RCRA-exempt, off-site recyclers be included in the reporting system.

Regarding federal facilities, the policy group recommended that EPA assist the states in obtaining cooperation from federal facilities in complying with (i.e., "fill out") the biennial report. Once the federal facilities complete these reports, states would then include the waste numbers in their CAPs to show the amount and expected dispositions of federal facilities waste.

Follow-Up to the Policy Group's Recommendations

In the summer of 1991, NGA held three meetings around the country to discuss the recommendations of the CAP Policy Development Group. Meetings were held in the West (EPA Regions 8, 9, and 10), the East (EPA Regions 1, 2, 3, and 5), and the South (EPA Regions 4 and 6). The purpose was to obtain the views of the state participants, both as representatives of their states and of their CAP regions. All participants embraced the recommendation to narrow the focus of the next CAP to off-site waste and all agreed that the law needed change. However, opinions differed on whether the siting milestones in the state CAPs should be strictly enforced. In general, representatives from large, net importing states wanted more rigorous enforcement of milestones while a number of other states wanted a more flexible approach that stressed plan development and not outcome. A complete summary of the regional meetings is provided in Appendix C.

I. Describe the Current Waste Management Picture

(All states would complete this step.)

A. States would report base year generation of all waste sent to off-site hazardous waste facilities (i.e., to all off-site Subtitle C facilities).

1. States would not report "mixed" or "exempt" waste unless it was sent to off-site hazardous waste (Subtitle C) facilities.

2. States would report waste generation only in terms of the SARA management categories (i.e., they would directly translate the RCRA codes to SARA management categories and eliminate reporting of the SARA waste types).

B. Concerning waste management capacity, states would report capacity utilization at all off-site Subtitle C facilities. States would report demand utilization figures for all waste, including the various hazardous waste categories and "other" (a combined category representing state hazardous waste, solid waste, and other non-RCRA waste). If the biennial report does not give sufficient information on nonhazardous waste sent to off-site Subtitle C facilities, states should call their facilities to get the information.

C. The biennial report data elements would serve as the basis for all reporting (i.e., states could use either biennial report data or state reports that obtain the equivalent data). EPA would alter the biennial report to pick up the information on other waste (nonhazardous, TSCA, and otherwise) treated at off-site facilities.

D. For waste generated and treated on site, states would provide a summary of total in-state management demand using data from the biennial report (or from another system using the same data elements). States would not need to report information on capacity utilization at on-site facilities or be required to project capacity at on-site facilities; states could assume the continued availability of such capacity. Potential shifts from on-site to off-site waste disposal caused by specific regulatory changes would be addressed in the projections section of the CAP (see section III, below).

II. Describe Waste Minimization Activities

(All states would complete this step.)

A. All states would describe current public waste minimization activities (and private programs if known) occurring in the state. If possible, states would provide estimates of reductions currently being achieved.

B. All states would describe future state programs and activities concerning waste minimization.

III. Estimate Twenty-Year Waste Projections and Management Needs

(All states would complete this step.)

A. All states should conduct a realistic five-year projection (estimating waste management demand five years from the date of CAP submittal) of all waste likely to be going to off-site management facilities. Projections beyond this period aimed at satisfying the twenty-year projection requirements can assume "flat" (i.e., zero) growth from the fifth-year estimate.

B. States would not need to report where the waste is likely to go, but would have to indicate which portion would remain in the state and which portion would not. (Thus, the amount of waste possibly leaving the state would be indicated by the amount of waste in each category exceeding in-state capacity.)

C. All states would be required to calculate the impact of final, major regulations on future waste generation and management. EPA would explain how to analyze each final regulation when it issued the CAP guidance. The guidance should be issued one year before the CAPs are due to EPA.

D. The required format for projecting waste generation would be the SARA management categories.

E. If waste projections were to incorporate assumptions on future waste minimization, the state would be required to document and justify the assumptions. To improve accuracy, EPA should develop a consistent methodology to project and measure waste minimization.

IV. Next Steps After Completion of Basic Data Reporting Requirements (Some states will need to supply more information than others.)

A. States could choose to satisfy the CAP requirements either individually (self-certification) or as part of an interstate or regional agreement. To avoid having to submit further information (as described below), a state would have to satisfy at least one of the following conditions.

1. The state must show that the base year in-state capacity will satisfy all projected waste demand for the state through the first five years after CAP submittal.
2. The state must enter into an interstate or regional agreement that, in total, shows that the regional capacity in the base year satisfies all regional projected waste through the first five years after CAP submittal. (The grouping of states comprising the regional agreements need not be the same as those formed for the 1989 CAPs; states would be free to form regional groupings of their choosing.)

B. States or regional agreements that failed to satisfy at least one of the above conditions would be considered as having a "capacity shortfall" and would have to supply additional information (see endnote concerning disagreement over definition of capacity shortfall).²

C. Additional information needed from states falling under IV-B, above, would include the following.

1. The state must supply a detailed waste minimization analysis for any estimated reductions in future waste. EPA would provide the basic methodology for allowing waste minimization credits.
2. The state must demonstrate that it maintains an "open" siting policy and must include a review of its record in issuing or denying facility permit requests. To demonstrate an open siting policy, a state must show that its laws and regulations do not discourage the construction of waste

treatment capacity. The state may use the results of previous facility permit requests and other information to make this demonstration.

3. The state must provide a listing of specific milestones for developing future capacity.
4. For states that certify together (as part of a regional agreement), the regional agreement must reflect all of the above information and each state CAP must reflect the changes.

V. Final Step: Enforcing the CAP

A. If EPA were to determine that a state (or a group of states in a regional agreement) will experience a capacity shortfall, the state (or group of states) would become subject to sanctions if it failed to meet its own (or EPA's) milestones. The severity of sanctions would depend on the degree of violation; states or regional plans showing current shortfalls and failing to meet milestones would face the toughest sanctions.

The Next CAP Process

On September 10, 1992, EPA released draft guidance for the 1993 CAP.³ The new guidance incorporated a number of state concerns and recommendations, offering a more streamlined and simplified process than in 1989.

The new guidance will be carried out in three phases, with only the first phase involving participation of all states. Phase 1 will require states to prepare basic information on current and future waste demand for different types of management capacity. States would submit these plans to EPA, whereupon EPA aggregates the states' data, reduces waste generation by an across-the-board 10 percent to account for national waste minimization trends, and determines where capacity demand (waste) exceeds supply (management capacity of known facilities). If shortfalls in commercial capacity are found, states contributing to them must prepare a Phase 2 plan, which requires a more rigorous identification of waste minimization efforts and its effect on generation. Finally, if shortfalls still remain after Phase 2, then Phase 3 would be triggered. In Phase 3, each state contributing to a shortfall must eliminate its contribution to the shortfall through increased waste minimization, by developing new capacity, and/or by entering into an interstate agreement.

Phase 1

The Phase 1 process would begin as soon as the final guidance is published. Most of the procedures and rules required in Phase 1 reflect recommendations made by the state working group. The elements of Phase 1 are summarized below.

- States must report base year (1993) waste generated and managed in on-site, captive, and commercial facilities using the national biennial reporting system data as the basis for all figures. EPA will supply software for states to convert all figures into waste management demand.
 - States will be required to summarize base year import and export amounts but, in a further simplification offered by EPA, will not be required to report the specific origin or destination of interstate transactions.
 - States will be asked to project recurrent waste to the base year (1993) and to the first six-year projection period (1999), but only waste sent to off-site, commercial facilities will be included in the projections. States also will be asked to provide information on new capacity expected to be on line by 1993 and 1999. Supply and demand may be held constant when projecting from 1999 to 2013.
 - States must describe current and future state programs and activities affecting waste minimization, but will not be required to calculate the effect of these programs in their analyses for Phase 1. Instead, EPA will reduce all reported waste by an across-the-board 10 percent to account for waste minimization.
- Nine months from its start, completed Phase 1 plans must be submitted to EPA. EPA would review the state plans to determine whether adequate capacity exists nationwide for all waste management categories. If adequate capacity was found to exist, no additional submittals

would be required from the states and the CAP process for 1993 would be declared completed. However, states contributing to any identified shortfall would be required to submit a Phase 2 plan within four months (see endnote for definition of shortfall state).⁴

Phase 2

Phase 2 essentially requires those shortfall states identified to conduct the detailed waste minimization analysis absent in Phase 1. States would be required to project how the waste minimization activities in their states would reduce the demand for commercial capacity in the shortfall management categories by 1999 and 2013. Phase 2 would be an opportunity for states to exceed the 10 percent waste minimization factor used in Phase 1, and thus eliminate the need to plan additional capacity. Within two months after receiving the Phase 2 submittals, EPA would determine whether shortfalls still remain in the targeted categories. If none are found, then the CAP process would be complete.

Phase 3

The final phase, Phase 3, would apply only if national shortfalls remained in one or more waste management categories. Each state that EPA identifies as a "shortfall state" will be required to reconcile its contribution to the national shortfall through either waste minimization, new facilities, or interstate agreements (state-to-state or regional). States unable to eliminate their shortfall contribution through any of these means would be subject to sanction, such as withdrawal of Superfund cleanup money.

The Future of the Capacity Assurance Process

The EPA proposal goes a long way in helping simplify and streamline the process while still providing valuable information for planning needs. However, the way in which the capacity assurance process addresses interstate waste (i.e., by requiring interstate agreements) may forever prevent the process from achieving simplicity.

A number of states—and their Governors—are interested in finding a more effective approach than the capacity assurance process for controlling the amount of waste sent across state borders for disposal. Rather than use the CAP interstate agreements to address interstate waste, some are calling for legislation to give states direct control over this form of interstate commerce. For example, in August 1991, the National Governors' Association adopted a policy that, among other items, called for the following (Appendix D contains the full text).

- Allow states to collect a "waste reduction fee" from hazardous generators and use these revenues to support state pollution prevention programs.
- Waive the Commerce Clause of the Constitution to authorize states to collect fees on hazardous waste imported into states for management or disposal. The disposal fees should be based on a multiple of the state surcharge on waste in the state of origin or destination, whichever is higher. The fee is not intended to serve as a de facto ban.

Many state policymakers believe that waste import fees, with some limits imposed, represent the best approach for curbing excessive waste exporting. Import fees help offset the administrative cost imposed on states for accepting out-of-state waste, but they do not impose bans on the imported waste. More important, by raising the cost of out-of-state disposal, waste import fees might encourage states lacking capacity to find ways to encourage its development. In short, many believe that if waste is made more difficult or expensive to export, then states lacking necessary capacity will find better ways to ensure capacity than the CAP process.

Today, the CAP process is at a crossroads. If adequate national capacity is found to exist in most categories and interstate waste volumes remain small, then impetus to revise the law may not exist. However, if the interstate waste volumes prove to be an issue in the 1993 CAP—with a number of states needing to develop detailed siting milestones under Phase 3—then Congress may be pressured to find more effective methods to address the interstate waste issue besides denying Superfund money. As EPA is preparing to implement another CAP process, all parties are trying to guess the outcome.

Endnotes

1. See National Solid Wastes Management Association, *Interchange of Hazardous Waste Management Among States*, December 31, 1990.
2. The CAP Policy Development Group was not in agreement on what would constitute a capacity shortfall. Some members felt that any calculated shortfall would require a state to complete the next steps. Others offered an alternative approach that would allow a limited waiver for small calculated shortfalls. Under the limited waiver option, states showing a shortfall could appeal to EPA for a determination on whether a new facility was needed. The state or regional group would need to undertake an analysis demonstrating that the calculated shortfall was not sufficient to support a new commercial facility. Upon review and consultation with potentially affected states, EPA could make a determination that the calculated shortfall did not constitute a "capacity shortfall" for CAP purposes and that the state (or regional group) need not submit further information. (Note: the purpose of this limited waiver was to avoid the construction of commercial capacity that could not be economically justified.)
3. The announcement for public comment was made in the *Federal Register* (Vol. 57, No. 126, pp. 41496-41497). Earlier in June, EPA first released a draft of the 1993 guidance for comment to state officials. The later release added a third phase to the two-phase CAP process called for in the June draft.
4. To identify shortfall states, EPA will conduct two evaluations. First, EPA will examine each state's projected demand and commercial capacity for any CAP management category that has a national shortfall to identify that state's shortfalls. Any state whose demand is less than its commercial capacity for a CAP management category will not be considered a "shortfall state." Second, EPA will examine each state's aggregate projected demand and commercial capacity for three controversial CAP management categories that are costly and difficult to permit: (1) incineration of liquids/gases, (2) incineration of sludges/solids, and (3) landfill. Any state whose aggregate demand is less than its aggregate commercial capacity for incineration and landfill also will not be considered a shortfall state. To assign portions of the net national shortfall (i.e., demand minus supply), EPA will calculate a state's proportionate contribution based on each state's share of waste in that category.

Appendix A
Additional Data Tables, 1989 CAPs

Appendix Table 1

Status of Commercial Hazardous Waste Capacity in 1987
(in tons)

Capacity Type	Maximum Capacity	Total Demand for Capacity				Remaining Capacity	
		Federal Hazardous ^a	Other Hazardous ^b	Non-Hazardous	Total	Total	Percent
Metals Recovery	1,631,849	275,415	273	7	275,695	1,356,154	83.1
Solvents Recovery	2,898,931	710,225	2,769	2,158	715,152	2,183,779	75.3
Other Recovery	376,669	49,712	29,191	29	78,932	297,737	79.0
Incineration Liquids	623,259	175,953	38,492	5,228	219,673	403,586	64.8
Incineration Sludges/Solids	216,470	93,848	18,217	291	112,356	104,114	48.1
Energy Recovery	2,234,649	618,232	128,804	8,445	755,481	1,479,168	66.2
Aqueous Inorganic Treatment	7,812,994	921,632	5,479	69,543	996,654	6,816,340	87.2
Aqueous Organic Treatment	1,030,819	86,581	736	17,197	104,514	926,306	89.9
Other Treatment	4,426,220	1,392,053	906	6,539	1,399,498	3,026,722	68.4
Sludge Treatment	7,417,819	25,542	0	0	25,542	7,392,277	99.7
Stabilization	5,010,990	282,328	10,654	8,891	301,873	4,709,117	94.0
Land Treatment	10,263	9,138	0	0	9,138	1,125	11.0
Landfill	24,144,431	2,416,272	188,370	383,066	2,987,708	21,156,723	87.6
Deep-Well Injection	11,110,562	508,436	0	678,000	1,186,436	9,924,126	89.3
Other Disposal	19,346,339	123,532	4	0	123,536	19,222,803	99.4
Total	88,292,264	7,688,897	423,895	1,179,394	9,292,186	79,000,078	89.5

Notes: ^a Hazardous waste as defined under federal law (i.e., Resource Conservation and Recovery Act).

^b Hazardous waste as defined under state law.

Source: National Governors' Association, from figures compiled by Argonne National Laboratory for EPA.

Appendix Table 2

Status of Captive Hazardous Waste Capacity in 1987
(in tons)

Capacity Type	Maximum Capacity	Total Demand for Capacity				Remaining Capacity	
		Federal Hazardous ^a	Other Hazardous ^b	Non-Hazardous	Total	Total	Percent
Metals Recovery	187,845	39,194	0	0	38,194	149,651	79.7
Solvents Recovery	513,561	55,066	0	4,750	59,816	453,745	88.4
Other Recovery	225,087	11,511	28	5	11,544	213,543	94.9
Incineration Liquids	1,302,173	660,446	13,008	4,795	678,249	623,924	47.9
Incineration Sludges/Solids	440,503	77,948	3	25,163	103,114	337,388	76.6
Energy Recovery	872,805	276,119	1,000	0	277,119	595,686	68.2
Aqueous Inorganic Treatment	30,357,838	3,835,072	2,139	1,386,079	5,223,290	25,134,548	82.8
Aqueous Organic Treatment	139,927,733	33,794,986	58,000	9,174,895	43,027,881	96,899,852	69.2
Other Treatment	49,784,081	4,189,686	19,029	2,377,273	6,585,988	43,198,093	86.8
Sludge Treatment	50,383	2,128	0	0	2,128	48,255	95.8
Stabilization	408,077	271,849	5,701	0	277,550	130,527	32.0
Land Treatment	462,618	105,313	16,300	1,993	123,606	339,012	73.3
Landfill	4,876,160	244,255	10,000	14,616	268,871	4,607,289	94.5
Deep-Well Injection	23,993,659	6,747,026	0	243,000	6,990,026	17,003,633	70.9
Other Disposal	173	102	0	63	165	8	4.6
Total	253,402,694	50,309,700	125,208	13,232,632	63,667,540	189,735,155	74.9

Notes: ^a Hazardous waste as defined under federal law (i.e., Resource Conservation and Recovery Act).

^b Hazardous waste as defined under state law.

Source: National Governors' Association, from figures compiled by Argonne National Laboratory for EPA.

Appendix Table 3

Status of On-Site Hazardous Waste Capacity in 1987
(in tons)

Capacity Type	Maximum Capacity	Total Demand for Capacity				Remaining Capacity	
		Federal Hazardous ^a	Other Hazardous ^b	Non-Hazardous	Total	Total	Percent
Metals Recovery	3,290,541	1,628,819	22,182	0	1,651,001	1,639,540	49.8
Solvents Recovery	5,657,616	3,034,256	2,886	72	3,037,214	2,620,402	46.3
Other Recovery	114,349	27,435	518	0	27,953	86,396	75.6
Incineration Liquids	1,677,379	3,329,270	34,969	217,284	3,581,523	-1,904,144	-113.5
Incineration Sludges/Solids	342,531	55,898	3,280	663	59,841	282,690	82.5
Energy Recovery	2,037,994	520,959	87,183	2,851	610,993	1,427,001	70.0
Aqueous Inorganic Treatment	438,181,993	24,859,034	2,418,295	121,629,563	148,906,892	289,275,101	66.0
Aqueous Organic Treatment	51,537,389	6,599,502	2,513,766	225,064	9,338,332	42,199,057	81.9
Other Treatment	350,198,324	98,256,834	15,651,127	10,906,805	124,814,766	225,383,558	64.4
Sludge Treatment	44,224,030	737,390	43,746	464	781,600	43,442,430	98.2
Stabilization	3,986,855	372,686	6,990	0	379,676	3,607,179	90.5
Land Treatment	1,004,559	329,701	20,652	76,944	427,297	577,262	57.5
Landfill	4,695,686	827,911	156,891	111,356	1,096,158	3,599,528	76.7
Deep-Well Injection	92,586,640	22,392,560	185,771	3,425,833	26,004,164	66,582,476	71.9
Other Disposal	54,177	33,905	74	3,864	37,843	16,334	30.1
Total	999,590,063	163,006,158	21,148,330	136,600,763	320,755,252	678,834,811	67.9

Notes: ^a Hazardous waste as defined under federal law (i.e., Resource Conservation and Recovery Act).

^b Hazardous waste as defined under state law.

Source: National Governors' Association, from figures compiled by Argonne National Laboratory for EPA.

Appendix Table 4

Status of All Hazardous Waste Capacity in 1987
(in tons)

Capacity Type	Maximum Capacity	Total Demand for Capacity			Remaining Capacity		
		Federal Hazardous ^a	Other Hazardous ^b	Non-Hazardous	Total	Total	Percent
Metals Recovery	5,110,235	1,942,427	22,455	7	1,964,889	3,145,345	61.5
Solvents Recovery	9,070,108	3,799,546	5,655	6,980	3,812,181	5,257,927	58.0
Other Recovery	716,105	88,658	29,737	34	118,429	597,676	83.5
Incineration Liquids	3,602,810	4,165,668	86,469	227,307	4,479,444	-876,634	-24.3
Incineration Sludges/Solids	999,504	227,694	21,500	26,117	275,311	724,193	72.5
Energy Recovery	5,145,448	1,415,310	216,987	11,296	1,643,593	3,501,855	68.1
Aqueous Inorganic Treatment	476,352,825	29,615,738	2,425,913	123,085,185	155,126,836	321,225,989	67.4
Aqueous Organic Treatment	192,495,941	40,481,068	2,572,502	9,417,156	52,470,726	140,025,215	72.7
Other Treatment	404,408,625	103,838,573	15,671,062	13,290,617	132,800,252	271,608,373	67.2
Sludge Treatment	51,692,232	765,060	43,746	464	809,270	50,882,962	98.4
Stabilization	9,405,922	926,863	23,345	8,891	959,099	8,446,823	89.8
Land Treatment	1,477,440	444,152	36,952	78,937	560,041	917,399	62.1
Landfill	33,716,277	3,488,437	355,261	509,038	4,352,736	29,363,540	87.1
Deep-Well Injection	127,690,861	29,648,022	185,771	4,346,833	34,180,626	93,510,235	73.2
Other Disposal	19,400,689	157,539	78	3,927	161,544	19,239,145	99.2
Total	1,341,285,022	221,004,755	21,697,433	151,012,789	393,714,978	947,570,044	70.6

Notes: ^a Hazardous waste as defined under federal law (i.e., Resource Conservation and Recovery Act).

^b Hazardous waste as defined under state law.

Source: National Governors' Association, from figures compiled by Argonne National Laboratory for EPA.

Appendix Table 5

Total Net Waste Exports or Imports by State as a Percentage of Total Generation in 1987 (in tons)

State	Total Generated	Net Waste Flow Balance*	Exports or Imports as a Percentage of Generation*
Alabama	871,018	-199,859	-23
Alaska	989	697	70
Arizona	29,276	34,519	118
Arkansas	2,931,192	-21,043	-1
California	822,100	119,978	15
Colorado	45,415	22,582	50
Connecticut	180,420	64,562	36
Delaware	25,528	17,222	67
Florida	518,697	43,498	8
Georgia	39,944,035	61,449	0
Hawaii	1,459	1,978	136
Idaho	14,015	-32,828	-234
Illinois	1,891,629	-94,911	-5
Indiana	1,838,788	-251,478	-14
Iowa	323,479	28,923	9
Kansas	1,432,263	-11,786	-1
Kentucky	5,787,630	46,405	1
Louisiana	10,282,203	-230,300	-2
Maine	11,453	6,825	60
Maryland	93,570	44,914	48
Massachusetts	217,106	71,109	33
Michigan	3,447,772	76,295	2
Minnesota	58,765	23,165	39
Mississippi	1,518,391	68,284	4
Missouri	1,217,557	24,551	2
Montana	5,458	2,694	49
Nebraska	450,784	2,506	1
Nevada	1,016	-48,468	-4,770
New Hampshire	17,523	12,002	68
New Jersey	864,834	-1,705	0
New Mexico	4,165	-1,944	-47
New York	16,175,013	49,193	0
North Carolina	1,398,348	49,849	4
North Dakota	12,091	9,142	76
Ohio	2,661,330	-183,005	-7
Oklahoma	610,384	1,165	0
Oregon	30,918	-92,779	-300
Pennsylvania	23,239,650	158,677	1
Rhode Island	12,727	3,450	27
South Carolina	5,314,907	-108,985	-2
South Dakota	2,460	2,445	99
Tennessee	683,266	48,557	7
Texas	60,092,983	65,523	0
Utah	227,776	-63,400	-28
Vermont	6,629	5,146	78
Virginia	36,264,674	4,372	0
Washington	234,711	108,491	46
West Virginia	13,792,794	36,643	0
Wisconsin	175,311	25,440	15
Wyoming	2,741	322	12

Note: * Negative values indicate net imports.

Source: National Governors' Association, from figures compiled by Argonne National Laboratory for EPA.

Appendix Table 6

Total Imports and Exports of Hazardous Landfill Waste in 1987 (in tons)

State	Imports	Exports	Net Exports
Pennsylvania	0	168,702	168,702
Texas	1,404	141,261	139,857
Washington	143	100,841	100,698
California	3,060	85,996	82,936
New Jersey		82,287	82,287
Michigan	50,384	110,606	60,222
Kentucky	0	53,545	53,545
Tennessee	0	45,994	45,994
Missouri	0	40,709	40,709
Connecticut	500	39,119	38,619
Mississippi	0	35,313	35,313
Florida		35,102	35,102
North Carolina	0	35,017	35,017
Georgia	1,234	35,357	34,123
Kansas		28,649	28,649
Arkansas		28,137	28,137
Wisconsin		22,034	22,034
Massachusetts	0	19,676	19,676
West Virginia		18,684	18,684
Arizona	0	16,946	16,946
Maryland	0	16,668	16,668
Iowa	0	15,960	15,960
Virginia	0	13,244	13,244
Minnesota	0	11,826	11,826
Colorado	20	7,283	7,263
Delaware		5,935	5,935
Nebraska	0	1,774	1,774
New Mexico	0	717	717
Rhode Island	0	547	547
New Hampshire	0	379	379
Oklahoma	7,930	8,015	85

State	Imports	Exports	Net Imports
Indiana	317,167	41,610	275,557
Alabama	226,781	6,421	220,360
Louisiana	204,091	3,780	200,311
Ohio	246,848	119,326	127,522
Oregon	100,110	1,446	98,664
Illinois	93,593	25,375	68,218
South Carolina	68,101	1,609	66,492
Utah	53,792	991	52,801
Nevada	41,254	399	40,855
Idaho	34,743	878	33,865
New York	47,403	21,799	25,604

Source: National Governors' Association, from figures compiled by Argonne National Laboratory for EPA.

Appendix Table 7

**Total Imports and Exports of Hazardous Waste
Destined for Incinerators in 1987 (in tons)**

State	Imports	Exports	Net Exports
Pennsylvania	617	15,309	14,692
California		10,074	10,074
New York	80	9,200	9,120
West Virginia		8,002	8,002
Michigan	118	8,070	7,952
Alabama	0	7,501	7,501
Missouri	0	6,972	6,972
Connecticut	0	5,877	5,877
Wisconsin		5,736	5,736
Tennessee	116	5,286	5,170
Indiana	1,062	5,731	4,669
Virginia	0	4,639	4,639
Florida		3,848	3,848
Massachusetts	0	3,831	3,831
Mississippi	0	3,154	3,154
Iowa	0	2,886	2,886
Georgia		2,068	2,068
Maryland	0	1,808	1,808
Delaware	11	1,298	1,287
Colorado	225	1,510	1,285
Washington	0	1,279	1,279
Oklahoma		879	879
North Carolina	4,233	5,006	773
Utah	0	730	730
Arizona	0	662	662
New Mexico	0	498	498
Rhode Island	0	482	482
Nebraska	0	348	348
Kansas		290	290
New Hampshire	0	188	188
Oregon	0	138	138
Idaho	0	72	72
Nevada		64	64
State	Imports	Exports	Net Imports
Kentucky	41,911	1,466	40,446
South Carolina	19,104	2,264	16,840
Louisiana	20,689	5,954	14,735
Arkansas	16,048	1,409	14,639
Minnesota	12,784	2,331	10,453
New Jersey	20,881	11,140	9,741
Texas	11,780	7,229	4,551
Illinois	20,520	18,428	2,092
Ohio	17,691	16,282	1,410

Source: National Governors' Association, from figures compiled by Argonne National Laboratory for EPA.

Appendix Table 8

Net Exports of Waste by Waste Category in 1987

Treatment Method	Tons Exported	Percentage of Total
Metals Recovery	150,657	4
Solvents Recovery	367,456	10
Other Recovery	31,448	1
Incineration Liquids	138,597	4
Incineration Sludges/Solids	54,171	1
Energy Recovery	482,755	13
Aqueous Inorganic Treatment	398,758	10
Aqueous Organic Treatment	17,606	0
Other Treatment	182,896	5
Sludge Treatment	13,137	0
Stabilization	139,865	4
Land Treatment	35,893	1
Landfill	1,498,558	39
Deep-Well Injection	147,845	4
Other Disposal	164,470	4
Total*	3,824,113	100

Note: *Includes waste sent to other countries and territories.
Source: National Governors' Association, from figures compiled by Argonne National Laboratory for EPA.

Appendix Table 9
Where Waste Went in 1987

Exporting State	Receiving States									
	Alabama	Alaska	Arizona	Arkansas	California	Colorado	Connecticut	Delaware	Florida	Georgia
Alabama				650.0					8,461.6	1,539.0
Alaska					52.0					
Arizona	1.9			188.0	10,057.0	17.0			6.0	
Arkansas	2,930.3		0.0						0.3	
California	1,264.5		89.0	3,923.0		26.0			130.0	
Colorado	1.5		0.0	690.0	1,666.0				7.0	
Connecticut	78.9			28.0					0.3	
Delaware	1,834.4			268.0	3.0				1.0	
Florida	30,534.3			194.0			80.0			1,917.0
Georgia	30,470.9			482.0	8.0		30.0		7,438.0	
Hawaii				11.0	263.0					
Idaho				2.0	188.0	192.0				
Illinois	14,912.6		0.0	2,236.0	5.0		30.0		53.0	
Indiana	14,794.1		0.0	6,778.0			20.0		4.0	
Iowa	653.6		0.0	38.0	2.0		10.0			
Kansas	1,160.6			31.0		73.0			0.4	
Kentucky	19,039.0			469.0					40.0	34.0
Louisiana	5,113.0			4,288.0					1,105.0	
Maine	24.1						580.0			
Maryland	357.2			336.0			70.0		127.0	
Massachusetts	8,837.1			45.0			12,090.0		28.0	
Michigan	1,176.3		0.0	34,345.0	78.0		30.0		342.0	
Minnesota	397.0		0.0	55.0	17.0	89.0	160.0		0.3	
Mississippi	38,209.2			169.0						40.0
Missouri	27,545.9		0.0	607.0			10.0		18.0	
Montana						54.0				
Nebraska	169.0		0.0	4,813.0		46.0				
Nevada	22.6		1.0	29.0	971.0	3.0			1.0	
New Hampshire	6.0			5.0			1,580.0			
New Jersey	2,208.8			518.0	24.0		2,970.0		28.0	
New Mexico	2.0		0.0	284.0	152.0	116.0			1.5	
New York	1,282.2			475.0			3,800.0		131.0	
North Carolina	2,800.7			630.0			30.0		16.0	1,278.0
North Dakota	45.2			1.0		4.0				
Ohio	1,403.4			360.0			20.0		16.0	
Oklahoma	551.3			53.0	2.0		10.0		0.1	
Oregon	87.2		0.0	30.0	4,219.0				4.5	
Pennsylvania	2,666.6		1.0	653.0	11.0		2,180.0	11.0	7.0	
Rhode Island							2,280.0		0.4	
South Carolina	2,408.3			263.0	24.0				484.0	1,899.0
South Dakota	0.7			9.0						
Tennessee	49,882.6			760.0	9.0				44.0	1,342.0
Texas	3,845.6		0.0	7,711.0	144.0	130.0			6.0	
Utah			0.0	1,700.0	1,642.0	606.0	80.0			
Vermont	236.2						190.0			
Virginia	8,451.6			520.0			330.0		747.0	
Washington			0.0	81.0	926.0					
West Virginia	861.7			274.0					1.0	
Wisconsin	3,516.5		0.0	102.0			20.0		4.0	
Wyoming				12.0		48.0				
Total Received	279,784.6	0.0	91.0	75,116.0	20,463.0	1,404.0	26,600.0	11.0	19,253.4	8,049.0

Source: National Governors' Association, from figures compiled by Argonne National Laboratory for EPA.

Appendix Table 9

Where Waste Went in 1987 (continued)

Exporting State	Receiving States									
	Hawaii	Idaho	Illinois	Indiana	Iowa	Kansas	Kentucky	Louisiana	Maine	Maryland
Alabama			3,927.0	8,681.0			1,456.0	14,054.0		
Alaska		94.0						12.0		
Arizona		762.0	238.0			117.0		70.0		
Arkansas			583.0	121.0		877.0	626.1	24,159.0		
California		26,539.0	2,659.0			13,581.0	167.5	16,844.0		
Colorado		1,062.0	958.0	4.0		2,970.0	393.4			
Connecticut			425.0	13,175.0			517.9			39.0
Delaware			65.0				98.8			256.0
Florida			528.0	140.0			590.1			50.0
Georgia			155.0	79.0		594.0	63.3			23.0
Hawaii		1,332.0								
Idaho							2.5			
Illinois		47.0		35,581.0	604.0	2,860.0	11,603.8	1,861.0		1.0
Indiana			84,232.0				4,409.9	463.0		53.0
Iowa		6.0	21,041.0	4,090.0		501.0	631.1	362.0		
Kansas			1,116.0	1,415.0			49.2	4,175.0		
Kentucky			10,908.0	21,319.0				15,000.0		
Louisiana			907.0			136.0	51.8			
Maine			7.0	65.0			2.9			
Maryland			932.0	2,069.0			122.4	577.0		
Massachusetts			665.0	533.0			196.9	20.0		437.0
Michigan			8,534.0	73,510.0		25.0	2,018.3	875.0		
Minnesota			13,395.0	7,874.0		910.0	274.4	535.0		10.0
Mississippi			381.0	22.0		49.0	1,530.4	15,674.0		
Missouri		29.0	29,928.0	8,453.0		3,439.0	2,757.4	3,745.0		1.0
Montana		462.0	38.0							
Nebraska			2,834.0	776.0		147.0	106.0	15.0		
Nevada		255.0		20.0						
New Hampshire			12.0							35.0
New Jersey			2,449.0	24,369.0			1,806.2	14,105.0		5,784.0
New Mexico			283.0							
New York			6,976.0	202.0		860.0	3,504.8	186.0		1,273.0
North Carolina			731.0	1,740.0		114.0	1,604.2	616.0		2,114.0
North Dakota		29.0	534.0					4.0		
Ohio			15,036.0	119,691.0		133.0	25,292.8	922.0		279.0
Oklahoma			194.0			6,046.0		9,030.0		
Oregon		1,221.0	2.0					129.0		
Pennsylvania			2,826.0	99,324.0			2,677.4	176.0		11,923.0
Rhode Island			489.0					2.0		35.0
South Carolina			1,080.0	45.0		26.0	821.5	107.0		228.0
South Dakota		76.0	311.0	31.0				19.0		
Tennessee			1,189.0	662.0		241.0	1,794.1	5,680.0		168.0
Texas			1,947.0	26.0		4,216.0	1,630.9	200,001.0		8.0
Utah		134.0	2.0			974.0				
Vermont			7.0				700.0	5.0		
Virginia			919.0	203.0			750.0	199.0		2,333.0
Washington		2,333.0	390.0	2.0		3,708.0		66.0		
West Virginia			552.0	1,690.0			4,367.5	1,566.0		209.0
Wisconsin			20,786.0	13,219.0	4,467.0	5,199.0	2,830.8	640.0		23.0
Wyoming										
Total Received	0.0	34,381.0	241,171.0	439,131.0	5,071.0	47,723.0	75,450.3	331,894.0	0.0	25,282.0

Source: National Governors' Association, from figures compiled by Argonne National Laboratory for EPA.

Appendix Table 9

Where Waste Went in 1987 (continued)

Exporting State	Receiving States									
	Massachusetts	Michigan	Minnesota	Mississippi	Missouri	Montana	Nebraska	Nevada	New Hampshire	New Jersey
Alabama		60.0	1,152.0	48.3						470.0
Alaska										
Arizona				0.0				15,511.0		83.0
Arkansas		43.0			1,544.0					20.0
California		69.0	722.0		293.0		754.0	28,883.0		1,799.0
Colorado		3.0			18.0			1,124.0		
Connecticut	4,999.2	1,362.0		0.2					0.0	19,832.0
Delaware	16.7	1,420.0								6,012.0
Florida	0.5	4,019.0	6.0		1,093.0					469.0
Georgia		748.0	8.0							2,072.0
Hawaii										
Idaho										
Illinois		8,923.0	2,810.0	0.0	32,060.0			867.0		800.0
Indiana		9,305.0	1,112.0	3.1	9,855.0		3,827.0			258.0
Iowa		43.0	863.0		209.0			140.0		24.0
Kansas		9.0			1,007.0			335.0		
Kentucky		4,160.0	128.0	52.5	23,324.0			114.0		204.0
Louisiana				27,885.6	26.0					33.0
Maine	2,948.0	119.0							0.0	1,471.0
Maryland	0.1	1,183.0	28.0							11,202.0
Massachusetts		991.0	4.0						0.0	19,818.0
Michigan	0.2		124.0				5,256.0			2,838.0
Minnesota	10.9	2,058.0			116.0			1,095.0		228.0
Mississippi	0.8	320.0								
Missouri		1,669.0	2,180.0	0.0				5.0		7.0
Montana		1.0								
Nebraska	2.1	51.0	4.0		77.0			6.0		
Nevada					2.0					
New Hampshire	4,259.2	78.0								4,387.0
New Jersey	102.3	19,232.0	152.0	0.2						
New Mexico								46.0		
New York	1,316.7	6,537.0	128.0						0.0	35,035.0
North Carolina		282.0	2.0							4,378.0
North Dakota	0.8	6.0	16.0							
Ohio		76,349.0	16.0		276.0					2,992.0
Oklahoma		17.0	228.0	15.4	2.0					
Oregon			86.0		17.0			2.0		
Pennsylvania	161.6	25,091.0	652.0	0.1						83,656.0
Rhode Island	2,698.4	21.0							0.0	787.0
South Carolina	12.1	306.0	30.0					4.0		1,460.0
South Dakota		3.0	476.0							
Tennessee		1,519.0		220.0	7.0					4,017.0
Texas		19.0	448.0	46.0	881.0		120.0			808.0
Utah		5.0						1,812.0		2.0
Vermont	947.0								0.0	2,011.0
Virginia	25.9	380.0		93.3						5,707.0
Washington					20.0			12.0		
West Virginia		2,524.0	284.0							5,812.0
Wisconsin	0.5	3,030.0	1,150.0		5,280.0			7.0		140.0
Wyoming		3.0								
Total Received	17,503.0	171,958.0	12,809.0	28,364.5	76,107.0	0.0	9,957.0	49,963.0	0.0	218,832.0

Source: National Governors' Association, from figures compiled by Argonne National Laboratory for EPA.

Appendix Table 9

Where Waste Went in 1987 (continued)

Exporting State	Receiving States									
	New Mexico	New York	North Carolina	North Dakota	Ohio	Oklahoma	Oregon	Pennsylvania	Rhode Island	South Carolina
Alabama		282.0	7,883.0		954.7	108.0		639.0		2,303.4
Alaska							17.0			
Arizona	4,873.0	3.0			0.6			2.0		
Arkansas			136.0		11.0	4,419.0		4.0		11.6
California		327.0			135.0	1.0	754.0	187.0		5.3
Colorado		353.0			10.2	1,614.0		128.0		
Connecticut		15,020.0	970.0		17,262.7			11,287.0	1,118.0	1,596.3
Delaware		2,471.0			295.3			1,527.0		2,962.0
Florida		217.0	301.0		2,553.7			2,002.0	18.0	16,576.0
Georgia			4,843.0		393.6	798.0		923.0		16,409.7
Hawaii			64.00				9.0			
Idaho							643.0			
Illinois		137.0	63.0		9,341.0	59.0		1,332.0	15.0	883.1
Indiana		2,625.0			31,852.8			733.0		820.9
Iowa		3.0			698.2	122.0				4.0
Kansas					102.1	2,459.0		18.0		
Kentucky		29.0			18,198.2			2,439.0		465.6
Louisiana		4.0	13.0		112.3	181.0		323.0		173.7
Maine		1,323.0			90.6			107.0	60.0	8.6
Maryland		1,080.0	1,617.0		13,069.9			21,878.0	159.0	4,860.7
Massachusetts		28,213.0			3,687.0			3,865.0	2,706.0	2,686.0
Michigan		729.0	93.0		111,210.9			4,597.0		54.6
Minnesota		111.0			554.1	848.0				270.4
Mississippi			18.0		61.3	23.0		2,311.0		38.2
Missouri		165.0				4,192.0		12,279.0		30.5
Montana					841.6		44.0	395.0		
Nebraska					58.0	1,890.0		212.0		
Nevada					28.2					
New Hampshire		401.0	51.0		211.6			516.0	323.0	136.7
New Jersey		22,963.0	2,458.0		30,323.0	2.0		68,981.0	707.0	5,352.6
New Mexico		128.0			0.9	143.0				
New York			46.0		35,390.2			42,862.0	562.0	673.1
North Carolina		344.0			1,534.3	30.0		2,178.0		58,205.7
North Dakota								78.0		
Ohio		4,624.0	6,153.0					27,626.0	35.0	644.6
Oklahoma					15.5			21.0		
Oregon	19.0	3.0			64.1					
Pennsylvania		7,468.0	194.0		154,647.8	44.0			112.0	3,207.2
Rhode Island		1,946.0	125.0		337.0			448.0		134.2
South Carolina		17.0	6,313.0		423.2			10,882.0		
South Dakota					52.2	66.0				
Tennessee		419.0	408.0		1,733.4	98.0		2,863.0		5,471.3
Texas		290.0			161.2	4,591.0		727.0		298.3
Utah					3.9	76.0	17.0			
Vermont		613.0			203.2	26.0		76.0	11.0	120.2
Virginia		663.0	1,499.0		2,164.7			6,691.0		9,917.9
Washington			98.0		1.5		98,610.0	2,566.0		
West Virginia		353.0			19,516.1			8,083.0		1,660.0
Wisconsin		79.0			17,028.7	9.0			42.0	123.3
Wyoming										
Total Received	4,892.0	93,403.0	33,346.0	0.0	475,335.5	21,799.0	100,094.0	241,786.0	5,868.0	136,105.7

Source: National Governors' Association, from figures compiled by Argonne National Laboratory for EPA.

Appendix Table 9

Where Waste Went in 1987 (continued)

Exporting State	Receiving States										
	South Dakota	Tennessee	Texas	Utah	Vermont	Virginia	Washington	West Virginia	Wisconsin	Wyoming	Total Sent
Alabama		6,327.8	20,198.0			620.0			111.0		79,925.8
Alaska			2.0				520.0				697.0
Arizona			1,587.0	1,093.0							34,609.5
Arkansas		970.1	17,618.0								54,073.4
California		13.1	11,782.0	29,079.0			323.0		92.0		140,441.4
Colorado			6,438.0	6,488.0		55.0			3.0		23,986.1
Connecticut			210.0			3,183.0			57.0		91,161.5
Delaware			2.0					1.0			17,233.2
Florida		981.1	478.0						4.0		62,751.7
Georgia		3,058.1	848.0	11.0		37.0			5.0		69,497.6
Hawaii			299.0				0.0				1,978.0
Idaho			54.3	402.0			69.0				1,552.8
Illinois		32.6	972.0						18,091.0		146,180.1
Indiana		43.6	209.0					442.2	15,812.0		187,652.6
Iowa			70.0	22.0					4,461.0		33,993.9
Kansas		13.2	1,701.0	21,577.0					696.0		35,937.5
Kentucky		5,432.7	380.0			16.0		73.5	30.0		121,855.5
Louisiana		78.4	61,162.0						1.0		101,593.8
Maine		18.7									6,824.9
Maryland		0.7	259.0	3.0		10,265.0					70,196.0
Massachusetts			96.0			2,498.0		1,196.1			88,612.1
Michigan		31.2	1,147.0					38.5	1,200.0		248,253.0
Minnesota			215.0	136.0			0.0		6,615.0		35,974.1
Mississippi		11,430.7	26,371.0								96,648.6
Missouri		856.5		99.0					2,642.0		100,658.3
Montana			0.3	449.0			409.0				2,693.9
Nebraska			601.0	19.0					637.0		12,463.1
Nevada			67.0	93.0					2.0		1,494.8
New Hampshire			0.1								12,001.6
New Jersey		6.4	262.0			12,244.0		79.0			217,126.6
New Mexico			859.0	933.0							2,948.4
New York			262.0			1,094.0					142,596.0
North Carolina		313.1	3.0			4,251.0					83,195.0
North Dakota			675.0	7,697.0					52.0		9,142.0
Ohio		0.3	193.0			1,544.0	2.0	7,664.1	1,058.0		292,330.2
Oklahoma			6,762.0						17.0		22,964.3
Oregon			10.0				1,421.0				7,314.8
Pennsylvania		2.0	9.0			2,091.0	11.0	528.4	132.0		400,463.1
Rhode Island			15.0								9,318.0
South Carolina		27.3	225.0			35.0					27,120.4
South Dakota				1,112.0					289.0		2,444.9
Tennessee			600.0	39.0		885.0		50.7	41.0		80,143.0
Texas		18.4		1,052.0		401.0		1,187.4	223.0		230,936.8
Utah			123.0				0.0				7,176.9
Vermont			0.1								5,145.7
Virginia		1,929.7	11.0					3.6	141.0		43,679.6
Washington			2,377.0	16.0				39.4			111,245.9
West Virginia			104.0			89.0					47,946.3
Wisconsin			148.0	7.0							77,851.8
Wyoming			9.0	250.0			0.0				322.0
Total Received	0.0	31,585.7	165,413.8	70,577.0	0.0	39,308.0	2,755.0	11,303.8	52,412.0	0.0	3,702,353

Source: National Governors' Association, from figures compiled by Argonne National Laboratory for EPA.

Appendix B
CAP Policy Development Group Participants

State Participants

Raoul Clarke
Environmental Administrator
Department of Environmental
Regulation
2600 Blair Stone Road
Tallahassee, Florida 32399-2400
904/488-0300

Mark Coleman
Deputy Commissioner
Environmental Health Services
Department of Health
1000 Northeast 10th Street
P.O. Box 35305
Oklahoma City, Oklahoma 73152
405/271-8056

Frank Coolick
Assistant Director
Hazardous Waste Regulation
Department of Environmental
Protection
401 East State Street
CN 028
Trenton, New Jersey 08625
609/633-1418

Dan Eden
Director
Hazardous and Solid Waste
Division
Texas Water Commission
1700 North Congress Avenue
P.O. Box 13087, Capitol Station
Austin, Texas 78711
512/463-7760

Tom Getz
Chief
Division of Air and
Hazardous Materials
Department of Environmental
Management
291 Promenade Street
Providence, Rhode Island 02908
401/277-2808

Harry Gregori Jr.
Director
Office of Policy and Planning
Department of Waste Management
101 North 14th Street
Richmond, Virginia 23219
804/225-2997

Teresa Hay
Administrator
Waste Management Division
Department of Natural Resources
900 East Grand
Des Moines, Iowa 50319
515/281-8975

John Iannotti
Bureau of Pollution Prevention
Department of Environmental
Conservation
50 Wolf Road
Albany, New York 12233-7253
518/457-7267

Robert King
Assistant Deputy Commissioner-EQC
Department of Health and
Environmental Control
2600 Bull Street
Columbia, South Carolina 29201
803/734-5360

Rusty Lundberg
Manager
Planning/Program Development
Section
Department of Health
288 North 1460 West
P.O. Box 16690
Salt Lake City, Utah 84116-0690
801/538-6170

Jan Radimsky
Supervising Waste Management Engineer
Department of Health Services
Toxic Substances Control Program/ATD
714/744 P Street
P.O. Box 94234-7320
Sacramento, California 94232-7320
916/324-1819

E. William Radlinski
Manager
Planning and Reporting Section
Environmental Protection Agency
2200 Churchill Road
Springfield, Illinois 62794-9276
217/785-9407

Susan Ridgley
Environmental Planner
Department of Ecology
Mailstop PV-11
Olympia, Washington 98504
206/438-7135

Sue Robertson
Chief
Land Division
Environmental Management Department
1751 Congressman W.L. Dickinson Drive
Montgomery, Alabama 36109
205/271-7930

James Snyder
Director
Bureau of Waste Management
Department of Environmental Resources
P.O. Box 2063
200 North 3rd and Locust Streets
Harrisburg, Pennsylvania 17105-2063
717/787-9871

Ronald Ross
Western Governors' Association
600 17th Street
Suite 1705, South Tower
Denver, Colorado 80202-5442
303/623-9378

EPA Participants

Jeffrey Alper
EPA Region 3
841 Chestnut Building
Philadelphia, Pennsylvania 19107
215/597-9636

Nancy Bacon
EPA Region 7
726 Minnesota Avenue
Kansas City, Kansas 66101
913/551-7545

Joseph Freedman
Office of General Counsel
Mail Code LE-132S
509 West Tower
USEPA
401 M Street S.W.
Washington, D.C. 20460
202/382-7710

Murray Newton
Chief
State Local Coordination Branch
USEPA
401 M Street S.W.
Washington, D.C. 20460
703/308-8380

Bob Reimer
CAP Coordinator
EPA Region IV
345 Courtland Street
Atlanta, Georgia 30365
404/347-2234

Matt Straus
Deputy Director
Waste Management Division
USEPA Mail Code OS-321W
401 M Street S.W.
Washington, D.C. 20460
703/308-8414

Mike Taimi
Chief
Capacity Assurance Branch
USEPA Mail Code OS-321W
401 M Street S.W.
Washington, D.C. 20460
703/308-8440

Jackie Tenusak
Chief
Capacity Assurance Section
Capacity Assurance Branch
USEPA Mail Code OS-321W
401 M Street S.W.
Washington, D.C. 20460
703/308-8482

Russ Wyer
Director
Waste Management Division
USEPA Mail Code OS-321W
401 M Street S.W.
Washington, D.C. 20460
703/308-8414

Appendix C

Summary of the Cap Policy and Guidance Review Meetings

As part of a cooperative agreement with EPA, NGA conducted (in late summer 1991) three regional meetings with state officials to: (1) discuss the recommendations of the state CAP Policy Development Group concerning the 1993 CAP submission; and (2) review and comment on EPA's requirements for the February 1992 CAP update. Attendees at the meeting included state CAP coordinators, EPA headquarters' staff, and EPA regional CAP coordinators.

This summary covers the significant issues raised at each of the three meetings.

Significant Issues

All states were in agreement that narrowing the focus of the CAPs to waste sent to off-site facilities will lead to more relevant capacity assurance plans. In addition, state officials agreed that by using the EPA biennial report (or its equivalent) as the basis for reporting data, CAPs would be more nationally consistent and comparable.

In general, state officials agreed that the CAP process provided an opportunity to better understand their waste management needs. But opinions differed on the value of the CAP as a planning tool. Some states were satisfied with the CAP while others believed the CAP was inferior to—or even conflicted with—their own state waste management plans.

State officials were in unanimous agreement that the law needed to be changed. Many states felt that the CAP is not the appropriate vehicle for dealing with equity issues between states concerning the handling of waste. Most agreed that Congress should address

these issues through new legislation. Many urged EPA to inform Congress of the hardships imposed by the present law and recommend that it be changed.

State officials felt that some of the controversy surrounding interstate shipment of waste was exacerbated by cleanup waste produced under the Superfund program. They urged that EPA adhere to the goals of Superfund by requiring cleanup remedies that keep waste on site, or that at least do not increase the problem of interstate waste transportation.

All states strongly felt that the 1989 EPA CAP review process and supplemental conditions had been inconsistent. State officials urged that EPA establish one set of CAP evaluation and review standards for all regions. Some suggested that EPA headquarters conduct all reviews to avoid regional inconsistencies.

The discussions on milestones to eliminate capacity shortfalls and enforcement yielded the most divergent state views. Some participants felt that states should be required to establish specific dates authorizing permitting activities and capacity development to eliminate shortfalls. If a state failed to meet the dates, sanctions should be enforced. While these states also recognized the need for some flexibility in meeting milestones, they felt strongly that clear deadlines should be set and ultimately enforced.

Other states were of the opinion that milestones should be vague, describing only the actions a state would take to remove any impediments to facility siting. Such actions might include providing siting incentives, streamlining the siting process, and removing overly

stringent facility operating standards. These states generally felt that enforcement should be used to ensure participation in the capacity assurance planning process rather than to require facility development. These states also felt that setting specific dates for capacity development hinders the siting process.

All states recognized the difficulty in establishing a definition of an "open siting/permitting process," but opinions fell into one of three camps. Western states wanted to leave the decision of what constitutes an open siting/permitting process to the states in their interstate agreement. States in the East and South were in favor of more objective, national criteria for describing an open siting/permitting process. Some participants at all meetings simply felt that attempting to define the term was a fruitless endeavor.

The issue of whether some shortfalls should be dismissed as *de minimis* remains unresolved. States with relatively small shortfalls believe that a provision should exist that would prevent them from being required to develop uneconomical capacity. These states supported the use of a waiver as discussed by the policy development group. Other states believed all state shortfalls should be addressed, though not necessarily through capacity development.

All states agreed that all CAP guidance information should be provided to the states one year before the CAP is due. In addition to the guidance, the states requested that the review criteria, enforcement strategy, and sanctions policy also be issued one year in advance of the CAP submission.

Finally, some states suggested that because CAP preparation was so resource-intensive, EPA should eliminate the 1992 update and instead concentrate on a full CAP for 1993. Better data would be available and less effort would be devoted to fixing an obsolete document (the 1989 CAP).

Western Meeting: Denver, August 1–2, 1991

The western regional meeting included states in the Western Governors' Association project. These included all states in EPA Regions 8, 9, and 10, plus Kansas and Nebraska.

Major Comments

The CAP as a planning tool. The states felt that the CAP process was constructive and wanted to maintain the present interstate organization for future CAP activities. The states continue to use the CAP as a planning tool and do not want any changes in the CAP process to divide the group.

Equity issues. Participants stressed that enforcing the CAP is not an appropriate way of dealing with the equity issue. They felt that the law was designed to promote planning, and that equity issues concerning interstate waste should be addressed through other mechanisms.

Other Comments

The following additional comments were received.

- September 1995 might be too early to expect states to eliminate shortfalls. The EPA guidance should acknowledge this.
- EPA, in reacting to suggestions to take the CAP seriously, should not just emphasize enforcement but should also

provide sufficient funds for data collection, for methodology development, and for building an accurate national waste management picture.

- EPA should consider the use of positive incentives, such as bonus money, for states with acceptable CAPs, and not just sanctions for states that fail to provide an assurance.
- The CAP is a good planning tool, but better data are needed. Standard methodologies for projections and waste minimization calculations would make CAPs easier to prepare and more nationally consistent.
- The states felt that the special CAP projects being conducted by EPA were too ambitious for the funds allocated and that there was a better and more cost-effective way to get the information that the projects were meant to provide.

Eastern Meeting: Washington, D.C., August 6–7, 1991

The eastern regional meeting included the states in the Northeast Regional Project, EPA Regions 1 and 3 and New Jersey, Region 5, and New York.

Major Comments

Equity issues. The states felt that the CAP process should not be used to address the equity issues associated with waste management burdens across states. Instead, equity issues should be handled through other means, such as RCRA consistency rules or fee legislation. The CAP could be a useful planning tool if enforcement was confined to participation in the CAP process and not focused on correcting capacity shortfalls.

Time frame. There was general agreement that the time frame for submitting the new CAP was too short. The 1992 submission should be waived or simply limited to an update similar to the quarterly reports now required of the Northeast Project. The next major revision should be delayed until 1993, when updated and higher quality data could be used.

1995 deadline. Many states felt that a 1995 deadline for eliminating all shortfalls is unrealistic. After better data becomes available in 1995, specific dates for compliance can be established.

Open siting criteria. States cannot force the siting of facilities. To get sites developed, states must assure industry that it has a fair chance of siting in areas where a market exists. A fair and open siting or permitting process is one way to accomplish this. Consequently, many states felt that some effort should be given to defining a set of objective criteria.

The CAP as a planning tool. Currently, the CAP often conflicts with state waste management plans and is not helpful in attracting facilities to a state. Significant differences often exist between the state's own waste management plans and its CAP. While a state waste management plan may indicate how much actual capacity may be needed, the CAP process forces states to "write-off" the shortfalls through their regional capacity pools, which are unrealistic. The result is that the public is given two documents: one that shows a capacity need and one that does not. (One state indicated that this contradiction was being used to oppose a facility application.)

Other Comments

The following additional comments were received.

- Rather than having a milestone that sets a specific date for capacity development, states should focus on barriers and market factors that affect siting decisions. Specific dates could be set for the removal of identified barriers. If these dates were not met, sanctions would be applied.
- States with small shortfalls should not be forced to develop uneconomical facilities. If states are required to develop capacity, they will need the authority to control waste flows in order to ensure that adequate waste quantities are available to their facilities.
- Industry wants a state to be neutral in the siting process. A pro-siting stance by states can mobilize opposition.
- Loss of Superfund money has no effect on public opinion, opposition, or acceptance of a waste management facility. It is a poor tool for enforcement.
- There should be national consistency in the data states collect to allow the CAP to provide good numbers for planning.
- Dialogue is hindered by the CAP process because it has become a win/lose situation and not a true exercise in planning and capacity development.
- Some officials felt that if national capacity exists there should be no sanctions. Only if there is a national shortfall should states with a shortfall be required to site new capacity.

• EPA should make a decision on how strictly it is going to enforce the CAP and not let the disgruntled states or other parties deter the agency from clarifying its position.

- The states felt that the EPA special CAP projects should suggest principles and methodologies for states to use. Results from the special projects need to be made available to the states one year before the CAP submission is due.

Southern Meeting: Atlanta, August 12–13, 1991

The southern regional meeting included states in EPA Regions 4 and 6.

Major Comments

Enforcement. The southern states focused much of their comments on enforcement of the CAPs. Most states felt that the CAP should be strongly enforced and that milestones should be required of any state or regional agreement showing a shortfall. While some flexibility could be allowed for states making progress toward meeting their milestones, most states felt that there should be a deadline by which time the milestones must be met or enforcement would ensue.

Waste minimization. All states emphasized the need to use waste minimization as a prominent part of the CAP. States were concerned that the CAP was still being perceived as a siting document. By emphasizing waste minimization, the public would be made aware of the CAP as a waste management plan.

“Open siting” policy. Attempting to identify “open siting” criteria was seen as a fruitless exercise in most instances. The only true measure of success was

an absence of shortfalls. States did feel that a discussion of a state’s siting policy was relevant for states with shortfalls.

Other Comments

The following additional comments were received.

- The CAP process should not force capacity that is not needed or that is uneconomical.
- Even if sites are developed, the economic viability of the facilities is not guaranteed since states are limited in their ability to control waste.
- Milestones should be required to assess facility siting and waste minimization programs.
- The siting location standards developed by EPA should be released as soon as possible.
- States should be assured of adequate funding to prepare CAPs.
- Citizen participation should be incorporated into the CAP development process.
- Some states suggested that a shortfall of 100 tons per year in any capacity category might be a suitable amount for *de minimus* consideration.

Appendix D

Excerpt from NGA Policy Position on Hazardous Waste Management (D-17) August 1992

D-17.8 Interstate Shipments of Hazardous Waste

Many hazardous waste streams must be targeted to highly specialized waste management facilities, and not all states can be expected to be self-sufficient in the management of hazardous waste. Nonetheless, the interstate shipment of hazardous waste is a serious and growing concern in many parts of the nation. The Governors urge Congress to address this problem. The nation should create incentives that discourage the generation of hazardous wastes, encourage the development of in-state or regional management capacity, and compensate importing states for the significant costs, risks, and other burdens they bear as hosts to hazardous waste management facilities used by other states. Specifically, Congress should:

- Authorize states to collect a "waste reduction fee" from hazardous waste generators, and use these revenues to support pollution prevention programs and technical assistance, primarily to smaller firms, as well as research on new and innovative technologies for permanent solutions at site cleanups. If a state chooses not to collect this fee, EPA should collect the fee in that state.
- Require the implementation of strong and enforceable hazardous waste reduction and pollution prevention programs in all states.
- Waive the Commerce Clause of the U.S. Constitution to authorize states to collect fees on hazardous wastes

imported into states for management or disposal at hazardous waste facilities, and to use such fees for environment-related purposes at the state or local level. The Governors believe these hazardous waste import fees should reflect particular management techniques, generally with the highest allowable fees on land disposal and incineration, lower fees on treatment and other management, and no import fees on legitimate recycling.

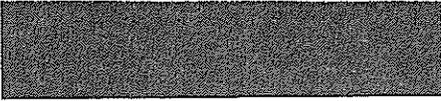
- Cap hazardous waste import fees as a multiple of the higher of the base surcharge prevailing in the state of origin or the base surcharge for wastes generated and managed in the importing state, in order to prevent fees from acting as de facto import bans. In order to give waste-exporting firms and states time to adjust, a substantial portion of the fee should be authorized immediately and the remainder phased in equal amounts over several years. After a period of time, states should also be authorized to levy fees on the importation of waste not considered hazardous under RCRA Subtitle C but managed at hazardous waste facilities. Fees on waste imported for management or noncommercial facilities may be levied at the state's discretion up to the capped levels.
- Authorize states to reduce or waive the hazardous waste import fee by agreement with other states. Small states that produce amounts of hazardous waste that would not economically justify

in-state treatment and disposal could be exempt from the multiplier fee requirements.

There are many examples of safe, effective, and efficient cross-border waste management arrangements and at this time the Governors do not support authority for outright bans of waste imports. However, there is a growing concern that some waste shipments are not warranted and may justify limited bans, when capacity to manage waste in the most environmentally preferred manner exists within an exporting state. In these circumstances the Governors support a waiver of the commerce clause to ban these wastes from export. At the same time, the Governors recognize that in most cases the decision to export is made by private companies, not government at any level. The criteria to be used for the imposition of selective bans must be carefully developed. The criteria must provide states clear direction to ensure fairness and equity.

There needs to be a uniform hazardous waste manifest system that will allow the tracking of interstate transportation and disposal of wastes.

The United Nation's system for the identification of hazardous material should be adopted as part of Title 49, *Code of Federal Regulations*, and become part of the current placarding system.



Glossary

Captive Hazardous Waste Management Facility

Captive waste management facilities are owned by waste generators for treatment and disposal of company waste. The term captive means the facility is dedicated for company use. They differ from on-site facilities in that captive facilities take waste from company plants located off the management facility's property.

Commercial Hazardous Waste Management Facility

Commercial hazardous waste management facilities treat and dispose of waste from various industrial, commercial, and government clients. Commercial facilities are privately operated, receiving waste from hundreds of generators nationwide.

Comprehensive Environmental Response Compensation and Liability Act (CERCLA)

The Comprehensive Environmental Response Compensation and Liability Act (commonly known as Superfund) is the nation's primary law for responding to uncontrolled and abandoned hazardous waste sites. Enacted in 1980 and amended in 1986, the law established a trust fund to respond to abandoned sites or sites where the owner or operator is bankrupt.

Net Waste Exports or Imports

The amount of all hazardous waste sent (exported) from a state, minus the amount of waste received (imported) by the state.

On-site Hazardous Waste Management Facility

On-site hazardous waste management facilities are waste management plants colocated with a waste-generating facility. Like captive facilities, on-site management plants are dedicated for company use, primarily serving the waste generator where they are located.

Resource Conservation and Recovery Act (RCRA)

The Resource Conservation and Recovery Act is national legislation passed in 1976 and amended in 1984 that covers the generation, transportation, and disposal of hazardous waste. Regulations promulgated under RCRA list roughly 700 different types of waste and include criteria for defining hazardous waste.

Waste Generator

Any facility that produces hazardous waste, including hazardous waste treatment plants that generate a hazardous waste product needing further treatment or disposal.