



Hazardous Waste Management Planning Needs and Practices

A Review of Several State Agency Approaches

HAZARDOUS WASTE MANAGEMENT PLANNING NEEDS AND PRACTICES:
A REVIEW OF SEVERAL STATE AGENCY APPROACHES

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EXECUTIVE SUMMARY

Background

The purpose of this project has been to 1) identify existing and emerging state hazardous waste management planning needs, 2) describe planning practices designed to address these needs, and 3) relate state observations on the relationship of their planning needs and activities to the Federal Capacity Assurance Planning (CAP)¹ process. The project was not designed to evaluate the performance of the CAP process or current state hazardous waste management practices. Also, the project did not evaluate or recommend whether or how states should undertake hazardous waste management planning.

To identify and describe planning needs and practices, the project targeted two groups of states (nine publishing formal hazardous waste management plans and nine engaged in other forms of planning). States that prepare a formal hazardous waste management plan (hereafter referred to as "formal planning states") and make it publicly available are: Connecticut; Michigan; Minnesota; New Jersey; New York; North Carolina; Pennsylvania; Vermont; and Washington. Other states that do not publish a formal hazardous waste management planning document even though they may engage in planning activities are: Alabama; Delaware; Illinois; Massachusetts; Missouri; Oregon; Texas; Utah; and Virginia². In selecting participants for the project, the primary goal was to obtain a range of perspectives associated with different environmental, economic, institutional, and public policy considerations.

State Planning Needs

States identified a wide range of hazardous waste management planning needs. The needs fall roughly into six categories:

1. Managing Waste According to the "Hierarchy": this category contains needs related to increasing waste minimization and, in general, shifting waste management to more preferred management methods in conformance with state/Federal waste management "hierarchy" policies. Waste management hierarchy refers to Federal and various state legislative mandates and policies that indicate a preference for certain types of management options over others. Although there is some variation among hierarchies, the basic

¹ The Federal Capacity Assurance Planning (CAP) process addresses states' management of hazardous waste. In 1986, Congress mandated this process as part of its reauthorization of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). Under CERCLA Section 104(c)(9) each state is required to provide "adequate assurance" that treatment and disposal capacity will be available for hazardous wastes generated within the state over a twenty year period.

² Certain of the other planning states are currently engaged in or have completed formal planning documents since their initial classification as other planning states. For example, Texas is currently engaged in preparing a formal hazardous waste management planning document and Illinois recently completed its "Four Year Strategy for Environmental Progress" planning document.

structure is: source reduction; recycling; treatment, which includes incineration and stabilization; and landfill.

2. Assessing Access to Hazardous Waste Management Capacity: needs in this category focus on state efforts to understand the demand for hazardous waste treatment and disposal services created by in-state generators and the availability of such services in and out of state.
3. Conducting Public Education: needs in this category reflect state interest in better informing the general public about hazardous waste risks and the means to address such risks and informing the regulated community of opportunities for improved management.
4. Improving Hazardous Waste Program Implementation: this category contains a wide range of needs including better targeting of program efforts and increased staff training.
5. Promoting Compliance with Hazardous Waste Regulations: needs in this category focus on increasing the rate of compliance with hazardous waste regulations on the part of the regulated community.
6. Balancing Environmental and Economic Considerations: this category reflects state interest in incorporating specific economic considerations into regulatory and technical assistance activities.

In general, states placed primary emphasis on the first three needs categories-- Management According to the Hierarchy, Assessing Access to Hazardous Waste Management Capacity, and Conducting Public Education--both in terms of the number of states identifying these needs and statements about priorities. States identifying needs associated with the management hierarchy consistently named this category as their top priority. States also placed significant emphasis on public education; in part, this results from the link between public education and achieving objectives related to the other needs categories.

State Planning Practices

The review of state planning practices relied on review of documents from the nine states that do formal planning and discussions with representatives of those states. (Interviews with the nine "other" planning states focused on their planning needs and their ideas for "ideal" hazardous waste management planning practices--information on actual planning practices was derived only from those states that prepared formal planning documents.) In all cases for the formal planning states, state legislative mandates required the planning process and dictated, at least, the initial planning objectives. State environmental agencies were responsible for implementing the planning process in New York, North Carolina, Pennsylvania, Vermont, and Washington. A special commission or quasi-public corporation established by the initial planning legislation was responsible for the planning process in Connecticut, Michigan, Minnesota, and New Jersey. All planning processes required at least two years to complete.

State planning objectives exhibit both similarities and differences. In particular, a central objective of all states' hazardous waste-related planning efforts is assessing management capacity needs and the availability of this needed capacity. A second universal objective is promoting waste minimization, with the states of Connecticut, Minnesota, New Jersey, Pennsylvania, Vermont, and Washington also explicitly addressing the implementation of a state legislatively mandated waste management hierarchy.³ From this point, state planning objectives tend to diverge, largely driven by statutory mandates (which in certain cases limit an agency's planning purview) and by specific state circumstances.

In all, 28 separate planning activities were identified, half of which were unique to a single state or nearly unique (i.e., associated with two or three states). Examples of planning activities include: examining total waste generation by type and volume for all wastes placing demand on RCRA subtitle C permitted management capacity;⁴ identifying, locating, and assessing the life expectancy of hazardous waste treatment facilities; and investigating the highest priority, technically feasible management options for hazardous waste streams.

Nine of the 28 activities show a high degree of overlap with six or more states undertaking them. These activities cover the basic process of assessing management capacity for all wastes placing demand on permitted hazardous waste management capacity. The process also includes incorporating into demand estimates the shifts in management according to state hazardous waste management hierarchies.

Most of the state plans contain specific recommendations for implementation activities, which many of the states have carried out. The recommendations cover a wide range of activities that, as would be expected, vary with the type and number of original plan objectives. In general, the implementation activities fall into three categories: follow-up studies; legislative changes; and administrative changes.

Planning Processes and the Capacity Assurance Planning Process (CAP)

The table "Summary Comparison of Comprehensive, State Capacity, and Capacity Assurance Hazardous Waste Management Planning" [pp. ES-5 to ES-7] summarizes the six objectives and related planning activities that emerge from the review of planning needs and practices. The six planning objectives are general statements derived directly from the six state needs categories discussed previously. The planning activities primarily derive from the activities states have undertaken in conducting their planning.

³ Massachusetts, addressed in this report as an "other planning" state, is implementing a waste management hierarchy mandated by their Toxic Use Reduction Act of 1989.

⁴ Subtitle C of the Resource Conservation and Recovery Act (RCRA) establishes criteria for identifying hazardous wastes and contains standards and enforcement provisions addressing all aspects of handling, storing, transporting, treating, and disposing of such wastes.

The table compares, on the basis of 24 planning activities, three hazardous waste management-related planning processes: comprehensive hazardous waste management planning; state hazardous waste management capacity planning; and the 1989 Federal CAP. The comprehensive hazardous waste management planning process incorporates all of the identified planning activities. No state, in practice, engaged in all of these activities--the comprehensive approach was created to act as an example of the full range of activities that emerge from combining the various state practices observed during this review. The state hazardous waste capacity planning process is structured around 12 "backbone" hazardous waste management planning activities (these activities are identified in the table by italicized print) which are a subset of the comprehensive hazardous waste management planning activities. This approach, in general, represents the typical practices in which formal planning states engaged.

The final column of the table addresses the 1989 Federal CAP process. The review is based on the activities EPA identified in its 1988 CAP guidance document and the typical activities undertaken by states during 1989 to meet this requirement. On the basis of the comparison portrayed in the table, the 1989 CAP process shares some similarities with the comprehensive and state capacity planning processes; CAP activities fully overlap with four of the "backbone" planning activities and partially overlap with two others. These activities are a fundamental aspect of all three planning processes. The activities provide the basic hazardous waste generation and management data required to understand a state's hazardous waste management system, analyze the state's relationship to interstate hazardous waste management markets, and examine potential future capacity shortfalls. These activities address an important and fundamental range of the hazardous waste management planning needs that states identified during the course of this project.

At the same time, fundamental differences also exist which limited the ability of the 1989 CAP process to address fully the state hazardous waste management planning needs addressed by the other two planning processes. Congress' original premise for mandating capacity assurance was the concern that states, due to political pressures and public opposition, have had difficulty permitting and constructing needed hazardous waste management capacity. This raised the specter that, over time, the capacity necessary to manage the hazardous waste generated in the United States safely would not be available. Congress believed that such a "capacity crisis" could lead to excessive hazardous waste management costs, improper or illegal hazardous waste management activities, and the potential creation of additional Superfund hazardous waste sites.

The 1989 CAP process did not include any activities associated with "management according to the hierarchy," "improve hazardous waste program implementation," or "promote compliance with hazardous waste regulations." Moreover, most of the states that conduct hazardous waste management planning processes independent of the CAP identified four primary factors that currently limit their ability to incorporate the CAP process into their planning efforts: the potential loss of Superfund monies associated with Capacity Assurance Planning; the range of needs addressed by CAP; the structure of the plans imposed by the 1989 CAP guidance; and the means of assuring capacity prescribed under CAP.

**Summary Comparison of Comprehensive, State Capacity,
and Capacity Assurance Hazardous Waste Management Planning**

PLAN ACTIVITIES	COMPREHENSIVE	STATE CAPACITY	CAPACITY ASSURANCE
1. MANAGEMENT ACCORDING TO THE HIERARCHY			
A. <i>Investigate the highest priority, technically feasible management options for hazardous waste streams to examine the potential for shifting to a more preferred management method.</i>	Yes	Yes	No
B. Examine the economic and regulatory barriers to achieving the high priority management methods.	Yes	Potentially (1)	No
C. <i>Identify state procedures to encourage waste management according to the waste management hierarchy.</i>	Yes	Yes	No (2)
2. ASSURE ACCESS TO HAZARDOUS WASTE MANAGEMENT CAPACITY			
A. <i>Examine total waste generation by type and volume for all wastes placing demand on permitted hazardous waste management capacity.</i>	Yes	Yes	Partially (3)
B. Examine wastes of particular concern to the state (e.g., waste oils, household hazardous wastes, exempt wastewaters).	Yes	Potentially	No
C. Examine number, type, size, and geographic distribution of in-state hazardous waste generators and managers.	Yes	Potentially	No
D. <i>Determine disposition of waste (management methods, location of managing facilities, and type of managing facilities).</i>	Yes	Yes	Yes
E. <i>Identify, locate, and assess life expectancy of hazardous waste treatment, storage, disposal, and recycling facilities in the state.</i>	Yes	Yes	Yes
F. <i>Project probable future hazardous waste generation and management, incorporating expectations for economic change, waste minimization, regulatory change, and remediation wastes.</i>	Yes	Yes	Yes
G. <i>Project preferred future hazardous waste generation and management in accordance with the waste management hierarchy.</i>	Yes	Yes	No

(1) All "potentially" designations indicate that, in certain instances, states undertaking capacity planning did incorporate these activities into their efforts.

(2) As currently proposed, the 1993 CAP process will partially address this activity for capacity shortfalls.

(3) This designation reflects the fact that CAP examined only a subset of wastes placing demand on permitted hazardous waste management capacity.

**Summary Comparison of Comprehensive, State Capacity,
and Capacity Assurance Hazardous Waste Management Planning**

PLAN ACTIVITIES	COMPREHENSIVE	STATE CAPACITY	CAPACITY ASSURANCE
H. <i>Determine the shortfall between in-state hazardous waste management capacity demand and supply on the basis of preferred future projections.</i>	Yes	Yes	Partially (4)
I. Conduct economic viability analysis of identified state hazardous waste management capacity shortfalls.	Yes	Potentially	No
3. CONDUCT PUBLIC EDUCATION			
A. Conduct surveys of generators and the general public to reveal their current level of understanding on management methods, hazardous waste generation and management risks, and specific concerns with hazardous waste generation and management to target educational efforts.	Yes	Potentially	No
B. <i>Investigate opportunities to educate generators on waste minimization.</i>	Yes	Yes	No (5)
C. <i>Produce plan report (or regular update) for distribution to the general public.</i>	Yes	Yes	Yes
4. IMPROVE HAZARDOUS WASTE PROGRAM IMPLEMENTATION			
A. Examine current efficiency and effectiveness of hazardous waste management programs overall to improve program implementation.	Yes	No	No
B. <i>Examine siting and permitting procedures.</i>	Yes	Yes	No
C. <i>Review hazardous waste activity reporting in light of state data needs and in-state business activity.</i>	Yes	Yes	No

(4) This designation reflects the fact that CAP did incorporate reductions in demand due to waste minimization but did not include the notion of a preferred future nor analysis on how to achieve improved management.

(5) As currently proposed, the 1993 CAP process will partially address this activity for capacity shortfalls.

**Summary Comparison of Comprehensive, State Capacity,
and Capacity Assurance Hazardous Waste Management Planning**

PLAN ACTIVITIES	COMPREHENSIVE	STATE CAPACITY	CAPACITY ASSURANCE
<p>5. PROMOTE COMPLIANCE WITH HAZARDOUS WASTE REGULATIONS</p> <p>A. Examine current structure of compliance efforts.</p> <p>B. Survey generators to determine level of understanding of hazardous waste generation and management regulations.</p> <p>C. Examine process for examining and responding to new federal requirements.</p>	<p>Yes</p> <p>Yes</p> <p>Yes</p>	<p>No</p> <p>No</p> <p>No</p>	<p>No</p> <p>No</p> <p>No</p>
<p>6. BALANCE ENVIRONMENTAL AND ECONOMIC CONSIDERATIONS</p> <p>A. Examine the regulatory framework and policies that affect key waste streams to identify mixed incentives and potential redundancy.</p> <p>B. Examine opportunities for increased waste minimization.</p> <p>C. Examine opportunities for providing technical assistance to generators for understanding and complying with new regulations.</p>	<p>Yes</p> <p>Yes</p> <p>Yes</p>	<p>No</p> <p>Potentially</p> <p>Potentially</p>	<p>No</p> <p>Partially (6)</p> <p>No</p>

(6) This designation reflects the fact that CAP did incorporate reductions in demand due to waste minimization but did not include the notion of a preferred future nor analysis on how to achieve improved management. As currently proposed, the 1993 CAP process will partially address this activity for capacity shortfalls.

When states prepared their 1989 CAPs they focused on maintaining access to Superfund remedial action funds. Under comprehensive and state capacity planning, states appear considerably more inclined than during CAP preparation to examine a broader range of wastes which potentially place demand on permitted hazardous waste management capacity and to address (and publicly display) difficult issues. As a result, states that independently undertake capacity planning efforts may not be inclined to use these plans as substitutes for CAPs, since the conclusions drawn in their own plans may make it more difficult to assure capacity within the framework of Section 104(c)(9).

As the summary table indicates, the 1989 CAP involved undertaking only a subset of the activities associated with comprehensive and state capacity planning. As a result, the 1989 CAP addressed a more limited set of needs than the other two planning processes. Probably the most important single difference between the 1989 CAP and the two models is the "management according to the hierarchy" need. The comprehensive and state capacity planning processes are linked to a goal of integrating the management hierarchy into the planning process. This goal leads to investigating the technical, economic, and regulatory feasibility of promoting management according to the hierarchy during state plan preparation. The 1989 CAP process does not contain this notion of improved management and, as a result, states did not include improved management feasibility analyses as a part of their 1989 CAP efforts.

EPA guidance for the preparation of the 1989 CAPs prescribed which waste streams states should address and how states needed to present their data in CAP documents. States understand EPA's need for consistency to facilitate evaluating plans and preparing a national profile of capacity assurance. At the same time, states, in undertaking either comprehensive or capacity planning of their own, typically address a different universe of waste streams and aggregate data in line with specific plan objectives or recommendations. This represents a fundamental conflict between the data needs of a nationally-oriented agency and the needs of states facing unique circumstances.

Finally, the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) section 104(c)(9) requires states to assure capacity for all hazardous wastes generated within their borders. In the event that states identify capacity shortfalls, the statute prescribes two means by which states can address them: site new in-state facilities or enter into an interstate/regional agreement for out-of-state management. EPA, in its guidance to states, encouraged states to reduce expected capacity demand by incorporating waste minimization estimates into their calculations. The law does not provide for states to examine the feasibility and/or desirability of undertaking these actions. As a result, comprehensive and state capacity planning practices differ significantly; they consider the technical, economic, and legal feasibility, as well as the overall desirability, of options to address capacity shortfalls. These feasibility analyses show up in a number of planning efforts and tend to result in states rejecting the notion that complete self sufficiency is desirable.

On the basis of the information collected and reviewed during this project, the 1989 CAP process appears to address a fundamental set of state hazardous waste management planning needs.

For those states which have not initiated or do not plan to develop their own independent hazardous waste management planning processes, the CAP process can provide useful information and insights. Nevertheless, for those states conducting hazardous waste-related planning, the CAP process does not provide fully adequate plans and/or it directly conflicts with state planning approaches. The CAP also is hampered in its ability to substitute for state comprehensive hazardous waste management planning or state capacity planning efforts by certain aspects of the statutory language and the tension between EPA's need for consistent data across all states and states' need to address individual circumstances.

SECTION I: INTRODUCTION

Report Structure

This report contains five sections: Introduction, Description of Planning Needs, Description of Planning Practices and Approaches, Description and Comparison of Planning Models, and Conclusion. This section, the Introduction, provides an overview of the project purpose and approach. Additionally, this section provides a brief discussion of the planning concept which guided research efforts and has acted as the framework for organizing the presentation of results. Section II lists and describes the planning needs that were identified through contact with the state agencies participating in the project. Section III provides a description of state agency hazardous waste management planning approaches and activities that derive from a review of publicly available planning documents and interviews with the preparers of these documents. In Section IV, the needs listed in Section II and the planning activities identified in Section III are combined to identify a set of objectives and related planning activities for two state hazardous waste management planning processes. Also within Section IV, the Federal Capacity Assurance Planning (CAP) requirement is introduced and its related activities are compared to those of the two model planning processes. Finally, Section V provides a conclusion of the report.

Project Purpose

The purpose of this project has been to identify existing and emerging state hazardous waste management planning needs and describe the planning practices states have designed to address these needs; in addition, EPA obtained state observations on the relationship of their planning needs and activities to the Federal CAP process. The project was designed neither to evaluate the performance of the CAP process nor to evaluate and recommend whether or how states should undertake hazardous waste management planning.

Project Approach

The project has targeted two groups of states to identify and describe planning needs and practices. In selecting participants for the project, the primary goal was to obtain a range of perspectives associated with different environmental, economic, institutional, and public policy considerations.

The two groups of states are distinguished by the nature of their planning activities: "formal planning" states and "other planning" states. Formal planning states are those that prepare a formal hazardous waste management plan (hereafter referred to as formal planning states) and make it publicly available. The other planning states are those that do not publish a formal hazardous

waste management planning document, even though they may engage in planning activities.⁵ (A complete list of states and their associated characteristics is provided in Table 1 [p. 3].)

EPA selected the 18 states to participate in the project based on four criteria:

1. participation in different CAP regional agreements for sharing management capacity;
2. location in different geographical areas;
3. characterization of total in-state waste generation volume as large, medium, or small⁶; and
4. characterization as net importing or exporting state relative to the interstate shipment of hazardous waste.

Table 1 lists the 18 states and provides their associated characteristics. As depicted in Table 1, the selected states are characterized as follows:

1. Each participates in one of the regional agreement blocks of states, including the Northeast States, EPA Region 4, EPA Region 5, EPA Region 6, Western Governors' Association States, and two independent states;
2. Five are large, eight are medium, and five are small generating states; and
3. Twelve are net exporting states and six are net importing states.

EPA obtained hazardous waste management planning need and practice information from formal planning states through a combination of document review and telephone interviews with state agency staff. Document review focused on understanding each state's planning process, planning purposes and goals, planning focus, and planning research activities. EPA obtained the hazardous waste management planning need information from other planning states through a telephone interview with each state agency. (The other planning states responded to the questions in Appendix A.)

⁵ Certain of the other planning states, for example Texas, are currently preparing formal hazardous waste management planning documents.

⁶ For purposes of this study, the designation of large, medium, or small reflects total waste generated in state (1987), excluding exempt wastewaters, as follows: large > 1,000,001 tons; medium 100,001 - 1,000,000 tons; small < 100,000 tons. These designations are based on information contained in a February 1991 report by the National Solid Waste Management Association entitled, Interchange of Hazardous Waste Management Services Among States.

Table 1: Summary of Participating State Characteristics

Characteristics	Formal Planning States										Non-Formal Planning States									
	CT	MI	MN	NJ	NY	NC	PA	VT	WA	AL	DE	IL	MA	MO	OR	TX	UT	VA		
1. Participation in different capacity agreements:																				
- Northeast States	X			X			X	X					X					X		
- EPA Region 4						X				X										
- EPA Region 5		X	X									X								
- EPA Region 6															X					
- Western States (WGA)									X					X		X				
- Self-certified					X								X							
2. Waste Generation Reported 1987																				
- large (L) >1,000,001 tons		L			L							L		L		L				
- medium (M) 100,001 - 1,000,000 tons	M			M			M		M	M	M		M			M	M			
- small (S) <100,000 tons			S			S		S				S		S						
- waste generation ranking *	25	7	33	15	5	32	14	43	23	24	36	9	16	13	34	1	22	30		
3. Status as Net Importer or Net Exporter **																				
- Net Importer (I)		I		I						I		I			I		I			
- Net Exporter (E)	E		E		E	E	E	E	E		E		E	E		E		E		

* Figures reflect ranking of all states according to amount of RCRA hazardous waste generated in 1987 less exempt wastes. (National Solid Waste Management Association, "Interchange of Hazardous Waste Management Services Among States," Table 1, page 5, February 1991.)

** Note that net importer/exporter status can change on an annual basis, although the net importing status of Alabama, Illinois, Oregon, and Utah is unlikely to change as large commercial management facilities are located in these states.

Planning Concepts

Throughout the project, the working definition of planning has been:

a structured, objective process of preparing a set of decisions for action in the future to influence events in the direction of some preferred outcome(s) and/or avoid otherwise unforeseen undesirable outcome(s).

For the planning framework discussed in this report, EPA used the "rational comprehensive" planning model. This model best captures the common notion of planning and closely mirrors the practices observed in reviewing state hazardous waste management planning efforts. Although variously characterized in academic planning literature, the framework can be viewed as having four interactive process steps: scoping; researching; evaluating; and implementing (See Figure 1, [p. 5]).

Scoping involves setting a plan vision, identifying an initial set of needs, and deriving plan objectives (see Figure 2, [p. 6]). In addition, scoping involves setting planning process objectives (e.g., develop public support for plan recommendations) and developing the planning process approach. Scoping for hazardous waste management planning-related processes often takes place--at least initially--in the state legislature, which creates a plan vision and objectives. The implementing agency, depending on the strictness of the statutory language, might refine the vision and objectives based on information collected during planning activities.

Researching entails basic information-gathering activities (see Figure 2). The activities involve characterizing the current, probable, and preferred future situations. Most agencies conducting planning use the information collected during this step to refine their statements of needs, objectives, and plan vision.

Evaluating represents the core analytical activities of the planning process in which the implementing agency evaluates options and specifies actions (see Figure 3, [p. 7]). Specific activities include: developing evaluation criteria; identifying options for achieving plan objectives; comparing options on the basis of technical, economic, legal, financial, and public policy feasibility criteria; selecting preferred options; and formulating recommendations. It is at the end of this process step that agencies typically produce a planning report designed to describe the planning process, its findings, and recommendations for future actions.

Implementing involves undertaking the recommended actions and monitoring the results (see Figure 3). Implementation includes setting benchmarks against which agencies can evaluate progress; allocating resources to support actions; assigning roles and responsibilities; implementing the recommendations; and monitoring both the benchmarks to assess progress and general developments to ensure the plan's original premise remains valid. Monitoring activities support either a periodic or on-going reassessment of the plan's vision, needs, and objectives.

FIGURE 1
The Planning Process

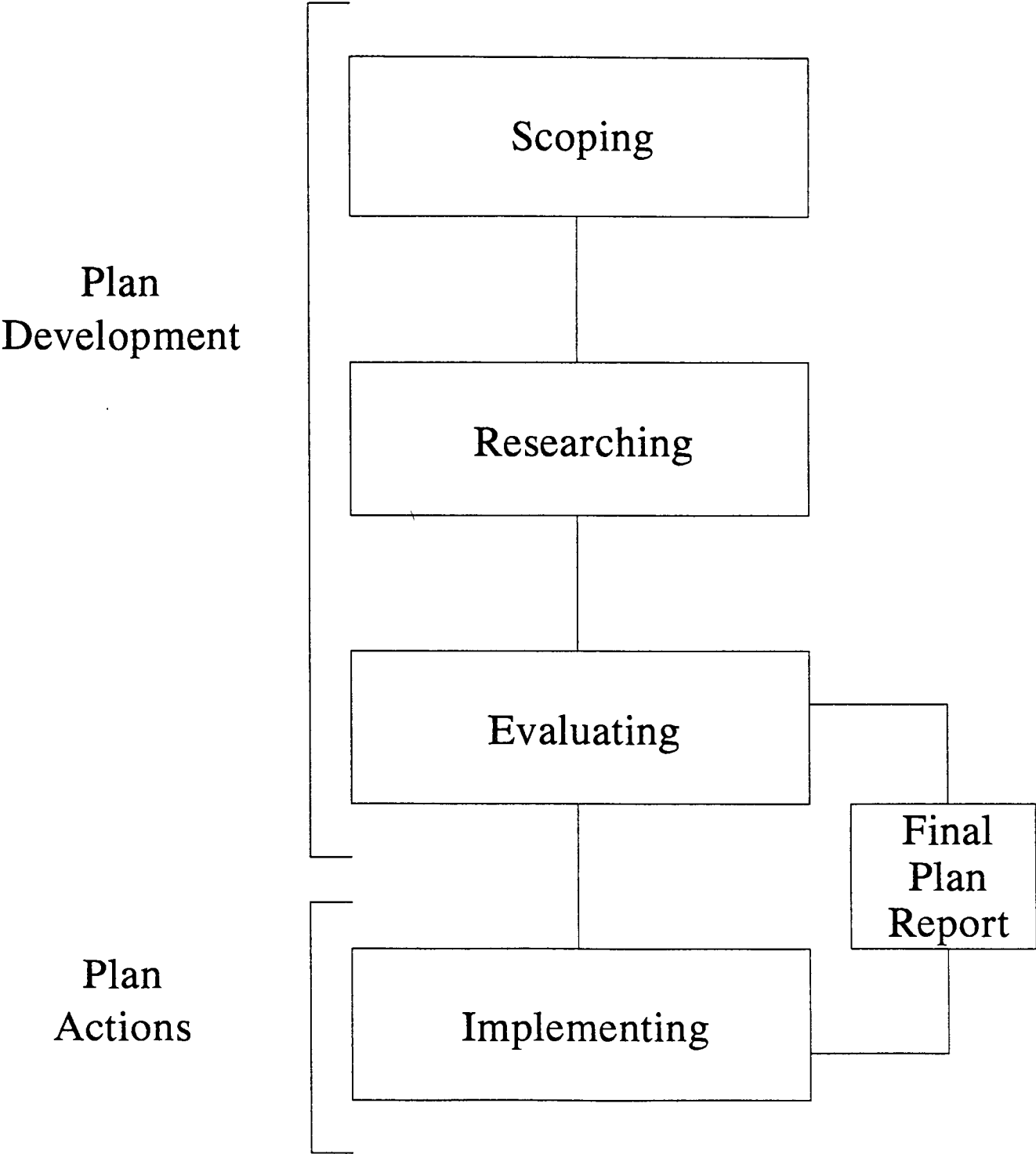


FIGURE 2
Scoping/Researching

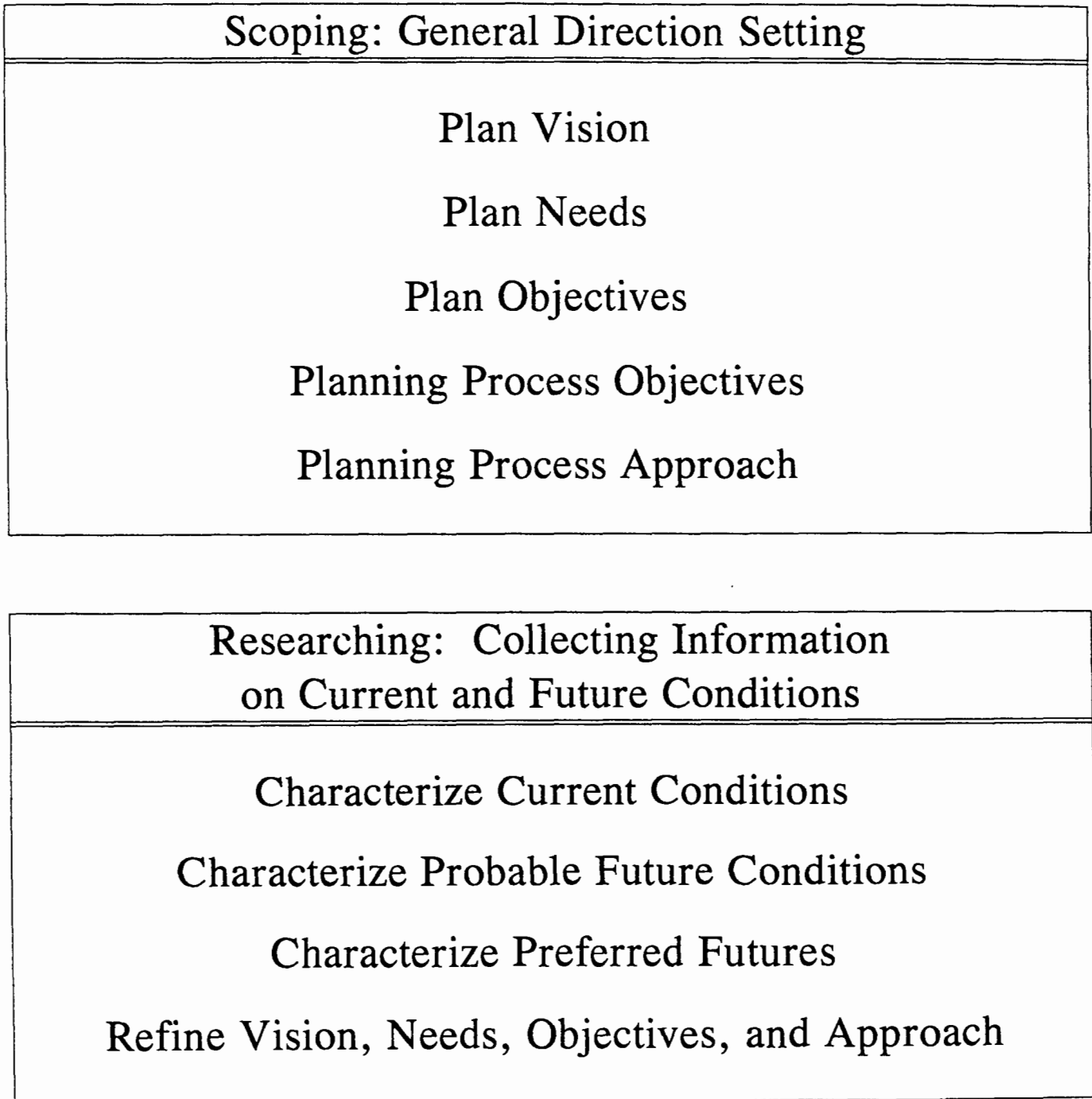


FIGURE 3
Evaluating/Implementing

Evaluating: Evaluate Options and Specify Actions

Develop Evaluation Criteria
Identify Options for Achieving Objectives
Compare/Contrast Options
Select Preferred Options
Make Recommendations

Implementing: Undertake Actions and Monitor Results

Set Benchmarks
Allocate Resources
Assign Roles/Responsibilities
Implement Recommendations
Monitor Benchmarks
Monitor General HWM Developments
Adjust Vision, Needs, Plan Objectives

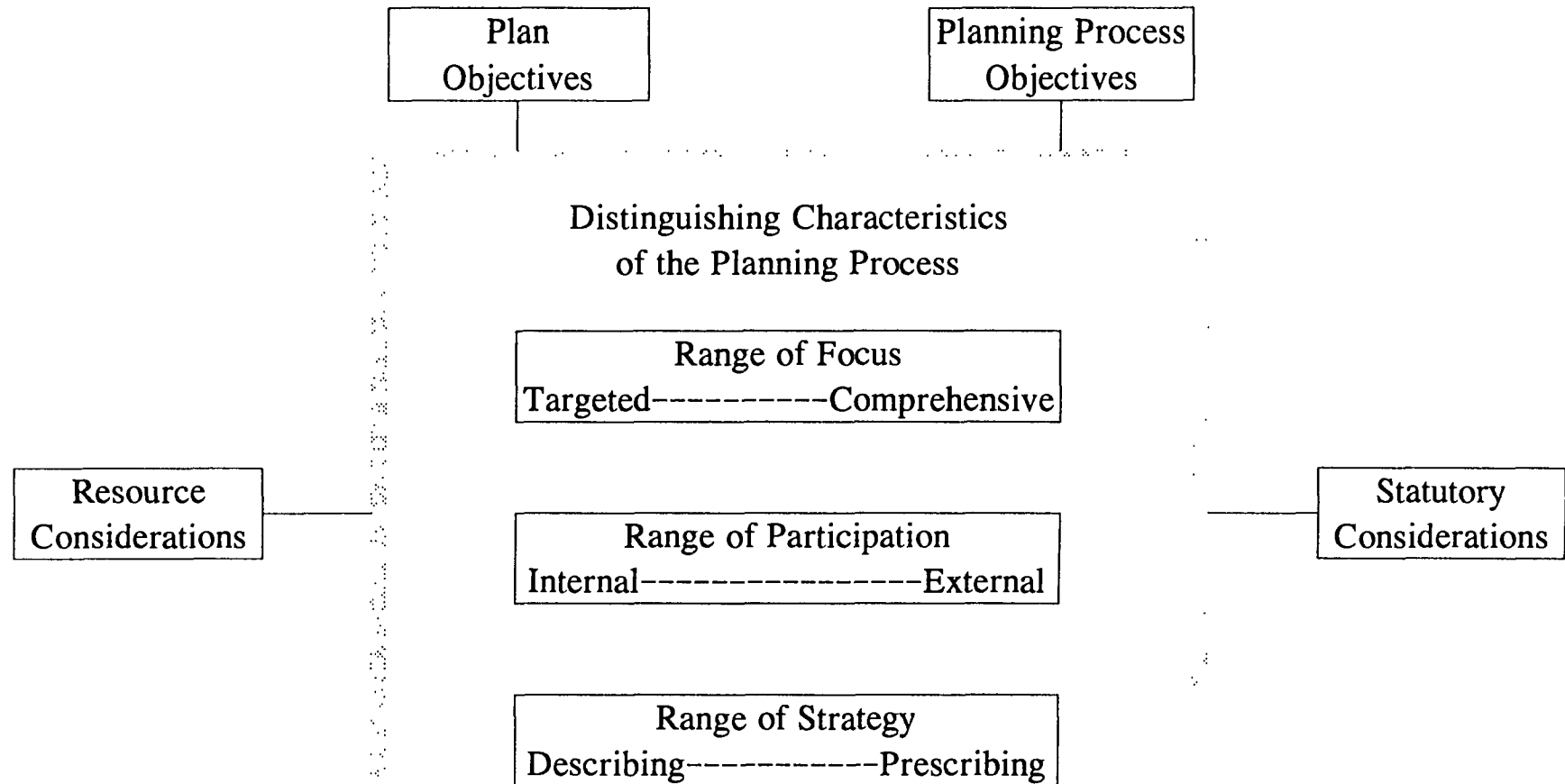
The specific planning process approach an agency might take is distinguished by differences in the plan focus, level and mode of participation, and strategic orientation (see Figure 4, [p. 9]). The focus of a plan's activities can range from highly targeted (e.g., reduce waste generation) to comprehensive (e.g., improve hazardous waste management) or even very global (e.g., overall environmental planning). Participation in the planning process can range between a process involving only agency personnel (internal orientation) to one with widespread and continuous public involvement (external orientation). The strategic orientation of the plan can range between strictly describing the current and expected situation (and awaiting public/private responses to the information) to prescribing very specific actions for meeting plan objectives.

The characteristics of the planning process approach are variously influenced by plan objectives, planning process objectives, resource constraints, and statutory considerations. Plan objectives influence, in particular, the focus of the planning activities. If, for example, plan objectives address a specific need or set of needs (e.g., more capacity), then the focus of research, evaluation, and implementation activities is also likely to be very targeted.

Planning process objectives particularly influence approaches to participation and strategic orientation. Planning process objectives frequently reflect particular state characteristics such as the level of stakeholder interest and concern about hazardous waste issues and the role that executive and legislative branches play in planning efforts, including authorizing planning activities, codifying planning outcomes, and/or providing authority to implement planning recommendations. Planning process objectives include using the planning process to build constituencies to support plan recommendations, increase public awareness, and serve as a reference for future policy initiatives.

Resource and statutory considerations can constrain approaches to focus, participation, and/or strategic orientation. Regardless of the comprehensiveness of plan objectives, the plan scope may be limited by resource constraints. As well, statutory mandates can specify plan objectives, the level and type of participation in the planning process, the planning report content, and the actions for implementing the plan.

FIGURE 4
Shaping the Planning Process Approach



SECTION II: DESCRIPTION OF PLANNING NEEDS

States identified a wide range of hazardous waste management planning needs. The identified needs, however, represent the perspectives of no more than a single agency (primarily within a single agency department) within each state. As a result, a more broad-based review of needs within each state might show considerably more, and more diverse, individual needs. For example, the State of New Jersey focused its needs primarily on assessing access to capacity because of the statutory mandate under which the entity interviewed, the Hazardous Waste Facilities Siting Commission, operates. For this reason, individual state responses should not be viewed as necessarily indicative of the state's overall set of hazardous waste management planning needs.

The needs identified during this review have been grouped into six categories:

1. Managing Waste According to the "Hierarchy": this category contains needs related to increasing waste minimization and, in general, shifting waste management to more preferred management methods (i.e., in conformance with state/Federal waste management "hierarchy" policies). Waste management hierarchy refers to Federal and various state legislative mandates and policies that indicate a preference for certain types of management options over others. Although there is some variation among hierarchies, the basic structure is: source reduction; recycling; treatment, which includes incineration and stabilization; and landfill.
2. Assessing Access to Hazardous Waste Management Capacity: needs in this category focus on state efforts to understand the demand for hazardous waste treatment and disposal services created by in-state generators and the availability of such services in and out of state.
3. Conducting Public Education: needs in this category reflect state interest in better informing the general public about hazardous waste risks and the means to address such risks and informing the regulated community of opportunities for improved management.
4. Improving Hazardous Waste Program Implementation: this category contains a wide range of needs including better targeting of program efforts and increased staff training.
5. Promoting Compliance with Hazardous Waste Regulations: needs in this category focus on increasing the regulated community's rate of compliance with hazardous waste regulations.
6. Balancing Environmental and Economic Considerations: this category reflects state interest in incorporating specific state economic considerations into regulatory and technical assistance activities.

Table 2 [pp. 12-17] presents the needs summarized into the six categories mentioned above and indicates which states identified the need. The last column of Table 2 indicates the number of states that identified the need. In general, states placed primary emphasis on the first three categories--Management According to the Hierarchy, Assess Access to Hazardous Waste Management Capacity, and Conduct Public Education--both in terms of statements about priorities and the number of states identifying these needs. States identifying needs associated with the management hierarchy consistently identified this category as their top priority. States also placed significant emphasis on public education; in part, this results from the link between public education and achieving the objectives related to the other needs categories.

States' responses also indicate that they tend to have a fairly similar "core" set of hazardous waste management planning needs, with most states then having a variety of unique needs driven by individual state circumstances. In all, there are roughly 16 needs that show a high degree of overlap (i.e., nine--50 percent--or more states identified the need) among states. These needs are identified by italicized print in Table 2. These indicate a strong state focus on assessing access to hazardous waste management capacity by understanding state capacity needs and addressing those needs through promoting management according to the hierarchy, increasing on-site management, and siting new and expanded facilities while acknowledging the limits placed on state efforts by the inability to control interstate waste flows.

With the exception of the basic distinction between formal planning and other planning states, no particular pattern emerged associating specific needs with state characteristics such as membership in a regional agreement for Federal CAP purposes, quantity of generation, or net importer or exporter of waste. Formal planning states identified more needs and their responses tended to group around specific needs. Other planning state responses, on the other hand, showed considerably more variation. This may result from the ability of formal planning states to provide focused responses after having systematically considered their needs rather than from any fundamental differences in the planning needs of the two state categories. The two states that have the highest ratio of imports to exports (Alabama and Utah), as well as Texas, did stress the need for obtaining the ability to control waste imports. Most other states focused on achieving increased self-sufficiency to reduce dependence on out-of-state facilities and improve relationships with importing states.

Managing Waste According to the Hierarchy, as mentioned earlier, is the single most important category that states identified. In all, states identified nine specific needs ranging from general statements about the need to promote waste management activities in accordance with the waste management hierarchy (#1) to more specific statements such as the need to develop a means to measure waste minimization progress (#5). All states also expressed a strong interest in developing a strategy that helped generators move waste into "higher" technologies so as to reduce risks and costs by minimizing the amount and types of wastes generated (#7). With regard to the waste management hierarchy overall, states' emphasis is strongly on the top end of the hierarchy (i.e., source reduction), although a number of the planning states, as discussed in Section III, have undertaken detailed analyses of opportunities for improved waste management along the entire hierarchy.

Table 2: Summary of State Hazardous Waste Management Planning Needs

NEEDS	Formal Plan									Other Plan								TOTAL STATES	
	CT	MI	MN	NJ	NY	NC	PA	VT	WA	AL	DE	IL	MA	MO	OR	TX	UT		VA
Management According to the Hierarchy																			
1. <i>Promote waste management activities in accordance with a state legislatively mandated waste management hierarchy.</i>	X	X	X	X	X	X	X	X	X				X			X			11
2. <i>Build waste minimization and other forms of improved management into planning analytical activities.</i>	X	X	X	X	X	X	X	X	X				X	X		X			12
3. Foster waste reduction concepts within regulatory agencies.	X	X						X	X				X		X	X			7
4. Establish/meet waste reduction goals.	X	X	X		X			X	X				X			X			8
5. Develop a means to measure waste minimization progress.		X				X		X	X				X		X	X			7
6. Conduct research to identify recycling, recovery, treatment, and disposal options that are technically and economically feasible for wastes that cannot be reduced.	X	X	X		X		X		X										6
7. <i>Develop (technical) assistance strategies that help generators move wastes into "higher" technologies.</i>	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	18
8. Develop market-based incentives to encourage the public and/or regulated community to reduce and avoid waste generation.	X		X						X										3
9. Foster multi-media (pollution prevention) concepts within regulatory agencies and the regulated community.		X											X		X	X			4

Table 2: Summary of State Hazardous Waste Management Planning Needs

NEEDS	Formal Plan										Other Plan								TOTAL STATES
	CT	MI	MN	NJ	NY	NC	PA	VT	WA	AL	DE	IL	MA	MO	OR	TX	UT	VA	
Assess Access to Hazardous Waste Management Capacity																			
1. <i>Develop an understanding of waste generation and management trends.</i>	X	X	X	X	X	X	X	X	X			X	X		X		X		13
2. <i>Address conditionally exempt generator and household hazardous wastes as counties/municipalities attempt to divert such wastes from landfills.</i>		X		X			X	X		X		X		X	X				8
3. <i>Assess how capacity needs will evolve in response to new regulations.</i>	X	X	X	X	X	X	X	X	X			X	X		X				12
4. <i>Assess how capacity needs will evolve in response to changes in regulatory emphasis (e.g., either less or more aggressive regulatory activities).</i>												X		X					2
5. <i>Assess how capacity needs will evolve in response to incentives for improved waste management.</i>			X			X		X	X			X	X						6
6. <i>Calculate the minimum number of facilities necessary to meet in-state demand for hazardous waste management capacity.</i>	X	X	X	X	X	X	X	X	X			X			X		X		12
7. <i>Assess the role of waste minimization as a primary means of conserving or avoiding the need for capacity.</i>	X	X	X	X	X	X	X	X	X	X					X	X	X		13
8. <i>Conduct technical and/or economic feasibility assessments of needed capacity.</i>	X		X	X				X	X										5
9. <i>Reconcile the need for facilities with public reluctance to accept facilities.</i>		X		X											X				3

Table 2: Summary of State Hazardous Waste Management Planning Needs

NEEDS	Formal Plan											Other Plan								TOTAL STATES
	CT	MI	MN	NJ	NY	NC	PA	VT	WA	AL	DE	IL	MA	MO	OR	TX	UT	VA		
10. Develop means to control waste imports.										X					X	X		3		
11. Encourage on-site/local management, especially of remediation wastes.	X	X	X				X		X	X	X	X					X	9		
12. Improve in-state siting and permitting processes.	X		X	X	X	X	X	X	X			X			X		X	11		
13. Identify appropriate sites for facilities.			X			X						X						3		
14. Understand the national capacity picture (indicating availability of out-of-state capacity).										X		X						2		
15. Identify strategies (e.g., permitting) for moving non-hazardous waste (e.g., Industrial Solid Waste) out of RCRA Subtitle C permitted capacity.												X	X		X			3		
16. Investigate intra-state equity considerations.					X													1		
17. Address trans-national waste movements.															X			1		
18. Participate in regional self-sufficiency planning efforts.	X		X	X				X	X	X	X	X						7		
19. Comply with CERCLA Section 104(c)(9).		X			X	X		X				X						5		
20. Accommodate free movement of waste under interstate commerce clause provisions.	X			X	X		X	X	X	X	X		X				X	9		
21. Address the issues of management capacity and distributional equity among states.						X		X	X	X						X	X	6		

Table 2: Summary of State Hazardous Waste Management Planning Needs

NEEDS	Formal Plan										Other Plan								TOTAL STATES
	CT	MI	MN	NJ	NY	NC	PA	VT	WA	AL	DE	IL	MA	MO	OR	TX	UT	VA	
Conduct Public Education																			
1. <i>Promote management according to the waste management hierarchy, with a focus on waste minimization.</i>	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	18
2. Promote reduced waste management costs.	X									X				X	X			X	5
3. <i>Compile and disseminate information to the general public on hazardous waste generation and management.</i>	X	X	X	X	X	X	X	X	X	X	X	X			X	X	X	X	16
4. <i>Build public participation into hazardous waste planning and facility siting.</i>		X	X			X	X	X	X		X	X	X	X				X	11
5. Promote partnerships among industry, interest groups, and the general public.		X										X			X		X	X	4
6. Prepare and disseminate information on the trade offs associated with personal choices.									X		X							X	3
7. Develop educational materials for use in academic instruction.									X										1
Improve Hazardous Waste Program Implementation																			
1. Provide staff training to maintain current program services and develop expertise to address changing hazardous waste management regulatory and technical assistance needs.									X	X		X	X	X	X	X			7
2. <i>Improve agency flexibility in response to rapidly changing legal, regulatory, environmental, and economic conditions.</i>	X	X		X					X		X	X	X	X	X				9

Table 2: Summary of State Hazardous Waste Management Planning Needs

NEEDS	Formal Plan										Other Plan										TOTAL STATES
	CT	MI	MN	NJ	NY	NC	PA	VT	WA	AL	DE	IL	MA	MO	OR	TX	UT	VA			
3. Develop effective mechanisms for targeting management programs.	X							X	X		X	X	X		X				7		
4. Obtain current, accurate, consistent, and streamlined data.	X						X	X	X		X	X	X		X	X			9		
5. Develop an agency capability to monitor program results and justify regulatory efforts in quantifiable terms.		X				X		X	X			X			X	X			7		
6. Identify new funding sources and maintain current funding for hazardous waste programs.		X										X	X	X			X	X	6		
7. Assess the implications of agency budgets increasingly supported by program fees.		X										X	X		X				4		
8. Reduce permit processing times.									X			X				X			3		
9. Improve working relationships with EPA.		X							X					X					3		
10. Assure quality in laboratory analysis.		X							X			X							3		
11. Improve the authorization process.		X										X	X			X			4		
12. Implement RCRA Corrective Action program.		X										X							2		
13. Identify opportunities for and build cooperative links with in-state military facilities to improve compliance, waste management practices, and cleanups.		X										X	X				X		4		
14. Promote regulatory consistency among all generators and throughout the state.												X							1		

Table 2: Summary of State Hazardous Waste Management Planning Needs

NEEDS	Formal Plan							Other Plan							TOTAL STATES				
	CT	MI	MN	NJ	NY	NC	PA	VT	WA	AL	DE	IL	MA	MO		OR	TX	UT	VA
Promote Compliance with Hazardous Waste Regulations																			
1. <i>Help the regulated community (especially small and conditionally exempt generators) respond to changing regulations and an expanding hazardous waste universe.</i>	X	X				X		X	X	X			X	X	X	X			10
2. Plan for compliance with federal requirements, including the federal capacity assurance requirement.					X	X						X			X				4
3. Enforce federal and state hazardous waste regulations effectively.						X			X			X			X				4
4. Obtain funding for clean up of abandoned hazardous waste sites.										X	X	X						X	4
Balance Environmental and Economic Considerations																			
1. Help generators address escalating hazardous waste management costs (e.g., through waste reduction).	X									X								X	3
2. Improve generators' (especially small businesses') understanding of an increasingly complex regulatory framework.		X						X	X	X		X	X	X					7
3. Assure generators' access to reasonably priced hazardous management capacity.	X																		1
4. Create and maintain a positive state environmental image, while helping industry maintain a competitive edge.		X								X		X							3
5. Examine regulatory strategies to avoid conflicting regulatory requirements.												X						X	2
6. Incorporate incentive-based and voluntary programs into the current command and control regulatory scheme.																		X	1

States, pretty much across the board, placed considerable emphasis on Assess Access to Hazardous Waste Management Capacity. This emphasis is not strictly the result of the 1989 CAP requirement; many of the formal planning states had identified and were addressing this category of needs before 1989. In total, the states identified 21 specific needs. The first five are associated with the states' interest in assessing their current and future capacity situations. Needs 6 through 17 are associated with the states' interest in managing waste without undue reliance on out-of-state facilities. Finally, needs 18 through 21 relate to the states' interest in assuring access to any needed out-of-state capacity.

Seven of the 16 "core" needs appear under this category. They are:

- Need 1: develop an understanding of waste generation and management trends.
- Need 3: assess how capacity needs will evolve in response to new regulations.
- Need 6: calculate the minimum number of facilities necessary to meet in-state demand for hazardous waste management capacity.
- Need 7: assess the role of waste minimization as a primary means of conserving or avoiding the need for capacity.
- Need 11: encourage on-site/local management, especially of remediation wastes.
- Need 12: improve in-state siting and permitting processes.
- Need 20: accommodate free movement of waste under interstate commerce clause provisions.

Five of these needs (numbers 1, 3, 6, 7, and 12) receive substantial emphasis by the formal planning states. These five common needs reflect, in particular, the formal planning states' interest in assuring access to hazardous waste management capacity by understanding their hazardous waste management system, expanding waste minimization as a means to preserve capacity and reduce exports, and increasing the siting of new and expanded facilities as need is demonstrated.

Three additional needs under this category merit attention: addressing conditionally exempt and household hazardous waste (#2); conducting technical and/or economic feasibility assessments of needed capacity (#8); and participating in regional self-sufficiency planning efforts (#18). Eight states identified the need to address conditionally exempt and household hazardous waste as a growing concern related to recent municipality efforts to divert these wastes from landfills. Formal planning states were primarily responsible for identifying needs 8 and 18, which they typically linked to their inability to control interstate waste flows. The states indicated that the lack of control meant that: (1) any facilities constructed in a state must be economically competitive (generating an interest in economic viability analyses) and; (2) that some wastes, even under the best of circumstances, are likely to require out-of-state management (generating an interest in regional, self-sufficiency planning).

Conduct Public Education is a unique category since it involves methods for addressing needs identified in other categories and therefore tends to overlap considerably with those other needs. The net result of this overlap is that public education emerges as an area of strong interest on the part of the states, showing a fairly balanced level of responses between formal and the other planning states. The states identified eight specific needs. The first two focus on the regulated community and support addressing needs listed under the Management According to the Hierarchy, and Balance Environmental and Economic Considerations. The remaining needs focus on increasing the general public's understanding of the hazardous waste management system and its associated risks. These education needs, in particular, support state efforts to obtain informed and rational decisions regarding siting and other hazardous waste management activities.

The remaining three categories comprise the remainder of the state needs which are typically driven by unique state circumstances and/or the specific mission of the state agency.

Improve Hazardous Waste Management Program Implementation is a category encompassing 14 separate needs. States placed considerable emphasis on the need to improve agency flexibility in response to changing conditions (#2) and on the need for current, accurate, consistent, and streamlined data (#4). These are "core" needs. The states also emphasized the need to provide staff training (#1), to develop effective mechanisms for targeting management programs (#3 - e.g., use of Biennial Report or state-equivalent data to spot waste minimization potential), and to develop an agency capability to monitor program results and justify regulatory efforts in quantifiable terms (#5 - e.g., use of indicators to track the impact of environmental protection programs over time).

Promote Compliance with Hazardous Waste Management Regulations is comprised of four specific needs with states placing particular emphasis on the need to help small and conditionally exempt generators respond to changing regulations and an expanding hazardous waste universe (this is a "core" need). Certain states placed a strong emphasis on needs related to Balance Environmental Protection With Economic Considerations. For some, helping industry maintain a competitive edge is an explicit hazardous waste management goal. States often translate this need into a focus on promoting waste minimization practices as a least-cost means to reduce environmental risks. Some states indicated that their agency's mission did not explicitly include economic development concerns and that balancing is not therefore a particular agency need.

SECTION III: DESCRIPTION OF PLANNING PRACTICES/APPROACHES

State Planning Practices and Approaches

For the initial portions of this section it may be useful to refer to Figure 4 which provides a schematic drawing of the factors and characteristics which shape a state's planning process approach. Figure 4 appears in Section I of the report on page 9.

All of the state hazardous waste-related planning practices reviewed follow the basic rational comprehensive planning model (i.e., the planning process includes some form of scoping, researching, evaluating, and implementing activities). In all cases, state legislative mandates initiated the planning process and dictated, at least, the initial planning objectives.⁷ State environmental agencies were responsible for implementing the planning process in New York, North Carolina, Pennsylvania, Vermont, and Washington; a special commission or quasi-public corporation established by the initial planning legislation was responsible for the planning process in Connecticut, Michigan, Minnesota, and New Jersey. All planning processes required at least two years to complete.

State planning objectives exhibit both similarities and differences. In particular, a central objective of all states' hazardous waste-related planning efforts is assessing management capacity need and access to the needed capacity. Also, all states built waste minimization considerations into their capacity need estimates. A second universal objective is promoting waste minimization; the states of Connecticut, Minnesota, New Jersey, Pennsylvania, Vermont, and Washington explicitly address the implementation of a state legislatively mandated waste management hierarchy.⁸

From the two universal objectives, state planning objectives tend to diverge, largely driven by statutory mandates (which in certain cases limit an agency's planning purview) and by specific state circumstances. Examples of less universal planning objectives include explicit objectives to improve:

- Public education--included by Michigan, North Carolina, Pennsylvania, Vermont, and Washington
- Siting procedures--included by New Jersey, New York, Pennsylvania, and Washington and
- The hazardous waste management regulatory system--included by Washington.

⁷ Planning legislation was enacted in the following years: CT - 1983; MI - 1979; MN - 1980; NJ - 1984; NY - 1987; NC - 1989; PA - 1980; VT - 1989; and WA - 1985.

⁸ Massachusetts, addressed in this report as an "other planning" state, is implementing a waste management hierarchy mandated by their Toxic Use Reduction Act of 1989.

Each State's approach (e.g., the focus of planning efforts, level and mode of stakeholder participation, and strategic orientation) to hazardous waste-related planning varies substantially. The focus of planning efforts (e.g., plan objectives, research activities, and recommendations) varies along a continuum between those directed at a specific need or limited set of needs to encompassing all or most of the identified needs in a comprehensive fashion. For example, Connecticut and New Jersey focused on capacity planning efforts whereas Washington addressed assuring access to management capacity, promoting its waste management hierarchy, improving the state's hazardous waste management regulatory system, improving siting, collecting better data, and improving education.

The primary factors influencing the focus of the state planning are state legislative mandates followed by the implementing agency's perception of planning needs. For example, New Jersey's planning legislation limits the plan focus to capacity considerations while Vermont's hazardous waste management planning statute specifies development of "a comprehensive state-wide strategy for the management of waste." In certain instances (e.g., Washington) the legislation specified limited planning objectives but provided sufficient discretion for the implementing agency to address a broader set of objectives.

Stakeholder participation occurs at some point in the planning process of all states interviewed for this project. The actual level and nature of stakeholder involvement, however, tends to vary widely from state to state. For example, some states assessed needs and conducted research primarily as an internal agency activity and involved stakeholders in a review of findings and recommendations via formal public hearings near the end of the planning process (e.g., Vermont's planning process). Other states opted for early, widespread stakeholder involvement through special citizen task forces--bringing together business, labor, scientific, public interest, and local and state government perspectives--and general public meetings (e.g., Washington's, Michigan's, and Connecticut's planning processes).

States also varied with regard to the strategy used to affect change related to their planning goals. Certain states (e.g., New York) strictly used their plan to describe the current and expected future situations and to allow the interested public (e.g., commercial TSDs) to make decisions on the basis of this information. Other states (e.g., Connecticut and Washington) used their plans to prescribe a specific set of public sector actions designed to encourage, for example, increased waste minimization.

Table 3 [pp. 24-26] provides a compilation of the state researching and evaluating plan activities derived from the review of state planning documents and discussions with representatives of each state (note that Table 3 is based on discussions with formal planning states only). In all, 28 separate planning activities were identified, half of which were unique to a single state or nearly unique (i.e., associated with two or three states). These "unique" activities result either from a state choosing to move outside the typical scope of hazardous waste-related planning activities (e.g., Connecticut and Minnesota examined the outlook for continued availability of out-of-state facilities) or because the state legislation specifically required the activity (e.g., legislation required New York to identify areas of the state which generate compatible hazardous waste streams and

which have similar interests in providing regional hazardous waste management capacity). In all, six of the nine states--Connecticut, Minnesota, New Jersey, New York, Vermont, and Washington--undertook relatively unique planning activities.

The remaining activities fall into two tiers. Nine comprise the first tier (these activities are presented in italicized print). These show a high degree of overlap, with six or more states undertaking them:

Activity 4: Examining total waste generation by type and volume for all wastes placing demand on RCRA subtitle C permitted capacity.

Activity 8: Determining the disposition of waste.

Activity 9: Identifying, locating, and assessing the life expectancy of hazardous waste treatment, storage, disposal, and recycling facilities in the state.

Activity 11: Projecting probable future hazardous waste generation, incorporating expectations for economic change, waste minimization, regulatory change, and remediation waste volumes.

Activity 12: Projecting preferred future hazardous waste generation in accordance with the state hazardous waste management hierarchy, or state equivalent.

Activity 14: Investigating the highest priority, technically feasible management options for hazardous waste streams to examine potential for movement up the waste management hierarchy.

Activity 17: Determining the shortfall between in-state hazardous waste management capacity demand and supply.

Activity 27: Examining siting and permitting procedures.

Activity 28: Producing a plan report for distribution to the public.

These activities cover the basic process of assessing management capacity for all wastes placing demand on permitted hazardous waste management capacity, while incorporating shifts in management according to state hazardous waste management hierarchies into demand estimates. The nine comprise the fundamental aspects (or "core" activities) of state-driven capacity planning.

The other five activities (numbers 5, 6, 15, 16, and 18) comprise the second tier. These activities show a moderate degree of overlap, with between four and five states undertaking them. They typically are closely related to capacity assessment and assurance activities but reflect a move to more comprehensive hazardous waste management planning by a state and/or the availability of resources to undertake special studies. Activities 15 and 18 are of special interest in that they

involve economic viability analyses of meeting management capacity demand with in-state facilities. They reflect the states' concern that any waste management services offered within the state must be price, quality, and service competitive. This concern derives from the states' limited ability to control or direct waste flows. Minnesota is the only state of those formal planning states interviewed for this project that has actively considered public sector subsidies to support a facility that otherwise would not be price competitive on the basis of waste volumes available in the state.

Most of the state plans contain specific recommendations for implementation activities and, on the basis of discussions with the states, many states have implemented these activities. The recommendations cover a wide range of activities and, as would be expected, vary with the type and number of original plan objectives. In general, the implementation activities fall into three categories: follow-up studies; legislative changes; and administrative changes. Follow-up studies include reviews of hazardous waste generation tax incentives and cost-benefit analyses of potential facility siting efforts. Legislative changes include requiring hazardous waste minimization facility planning and setting state-wide hazardous waste minimization goals. Administrative changes primarily involve increasing and/or redirecting technical assistance programs and improving data collection and management efforts.

Table 3: Summary of Formal State Hazardous Waste Management Planning Activities

RESEARCHING AND EVALUATING ACTIVITIES	Formal Plan States									TOTAL STATES
	CT	MI	MN	NJ	NY	NC	PA	VT	WA	
1. Reviewed and described hazardous waste regulatory system.			X							1
2. Conducted surveys of hazardous waste generators and the general public to identify hazardous waste issues and concerns.									X	1
3. Examined total waste generation by type and volume for the primary wastes (e.g., LQG) placing demand on RCRA subtitle C permitted management capacity.					X					1
4. <i>Examined total waste generation by type and volume for all wastes (large/small quantity generators and state-specific regulated wastes) placing demand on RCRA subtitle C permitted management capacity.</i>	X	X	X	X		X	X	X	X	8
5. Examined wastes of particular concern to the state (e.g., waste oils, household hazardous waste, exempt waste waters).	X	X	X					X	X	5
6. Examined number, type, size, and geographic distribution of in-state hazardous waste generators and managers.				X	X		X	X	X	5
7. Examined waste generation volumes relative to generation processes.			X					X	X	3
8. <i>Determined disposition of waste (management methods, location of managing facilities, and type of managing facilities).</i>	X	X	X	X	X	X	X	X	X	9
9. <i>Identified, located, and assessed life expectancy of hazardous waste treatment, storage, disposal, and recycling facilities in the state.</i>	X	X	X	X	X	X	X	X	X	9
10. Examined outlook for continued availability of out-of-state facilities.	X		X							2
11. <i>Projected probable future hazardous waste generation, incorporating expectations for economic change, waste minimization, regulatory change, and remediation waste volumes.</i>	X	X	X	X	X	X	X	X	X	9

Table 3: Summary of Formal State Hazardous Waste Management Planning Activities

RESEARCHING AND EVALUATING ACTIVITIES	Formal Plan States									TOTAL STATES
	CT	MI	MN	NJ	NY	NC	PA	VT	WA	
12. <i>Projected preferred future hazardous waste generation in accordance with the state hazardous waste management hierarchy, or state equivalent.</i>	X	X	X	X			X		X	6
13. Performed trend analysis of historical hazardous waste generation and management data.					X				X	2
14. <i>Investigated the highest priority, technically feasible management options for hazardous waste streams to examine potential for movement up the waste management hierarchy (e.g., options to reduce and recycle wastes).</i>	X	X	X	X			X		X	6
15. Examined the economic and regulatory barriers to achieving the high priority management methods.	X	X	X	X					X	5
16. Identified state procedures to encourage waste management according to state's waste management hierarchy.	X			X			X	X	X	5
17. <i>Determined the shortfall between in-state hazardous waste management capacity demand and supply.</i>	X	X	X	X	X	X	X	X	X	9
18. Conducted economic viability analysis of identified state hazardous waste management capacity shortfalls.	X		X	X					X	4
19. Conducted regional analysis of existing and needed hazardous waste management facilities and recommended steps to coordinate hazardous waste facility planning on a regional basis.			X	X					X	3
20. Analyzed the ability of existing facilities to meet current and proposed state and federal environmental, health, and safety standards, and facility compliance records in meeting these standards.				X						1
21. Examined cost and environmental impact of current disposal practices.			X					X		2
22. Examined transportation costs, routes, and/or risks.	X			X	X					3

Table 3: Summary of Formal State Hazardous Waste Management Planning Activities

RESEARCHING AND EVALUATING ACTIVITIES	Formal Plan States									TOTAL STATES
	CT	MI	MN	NJ	NY	NC	PA	VT	WA	
23. Identified areas of the state generating compatible hazardous waste streams and which have similar interests in providing regional hazardous waste management capacity.					X					1
24. Determine location by area of the state of facilities needed to satisfy statewide hazardous waste management capacity shortfalls.					X					1
25. Examined program efficiency and structure.			X							1
26. Conducted cost/benefit analysis of siting a disposal facility.			X							1
27. <i>Examined siting and permitting procedures.</i>	X	X	X	X		X	X		X	7
28. <i>Produced plan report for distribution to general public.</i>	X	X	X	X	X	X	X	X	X	9

SECTION IV: DESCRIPTION AND COMPARISON OF PLANNING MODELS

Section II of this document provided a description of the hazardous waste management planning needs of 18 states. Section III provided a compilation of the activities undertaken by nine states which have independently undertaken hazardous waste management planning. Table 4 [pp. 28-30] provides a list of six potential hazardous waste management planning objectives and 24 related planning activities that could form the basis for state hazardous waste management-related planning. The six planning objectives are general statements which derive directly from the six needs categories presented in Table 2. The planning activities primarily derive from those listed in Table 3. However, activities identified with objectives 5 and 6, while able to support these objectives, were not undertaken by most formal planning states, nor did they explicitly identify them as part of their formal planning process.

Within Table 4 there are 12 activities highlighted by italicized print lettering. These activities emerge as the "backbone" of any state hazardous waste management-related planning process, assuming that resources or state legislative mandates do not limit the process. These activities emerge from the "core" needs identified in Table 2 and the "core" planning activities identified in Table 3. The remaining activities lend support to the six planning objectives but tend to address more state-specific concerns and/or reflect a move from focusing on hazardous waste management capacity planning to a more comprehensive form of hazardous waste management planning (e.g., addressing such objectives as improving public sector program efficiency).

Table 5 [pp. 31-33] compares three hazardous waste management-related planning processes on the basis of the planning activities listed in Table 4. Comprehensive hazardous waste management planning (addressed in the second column of Table 5) is a planning process designed to incorporate all of the planning activities identified in Table 4. As a result, a "yes" appears in this column next to each planning activity. Obviously, the comprehensive model represents a highly resource intensive planning process and addresses a variety of needs on which most states do not place a high priority. Washington state's planning process was the only one that came close to incorporating all of these activities.

State hazardous waste management capacity planning (addressed in the third column of Table 5) is structured around the 12 "backbone" hazardous waste management planning activities and is a subset of comprehensive hazardous waste management planning. (The "backbone" activities are in italicized print in Table 5 and have a "Yes" associated with state capacity planning.) The state hazardous waste management capacity planning process focuses on assessing the availability of sound and viable hazardous waste management options for all waste streams generated in-state and placing demand on permitted hazardous waste management capacity. Sound options are those that accord with the hazardous waste management hierarchy, and viable is defined as within the bounds of state authority, economically feasible, and technically acceptable.

Table 4: Hazardous Waste Management Plan Objectives and Related Plan Activities

PLAN OBJECTIVES	PLAN ACTIVITIES
<p>1. Identify opportunities to and options for moving wastes up the hazardous waste management hierarchy, with a particular emphasis on source reduction.</p>	<p>A. <i>Investigate the highest priority, technically feasible management options for hazardous waste streams to examine the potential for movement up the waste management hierarchy.</i></p> <p>B. Examine the economic and regulatory barriers to achieving the high priority management methods.</p> <p>C. <i>Identify state procedures to encourage waste management according to the waste management hierarchy.</i></p>
<p>2. Establish accurate current and future in-state demand for permitted hazardous waste management capacity (including all wastes that place demand on this capacity), identify options for obtaining in-state needed and viable hazardous waste management capacity, and assure continued access to needed out-of-state commercial hazardous waste management capacity.</p>	<p>A. <i>Examine total waste generation by type and volume for all wastes placing demand on permitted hazardous waste management capacity.</i></p> <p>B. Examine wastes of particular concern to the state (e.g., waste oils, household hazardous wastes, exempt wastewaters).</p> <p>C. Examine number, type, size, and geographic distribution of in-state hazardous waste generators and managers.</p> <p>D. <i>Determine disposition of waste (management methods, location of managing facilities, and type of managing facilities).</i></p> <p>E. <i>Identify, locate, and assess life expectancy of hazardous waste treatment, storage, disposal, and recycling facilities in the state.</i></p> <p>F. <i>Project probable future hazardous waste generation and management, incorporating expectations for economic change, waste minimization, regulatory change, and remediation wastes.</i></p> <p>G. <i>Project preferred future hazardous waste generation and management in accordance with the waste management hierarchy.</i></p>

Table 4: Hazardous Waste Management Plan Objectives and Related Plan Activities

PLAN OBJECTIVES	PLAN ACTIVITIES
<p>2. (continued)</p>	<p>H. <i>Determine the shortfall between in-state hazardous waste management capacity demand and supply on the basis of preferred future projections.</i></p> <p>I. Conduct economic viability analysis of identified state hazardous waste management capacity shortfalls.</p>
<p>3. Foster public understanding and awareness of hazardous waste risks and management options by providing educational opportunities to participants in (and parties interested in) the hazardous waste management system.</p>	<p>A. Conduct surveys of generators and the general public to reveal their current level of understanding on management methods, hazardous waste generation and management risks, and specific concerns with hazardous waste generation and management to target educational efforts.</p> <p>B. <i>Identify state procedures to encourage waste management according to state's waste management hierarchy.</i></p> <p>C. <i>Produce plan report (or regular update) for distribution to the general public.</i></p>
<p>4. Address difficulties in implementing hazardous waste management programs by improving the effectiveness and efficiency of siting and permitting activities, maintaining and improving staff training, and identifying and collecting the right type of data.</p>	<p>A. Examine current efficiency and effectiveness of hazardous waste management programs overall to improve program implementation.</p> <p>B. <i>Examine siting and permitting procedures.</i></p> <p>C. <i>Review hazardous waste activity reporting in light of state data needs and in-state business activity.</i></p>

Table 4: Hazardous Waste Management Plan Objectives and Related Plan Activities

PLAN OBJECTIVES	PLAN ACTIVITIES
<p>5. Increase and maintain compliance by improving education to generators (especially small quantity generators), better targeting enforcement resources, and providing more effective and timely response to new federal requirements.</p>	<p>A. Examine current structure of compliance efforts.</p> <p>B. Survey generators to determine level of understanding of hazardous waste generation and management regulations.</p> <p>C. Examine process for analyzing and responding to new federal requirements.</p>
<p>6. Promote hazardous waste regulatory and management systems that better balance environmental and economic needs by streamlining regulations where possible, encouraging waste minimization, and assisting generators to understand new regulations.</p>	<p>A. Examine the regulatory framework and policies that affect key waste streams to identify mixed incentives and potential redundancy.</p> <p>B. Examine opportunities for increased waste minimization.</p> <p>C. Examine opportunities for providing technical assistance to generators for understanding and complying with new regulations.</p>

Table 5: Summary Comparison of Comprehensive, State Capacity, and Capacity Assurance Hazardous Waste Management Planning

PLAN ACTIVITIES	COMPREHENSIVE	STATE CAPACITY	CAPACITY ASSURANCE
1. MANAGEMENT ACCORDING TO THE HIERARCHY			
A. <i>Investigate the highest priority, technically feasible management options for hazardous waste streams to examine the potential for shifting to a more preferred management method.</i>	Yes	Yes	No
B. Examine the economic and regulatory barriers to achieving the high priority management methods.	Yes	Potentially (1)	No
C. <i>Identify state procedures to encourage waste management according to the waste management hierarchy.</i>	Yes	Yes	No (2)
2. ASSURE ACCESS TO HAZARDOUS WASTE MANAGEMENT CAPACITY			
A. <i>Examine total waste generation by type and volume for all wastes placing demand on permitted hazardous waste management capacity.</i>	Yes	Yes	Partially (3)
B. Examine wastes of particular concern to the state (e.g., waste oils, household hazardous wastes, exempt wastewaters).	Yes	Potentially	No
C. Examine number, type, size, and geographic distribution of in-state hazardous waste generators and managers.	Yes	Potentially	No
D. <i>Determine disposition of waste (management methods, location of managing facilities, and type of managing facilities).</i>	Yes	Yes	Yes
E. <i>Identify, locate, and assess life expectancy of hazardous waste treatment, storage, disposal, and recycling facilities in the state.</i>	Yes	Yes	Yes
F. <i>Project probable future hazardous waste generation and management, incorporating expectations for economic change, waste minimization, regulatory change, and remediation wastes.</i>	Yes	Yes	Yes
G. <i>Project preferred future hazardous waste generation and management in accordance with the waste management hierarchy.</i>	Yes	Yes	No

- (1) All "Potentially" designations indicate that, in certain instances, states undertaking capacity planning did incorporate these activities into their efforts.
- (2) As currently proposed, the 1993 CAP process will partially address this activity for capacity shortfalls.
- (3) This designation reflects the fact that CAP examined only a subset of wastes placing demand on permitted hazardous waste management capacity.

Table 5: Summary Comparison of Comprehensive, State Capacity, and Capacity Assurance Hazardous Waste Management Planning

PLAN ACTIVITIES	COMPREHENSIVE	STATE CAPACITY	CAPACITY ASSURANCE
H. <i>Determine the shortfall between in-state hazardous waste management capacity demand and supply on the basis of preferred future projections.</i>	Yes	Yes	Partially (4)
I. Conduct economic viability analysis of identified state hazardous waste management capacity shortfalls.	Yes	Potentially	No
3. CONDUCT PUBLIC EDUCATION			
A. Conduct surveys of generators and the general public to reveal their current level of understanding on management methods, hazardous waste generation and management risks, and specific concerns with hazardous waste generation and management to target educational efforts.	Yes	Potentially	No
B. <i>Investigate opportunities to educate generators on waste minimization.</i>	Yes	Yes	No (5)
C. <i>Produce plan report (or regular update) for distribution to the general public.</i>	Yes	Yes	Yes
4. IMPROVE HAZARDOUS WASTE PROGRAM IMPLEMENTATION			
A. Examine current efficiency and effectiveness of hazardous waste management programs overall to improve program implementation.	Yes	No	No
B. <i>Examine siting and permitting procedures.</i>	Yes	Yes	No
C. <i>Review hazardous waste activity reporting in light of state data needs and in-state business activity.</i>	Yes	Yes	No

(4) This designation reflects the fact that CAP did incorporate reductions in demand due to waste minimization but did not include the notion of a preferred future nor analysis on how to achieve improved management.

(5) As currently proposed, the 1993 CAP process will partially address this activity for capacity shortfalls.

Table 5: Summary Comparison of Comprehensive, State Capacity, and Capacity Assurance Hazardous Waste Management Planning

PLAN ACTIVITIES	COMPREHENSIVE	STATE CAPACITY	CAPACITY ASSURANCE
<p>5. PROMOTE COMPLIANCE WITH HAZARDOUS WASTE REGULATIONS</p> <p>A. Examine current structure of compliance efforts.</p> <p>B. Survey generators to determine level of understanding of hazardous waste generation and management regulations.</p> <p>C. Examine process for examining and responding to new federal requirements.</p>	<p>Yes</p> <p>Yes</p> <p>Yes</p>	<p>No</p> <p>No</p> <p>No</p>	<p>No</p> <p>No</p> <p>No</p>
<p>6. BALANCE ENVIRONMENTAL AND ECONOMIC CONSIDERATIONS</p> <p>A. Examine the regulatory framework and policies that affect key waste streams to identify mixed incentives and potential redundancy.</p> <p>B. Examine opportunities for increased waste minimization.</p> <p>C. Examine opportunities for providing technical assistance to generators for understanding and complying with new regulations.</p>	<p>Yes</p> <p>Yes</p> <p>Yes</p>	<p>No</p> <p>Potentially</p> <p>Potentially</p>	<p>No</p> <p>Partially (6)</p> <p>No</p>

(6) This designation reflects the fact that CAP did incorporate reductions in demand due to waste minimization but did not include the notion of a preferred future nor analysis on how to achieve improved management. As currently proposed, the 1993 CAP process will partially address this activity for capacity shortfalls.

The state capacity planning process addresses, in whole or in part, the first four general planning objectives: management according to the hierarchy; assessing access to hazardous waste management capacity; promoting public education; and improving hazardous waste program implementation. The "Potentially" designation which appears in association with certain activities indicates that, in certain circumstances, states may be interested in undertaking such activities, although the activities are not necessary components of this planning process. Finally, the program implementation aspects of state capacity planning, as indicated in Table 5, strictly focus on improving siting and permitting processes and improving hazardous waste data collection and management activities.

The final column of Table 5 addresses the Congressionally mandated CAP process. Congress mandated this process as part of its reauthorization of CERCLA in 1986. In the reauthorization, Congress requires each state to provide "adequate assurance" that treatment and disposal capacity will be available for the hazardous wastes generated within the state during the twenty year period following the date of the assurance. Congress also stipulated that, after October 17, 1989, EPA could not provide Superfund remedial action funds to a state unless the state had provided such an assurance.

Congress' original premise for mandating capacity assurance was the concern that states, due to political pressures and public opposition, have had difficulty permitting and constructing needed hazardous waste management capacity. This raised the specter that, over time, the capacity necessary to manage the hazardous waste generated in the United States safely would not be available. Congress believed that such a "capacity crisis" could lead to excessive hazardous waste management costs, improper or illegal hazardous waste management activities, and the potential creation of additional Superfund hazardous waste sites.

To aid states in assuring capacity, EPA published "Assurance of Hazardous Waste Capacity: Guidance to State Officials" in December 1988. This document recommended the activities EPA believed states should undertake to meet the "adequate assurance" provisions of CERCLA 104(c)(9). The centerpiece of this Guidance was EPA's recommendation that states prepare twenty year CAPs as a means for assuring adequate capacity.

In preparing their CAPs during 1989, states aggregated current and projected generation and management data. When a state identified any hazardous waste management capacity "shortfalls" (insufficient capacity), EPA specified three ways in which the state could assure capacity for the hazardous wastes generated within its borders. The state could: take steps to reduce or eliminate the quantities of waste generated (e.g., waste minimization); plan for permitting of needed hazardous waste management capacity; and/or enter into interstate or regional agreements to assure access to out-of-state hazardous waste management capacity.

The review of CAP activities provided in Table 5 is based on the activities EPA identified in its 1989 guidance document and the typical activities undertaken by states in meeting this requirement during 1989. The information in Table 5 indicates that 1989 CAP activities fully overlap with four "backbone" planning activities to:

- Determine the disposition of waste
- Identify, locate, and assess life expectancy of hazardous waste treatment, storage, disposal, and recycling facilities
- Project probable future hazardous waste generation and management and
- Produce a plan report for distribution to the general public.

Additionally, 1989 CAP activities partially overlap with two of the "backbone" planning activities and one additional activity. CAP "Partially" overlaps with activity 2.A. because it focused on large quantity generator wastes only; most state capacity planning efforts addressed all wastes placing demand on permitted hazardous waste management capacity. CAP also partially overlaps with activity 2.H. because it calculated shortfalls based on projections of the probable future rather than the preferred future. CAP partially overlaps with activity 6.B. because it encouraged, but did not require, states to examine opportunities for increased waste minimization for those waste streams creating hazardous waste management demand in excess of available state capacity. As Table 5 indicates, the 1989 CAP did not include any activities relating to the objectives of "Management according to the hierarchy," "Improve hazardous waste program implementation," and "Promote compliance with hazardous waste regulations."

The 1989 CAP, on the basis of the comparison portrayed in Table 5, shares some similarities with the comprehensive and state capacity planning processes. At the same time, fundamental differences also exist which limited the ability of the 1989 capacity assurance process to address fully the state hazardous waste management planning needs addressed by the other two processes.

The primary similarities between the 1989 CAP process and the comprehensive and state capacity planning models are the research and evaluation activities undertaken in preparing the baseyear and probable future needs assessments. These research activities are a fundamental aspect of all three planning processes, providing the basic hazardous waste generation and management data required to understand a state's hazardous waste management system, the state's relationship to interstate hazardous waste management markets, and potential future capacity shortfalls. These activities address an important and fundamental range of the hazardous waste management planning needs states have identified during the course of this project.

All of the formal planning states acknowledged this overlap between their planning efforts and capacity assurance, and two states, New York and Minnesota, indicated that there was sufficient overlap for them to use their capacity assurance plans as the basis for future state capacity planning efforts. The seven remaining formal planning states, however, indicated that they do not plan to use the CAP as part of their own planning efforts. The seven states identified four primary factors that currently limit their ability to incorporate the 1989 CAP process into their planning efforts: the potential loss of Superfund monies associated with CAP; the range of needs

addressed by CAP; the CAP structure imposed by EPA's 1989 guidance; and the means of assurance prescribed in CERCLA section 104(c)(9).

First, the requirement that states prepare a CAP to qualify for continued receipt of Superfund remedial action monies creates a difference between the overall objectives of the CAP process and the overall objectives of comprehensive and state capacity planning. When states prepare CAPs, they focus on maintaining access to Superfund remedial action funds. Certain states indicated that this objective tends to orient the entire planning process to present the most optimistic picture possible of hazardous waste management capacity supply and demand. Under comprehensive and state capacity planning, states appear considerably more inclined to examine a broader range of wastes which potentially place demand on permitted hazardous waste management capacity and to address (and publicly display) difficult issues. States that independently undertake capacity planning efforts also may not be inclined to use these plans as substitutes for CAPs, since the conclusions drawn in their own plans may make it more difficult to assure capacity within the framework of Section 104(c)(9).

Second, as Table 5 indicates, the 1989 CAP involved undertaking only a subset of the activities associated with comprehensive and state capacity planning. As a result, the 1989 CAP addressed a more limited set of needs than the other two planning processes. Probably the most important single difference between the 1989 CAP and the two models is the "promoting waste handling according to the waste management hierarchy" need. The comprehensive and state capacity planning processes are linked to a goal of promoting waste handling according to the waste management hierarchy. This goal underlies the "improved management" aspect of the overall objectives associated with comprehensive and state capacity planning practices, and leads, during the researching and evaluating stages of planning, to investigating the technical, economic, and regulatory feasibility of promoting preferred management methods. The 1989 CAP process, on the basis of CERCLA section 104(c)(9), did not contain this notion of improved management and, as a result, states did not include improved management feasibility analyses as a part of their CAP efforts.

Third, EPA guidance for the preparation of the 1989 CAPs prescribed which waste streams states should address and how states needed to present their data in CAP documents. States understand EPA's need for consistency to facilitate evaluating plans and preparing a national profile of capacity assurance. At the same time, states, in undertaking either comprehensive or capacity planning of their own, typically address a different universe of waste streams and aggregate data in line with specific plan objectives or recommendations. This represents a fundamental conflict between the data needs of a nationally-oriented agency and the needs of states facing unique circumstances.

Fourth, CERCLA section 104(c)(9) requires states to assure capacity for all hazardous wastes generated within their borders. In the event that states identify capacity shortfalls, the statute proscribes two means by which states can address them: site new in-state facilities or enter into an interstate/regional agreement for out-of-state management. EPA, in its guidance to states, encouraged states to reduce expected capacity demand by incorporating waste minimization

estimates into their calculations. However, CERCLA does not provide for states to examine the feasibility and/or desirability of undertaking these actions. Comprehensive and state capacity planning practices differ significantly in that states actively consider the technical, economic, and legal feasibility, as well as the overall desirability, of various options to address capacity shortfalls. States are particularly interested in evaluating the relationship of capacity shortfall volumes and the economic threshold volumes for waste management technologies. These analyses show up in a number of planning efforts. States noted that, given their limited ability to direct waste flows, any waste management services offered in the state must be price, quality, and service competitive. These types of feasibility analyses tend to result in states rejecting the notion that complete self sufficiency is desirable.

The four factors also point to important differences between the 1989 CAP process and either comprehensive hazardous waste management or state capacity planning processes. These factors pose a particularly difficult problem since, for the most part, they derive from the statutory language of Section 104(c)(9) or from EPA's need to obtain consistent data from all states to support preparing a national capacity profile.

EPA is currently developing written guidance for 1993 CAP preparation. In this guidance, EPA emphasizes that it does not intend for the CAP process to override or interfere with state requirements or efforts to plan for hazardous waste management or to provide for the management of wastes. Moreover, EPA encourages states to continually examine opportunities for improving the safety, efficiency, and effectiveness of existing management technologies, as well as adopting new technologies.

SECTION V: CONCLUSION

The states participating in this project identified a wide range of hazardous waste management needs. In general, states placed primary emphasis on needs relating to improving waste management (defined as promoting waste handling according to the waste management hierarchy), assessing access to hazardous waste management capacity, and conducting public education. The states' responses indicate that states tend to have a fairly similar "core" set of hazardous waste management planning needs, with most states then having a variety of unique needs driven by individual state circumstances. The core needs indicate a strong state focus on assessing access to hazardous waste management capacity while acknowledging the limits placed on state efforts by their inability to strictly control interstate waste flows.

A comparison of the state capacity and comprehensive planning models with the CAP process reveals both similarities and differences between the activities. The CAP process appears, on the basis of the information collected and reviewed during this project, to address a fundamental set of state hazardous waste management planning needs. This indicates that, for those states which have not or do not plan to initiate their own independent hazardous waste management planning processes, the capacity assurance process can provide useful information and insights. The process, however, remains hampered in its ability to act as or substitute for state comprehensive hazardous waste management or capacity planning efforts by certain aspects of the statutory language and by the tension between EPA's need for consistent data across all states and states' need to address individual circumstances. These limits point to the unique nature of the capacity assurance requirement and indicate that CAP is likely, at least in the near term, to play a limited role in independent state hazardous waste management planning efforts.

APPENDIX A: INTERVIEW QUESTIONS FOR OTHER PLANNING STATES

Section I: Identify future issues, needs, and priorities associated with state hazardous waste management planning

1. What do you expect will be the most important hazardous waste issues/concerns that state environmental agencies will face 5 to 10 years from now?
 - a. Would you say there is widespread agreement both on the need to address and the relative importance of these issues?
 - b. If not, what differences of opinion would you expect to hear?
2. How would you rank these issues in terms of their relative importance (e.g., which issue would you address first, second, etc.)?

* * * * *

Section II: Gain an understanding of the current state hazardous waste management planning issues, needs, and approaches

1. Currently, what are the most important hazardous waste issues/problems with which your state is concerned?
2. How does the state rank these issues/problems?
3. Do you think the states' current hazardous waste management priorities are appropriate and, if not, which issues would you drop (de-emphasize) and which issues (either new or existing) would you make a priority?

* * * * *

Section III: Obtain different perspectives on useful hazardous waste management planning models

1. Ideally, what functions should planning serve, what should it allow you to do?
2. Given the planning functions that we have discussed, how would you structure your approach to planning (e.g., what planning components would you include)?
3. What purposes do you think hazardous waste management planning should serve?

APPENDIX A

INTERVIEW QUESTIONS FOR OTHER PLANNING STATES

4. What capabilities do you think the state would need to engage in the type of hazardous waste management planning that you have described?

* * * * *

Section IV: Gain an understanding of CAP's ability to meet potential state hazardous waste management planning needs

1. How do you see the CAP requirement fitting in with the state's efforts to address current and future priority hazardous waste management issues?