

# Strategic Management in a Crisis-Oriented Environment

MICHAEL D. MEYER

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Strategic management is a concept that has been applied for many years in the private sector. Only recently have public-sector transportation agencies become interested in strategic management. In this paper the literature on strategic planning and strategic management is reviewed and a definition of strategic management is offered. A strategic management application in one state highway agency is examined. The results of this study are used to make observations about characteristics of successful strategic management. It is concluded that a strategic management process is an important managerial planning tool for dealing with a rapidly changing policy environment such as that facing transportation agencies.

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A basic tenet of effective organization management is that managers should play an important role in determining the strategic direction of their agency. Nowhere is this function more important than in state transportation agencies. For many years such agencies focused their resources on the design and construction of new facilities. Today, however, the environment of transportation is changing dramatically. Many transportation agencies are now more concerned with maintaining the existing system than with building new facilities. In addition, changes are being proposed in the federally aided highway and transit programs that could significantly affect the way transportation agencies do business. In addition, many transportation agencies will lose much of their professional staff to retirement during the next several years. These and other factors indicate a need for a systematic process for assessing the strategies available to an agency for dealing with future threats and opportunities, and for implementing the most effective strategies. Such a process is called strategic management. The purpose of this paper is to identify the key characteristics of a strategic management process and to examine the critical dimensions of implementing such a process in a public-sector organization. To accomplish this, the literature on strategic planning and strategic management is examined. Because strategic planning forms the basis for strategic management, some time is spent in the first section discussing the key characteristics of strategic planning. Then one strategic management application in a state highway agency is examined, and the results of this case study are used to draw conclusions on the substance and manner of implementing strategic management in public-sector transportation agencies.

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Bureau of Transportation Planning and Development, Massachusetts Department of Public Works, 10 Park Plaza, Room 4150, Transportation Building, Boston, Mass. 02116.

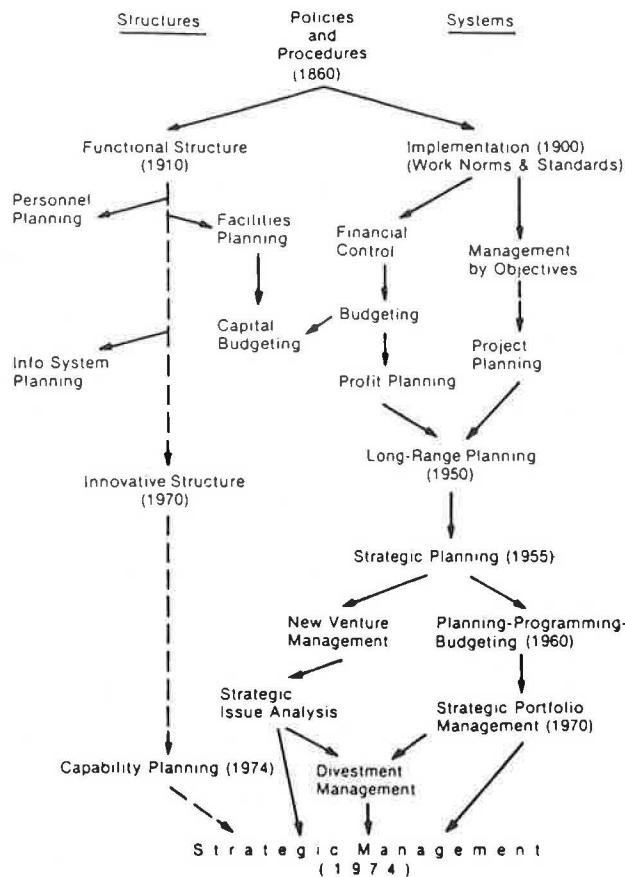
## PERSPECTIVES ON STRATEGIC PLANNING AND MANAGEMENT

Strategic planning and strategic management have been applied in the private sector for many years. Perhaps the best discussion of these concepts, and of how they relate to one another, is given by Ansoff (1). As shown in Figure 1, Ansoff places the first major adoption of corporate strategic planning in the United States during the late 1950s. Such planning was initiated to deal with uncertainty relating to foreign competition, decline of some major industries, rapid technological advances, and product diversification. It was not until the late 1970s, however, that the concept of strategic management first appeared. It was at this point that corporate managers realized that the planning of strategy and, more important, strategy implementation, could not be divorced from the planning and management of an organization's capability.

Throughout this period, the business and management literature was filled with technical articles on how to conduct strategic planning and how to manage strategically. Some important contributions were made by Anthony (2) who developed a framework for examining planning and control systems within an organization. Anthony defined strategic planning as the process of deciding on organizational objectives; on changes in these objectives; on the resources used to attain these objectives; and on the policies that are to govern the acquisition, use, and disposition of these resources.

Ackoff, in analyzing the concept of corporate planning, identified five major parts of a corporate plan and, hence, of the phases of a corporate planning process (3). These phases involve specification of objectives and goals, selection of policies and programs to achieve these objectives, determination of the resources needed to implement these actions, design of a decision-making framework to carry out the plan, and establishment of a monitoring mechanism to detect and prevent errors in plan implementation. The value of corporate planning to managers was also considered by Ackoff to lie more in their participation in the process than in their use of the resulting document.

As the concepts of corporate and strategic planning became of greater interest to many top managers, the literature on these topics expanded rapidly, with many authors providing different definitions of the concepts. Drucker (4), for example, viewed strategic planning as an entrepreneurial skill and as a continuous process of making present decisions with an awareness of future opportunities and consequences. Andrews (5) similarly viewed strategic planning as establishing the pattern of major



**FIGURE 1** History of strategic planning and strategic management.

objectives, purposes, or goals and identifying the policies and plans for achieving these goals. His framework included an assessment of opportunities in the firm's environment; the integration of these opportunities with the technical, financial, managerial, and personnel resources of the organization; and a consideration of this integration with agency mandates and goals.

Perhaps the most thoughtful examination of strategic planning was conducted by Steiner (6). Acknowledging that the field of inquiry had been flooded with different definitions of strategic planning, Steiner noted that strategic planning should be approached from four points of view.

First, planning by definition deals with the futurity of current decisions. Strategic planning is thus "the systematic identification of opportunities and threats that lie in the future, which in combination with other relevant data provide a basis for a company's making better current decisions to exploit the opportunities and to avoid the threats."

Second, strategic planning is a systematic, continuous process of setting and validating organizational goals, defining strategies and programs to achieve these goals, and developing detailed plans to implement strategic decisions. Three of the major outputs of a strategic planning process are (a) a statement of organizational goals and objectives, (b) a plan that outlines the evolution of the agency over specific time periods, and (c) work programs (usually at division levels) that establish the direction for organizational work units and act as a means of monitoring progress toward desired agency performance.

Third, strategic planning is as much an organizational philosophy as it is a planning process. Top management must place importance on the activities associated with strategic planning and on the results of the process. Members of the organization must view strategic planning as an effort worth undertaking.

Finally, strategic planning provides an important link among operations plans, medium-range programs, and budgets. This link is critical in coordinating the many organizational activities that can play an influential role in helping top management achieve strategic objectives. An effective coordination effort also provide credibility to the strategic planning process.

Even as these and other authors argued the merits of strategic planning, others began questioning the effectiveness of the strategic planning process. Ansoff et al. (7) argued that strategic managerial issues were too complex to be handled by strategic planning. Others challenged the basic assumptions of strategic planning and argued that a more broad-based approach was needed to address strategic organizational issues (8-10). A major criticism of strategic planning was that it did not often have a close relationship with the actual implementation of the options defined in the strategic planning process; that is, making decisions about changes in organizational structure, allocation of personnel and budget, and monitoring the effectiveness of strategy implementation. The link between strategic planning and strategy implementation resulted in the process called strategic management.

The foregoing discussion provides a brief description of how strategic planning and strategic management have evolved in the private sector. Application of these concepts in the public sector, and specifically in transportation, has been a matter of adapting, where possible, approaches and techniques from the private sector. This application, however, has not occurred without debate about its usefulness in the public-sector environment. Steiner argued that public-sector application of strategic planning was limited to certain types of policy issues because of the political nature of that environment (6). Rondonelli (11) similarly argued that public-sector planning involves political conflict and resolution, often with no clearly defined criteria for evaluation of alternatives. Thus, he concluded that the more structured corporate-sector planning process cannot be applied directly to the public sector. Others, however, have concluded that there are sufficient similarities between the two sectors to make it possible to use strategic planning with some success in the public sector (12-16). A recent review of public-sector strategic planning concluded that, although its use is relatively new, experience to date has indicated that public-sector managers can derive benefits from such a process (17).

In the transportation sector, strategic planning and management have only recently received serious attention. A 1983 review of strategic planning in transportation agencies found that some form of strategic planning existed in several Canadian agencies and in a few state transportation and port authority organizations in the United States (18). Given the rapidly changing environment of transportation agencies, this review concluded that strategic planning would be a valuable tool for transportation managers. Indeed, much of the interest in strategic planning in the early 1980s was found in public

transit agencies that were facing major uncertainty because of potential future cutbacks in federal funding. Several authors noted the importance of a strategic planning process for addressing this uncertainty (19–21). Overall, however, the literature on strategic planning and management in transportation has been sparse.

In summary, private-sector applications of strategic planning and strategic management concepts have far outnumbered those found in the public sector. Even so, there has been a growing interest in the transportation sector in applying these concepts to better anticipate the problems and opportunities of a rapidly changing world. Although some authors have argued that there are substantial differences between public- and private-sector applications, there is growing evidence that a strategic management process is a useful tool for transportation managers to employ in dealing with a rapidly changing policy environment.

For the purposes of this paper, strategic management will be defined simply as the process by which managers understand organizational goals, examine the future threats to and opportunities for an organization, identify strategies for dealing with these threats and opportunities, change organizational capability to implement these strategies, and continually monitor the entire process to provide managerial direction and support for accomplishing the strategic management objectives. This definition will be used in the following case study to illustrate the implementation of strategic management in one state highway agency.

### STRATEGIC MANAGEMENT IN A STATE HIGHWAY AGENCY: A CASE STUDY

The Massachusetts Department of Public Works (DPW) is the agency responsible for the planning, design, construction, and maintenance of the state highway system in Massachusetts. For many years, the DPW used its strong professional capability to design and build this system. However, by the late 1960s and early 1970s, the department was embroiled in numerous conflicts over the future direction of the state highway program. In the Boston area, for example, a multiyear study of transportation issues resulted in a gubernatorial moratorium on most major highway construction.

By the late 1970s, it had become clear to top DPW management that significant changes were likely to face the DPW in the coming years. A meeting of 37 top managers held in 1978 to discuss the problems facing the DPW identified some of the key issues facing the agency at that time:

- There will be a smaller number of “big-build” Interstate-type projects in the future,
- Maintenance of the highway system will become of increasing concern,
- The state aid program to local communities will become less important because of insufficient resources to administer the program,
- Coordination with other agencies will become more important because of environmental and intermodal coordination issues, and

- Federal and state initiatives on affirmative action and minority enterprises will require increased attention on the part of DPW managers.

Before top management could address these problems, a new governor was elected and several top managers were replaced. Four years later, however, a review of the DPW by the FHWA indicated that the problems had become worse during the intervening 4 years. The FHWA predicted that, in its then current condition, the DPW would not survive for more than 2 years. This prediction was based on several factors. In 1980, the DPW had nearly 4,000 employees. By 1982 this number had been reduced to 2,900 with approximately 1,000 of these receiving demotions. This staff reduction, caused by budget cutbacks resulting from a referendum on tax limitations, created a serious morale problem in the DPW. The average age of DPW employees had also increased to 57 years because those fired were most often the youngest. In addition, the number of construction projects advertised had reached a modern era low in 1982.

When a new governor was elected in 1982, he faced a serious problem in rebuilding the DPW. The new top management looked at ways to structure this rebuilding effort and began a strategic management effort that had several successes and some failures. These successes and failures will be examined in the rest of this case study.

For purposes of presentation, the analysis of the DPW's strategic management effort will be divided into the strategic management components defined in the last section.

#### Understanding Organizational Goals

The first task in the strategic management effort was to better understand the organizational goals of the DPW. The top 20 managers were asked to define these goals on paper. Much to the surprise of this group, there were clear differences of opinion on what these goals were. The engineers who had been in the DPW for many years focused the goals on the engineering, construction, and maintenance of the state highway system. The new managers, some nonengineers, defined the goals more broadly and related them to the DPW's role in the entire transportation system. After numerous discussions, the head of the agency drafted a mission statement that served as the basis for the mission statement that was eventually adopted:

- To allow and promote the mobility of people and goods in Massachusetts through the sound development, efficient operation, and reliable maintenance of a safe and attractive highway system and through coordination of that system with other transportation agencies to form a coherent public transportation network for all users;
- To administer highway capital programs so that transportation goals are met to promote economic welfare, with maximum benefit to the physical and social environments; and
- To assist local governments in improving their highway networks in both urban and rural areas.

**Examining Future Threats and Opportunities**

The next task in strategic management is to examine future threats and opportunities, in actuality the strategic planning component of strategic management. Although this task is critical for establishing the strategic agenda of top management, there is little consensus in the literature on how such a task should be accomplished. The “environmental analysis” or “environmental scanning” procedure used in private-sector applications has employed techniques ranging from the Delphi method to economic input-output models (22). Such a level of sophistication, however, was considered unnecessary for the DPW effort.

The top 20 managers were asked to identify the critical problems that would face the DPW in the next 5 years. More than 30 different problem statements were received and categorized in six major areas: project selection and development, organizational structure, personnel, funding, maintenance and bridge rehabilitation, and public image. A matrix was then formed with these six issues as rows and four questions as columns (Figure 2). The four questions were

- Are there future threats that will exacerbate this problem?
- Are there future opportunities that could expedite solution of the problem?
- What actions are currently being undertaken?
- What actions should be undertaken?

The last column in the matrix, once filled in, would thus serve as the strategic planning agenda for top management.

Over a period of 2 months the strategic management committee met several times to complete the matrix shown in Figure 2. Examples of the way two issues were defined follow.

**1. Issue 1: Project selection and development**

**Future threats**

- There are too many projects in the pipeline given limited funds.
- The Southeast Expressway and Central Artery projects will consume much of the department’s resources. The department might not be able to support other projects.
- The passage of new legislation will likely raise expectations of department project delivery and might even require that commitments be made to assure passage.
- Political pressures will be brought on the department to deliver.

- Continuing economic development pressures will require some action by the department to provided needed infrastructure.
- If the legislature creates an independent infrastructure finance bank, this could promote uncoordinated highway project development and could even cause the department to lose some discretion in highway decisions.
- The organization of the department, if it remains the same, will not provide for effective project development.

**Future opportunities**

- New legislation will provide added money and personnel to rebuild the department project implementation capability.
- The trade-in of Interstate projects will provide additional funds for projects.
- The passage of time will see a steady deterioration of the highway system. This deterioration could create a useful justification for added funds.
- Political influence could be orchestrated to promote additional funding.

**Current actions**

- The Interstate substitution transfer.
- Bond legislation.
- The development of an infrastructure slide show.

**Future actions**

- Determine viable criteria for the selection of projects and stick to them.
- Develop a strategy to educate the public and legislature about the project development process; that is, clearly define the process.
- Develop a realistic 5-year program and a process to examine 10-year needs.
- Upgrade project information system to allow on-line information on all of the department’s projects.
- Focus public attention on the bridge problem and on the department’s response.
- Develop a strategy for increasing funds in capital and operations budget, perhaps exploring alternative sources of dedicated funds.
- Conduct a study of the project selection and development process with explicit consideration given to the “batching” of projects at key decision points.

**2. Issue 6: Perception**

	Future Threats	Future Opportunities	Current Actions	Future Actions
Project Selection and Development				
Organization Structure				
Personnel				
Funding				
Maintenance and Bridge Rehab.				
Public Image				

**FIGURE 2** Strategic planning matrix.

#### Future threats

- Possible increase in infrastructure failures (e.g., bridge collapses).
- The Southeast Expressway reconstruction will create a terrible image of the DPW.
- An overcommitment of projects will clearly strain the DPW's credibility if it cannot deliver.
- Cutbacks in the state-aid program and the DPW's role could alarm cities and towns.

#### Future opportunities

- The move to the new building could be used to paint a new image of the DPW.
- Good publicity on the Southeast Expressway project could help the DPW image (although this will likely be a no-win situation).

#### Current actions

- Interface between local citizens and engineers.
- Major spring cleanup.
- Tourist information program.

#### Future actions

- Conduct a poll to determine DPW's image.
- Develop a media strategy to associate DPW with "public interest" topics.
- Conduct workshops in cities and towns.
- Devote considerable effort to planning mitigating actions for the reconstruction of the Southeast Expressway.

This strategic planning effort provided a systematic process for identifying key strategies that should be undertaken to prepare the DPW for the future. Several of these strategies were implemented. For example, considerable effort was spent on planning the mitigation plan for the reconstruction of a major Boston expressway. This effort, identified as both a threat and an opportunity in the matrix, resulted in substantial favorable publicity for the department and is widely considered to have enhanced its image. Other strategies were not implemented, however, mainly for one significant reason: the day-to-day demands on top managers required almost all of their attention. When decisions needed to be made on today's problems, there was little time to consider actions that would have an impact several years hence. And there was no direction from upper management that managers should, in effect, make the time.

Many of the strategic initiatives identified in this task were thus not implemented because of competing demands for managerial attention. This was not true for one of the most important issues, however.

### Changing Organizational Capability

Given limited resources and time, the head of the agency decided that an assessment of the DPW's organizational structure and of its capability to handle future work should receive priority. A consultant was hired to conduct an organizational analysis of the DPW and to recommend changes that were considered necessary. Because this analysis is really a key component of the DPW's strategic management effort, and because its results are being implemented (which will have significant impact on the DPW), some time will be spent here

discussing the key characteristics of the organizational assessment, which are shown in Figure 3.

Several of these tasks merit special attention. Because organizational structure and responsibility should reflect the mission and goals of an agency, it is extremely important to begin the assessment with a common understanding of mission, goals, and mandates. Thus, the first task shown in Figure 3 is critical for a successful assessment effort. The organizational analysis task serves as the basis for the entire assessment process. This task is often quite difficult because of the need to define the formal and informal lines of authority and communication. The formal organizational chart does not often reflect what actually occurs in an organization.

The implementation tasks are also a key ingredient to successful organizational change. Not only are recommended changes to the organizational structure important; the identification of equipment needs, human resources, and required changes to legislative and regulatory mandates are as well. Without these implementation tasks, managers might have a difficult time developing a set of specific steps needed to implement organizational changes. The assessment process shown in Figure 3 resulted in the identification of several organizational and staffing issues that needed to be addressed to prepare the DPW for the future. Example issues include

- Reducing the span of control of top managers,
- Strengthening the strategic planning process,
- Strengthening contract management and design functions,
- Revising out-of-date standard operating procedures,
- Increasing use of computer and word processing technology, and
  - Dealing with retirement of current staff (44 percent) over the next 5 years.

These issues were then used to develop specific organizational and staffing recommendations that, for the most part, have been adopted (23).

### Monitoring Strategy Implementation

The DPW has just begun to implement the recommended organizational changes. A top management committee has been formed to develop an overall strategy for this implementation and to monitor the effectiveness of these changes. It is thus too soon to judge the success or failure of this monitoring effort.

Although DPW experience with strategic management is still in its early stages, there has been sufficient exposure to the process to allow several conclusions to be drawn about what is needed for successful strategic management.

### STRATEGIC MANAGEMENT IN A TRANSPORTATION AGENCY: LESSONS LEARNED

Although the strategic management process described is related to one specific case, several observations can be made that relate to public-sector strategic management in general. These observations are offered as a reference for further research on the characteristics of successful strategic management in the public sector.

- o Review Mission, Goals, Legislative Mandates and Related Information
- o Interview Key Management Personnel
- o Oversee "Peer Review" of Similar Departments
- o Conduct Organizational Analysis
  - Review Current Organization Structure and Staffing Plan
  - Determine Responsibilities and Functions Performed by Each Organizational Element
  - Determine Formal and Informal Lines of Communication
  - Utilize Charting Techniques to Identify Problem Areas, such as:
    - Fragmentation of Functional Responsibility
    - Excessive Span of Control
    - Staffing Imbalances
- o Conduct Operations Analysis
  - Review Current Operational Procedures Relating to Maintenance and Construction Programs
  - Identify Opportunities to Improve Program Effectiveness and Efficiency through Improved Operational Practices
    - Maintenance Management
    - Inventory Management
    - Priority-Setting Methods
- o Perform Staffing Analysis
  - Review Recent Staffing Trends and Characteristics
  - Review Current Staffing Plan
  - Assess Current Staff Resources Relative to Current Program Needs
  - Assess Current Staff Resources Relative to Expected Program Needs
- o Develop Recommended Organizational Structure and Staffing Levels
- o Define Phased Organizational Changes to Implement Recommended Organizational Structures
  - Grouping of Department Functions by Organizational Units
  - Revised Lines of Communication
  - Assignment of Program Responsibilities
  - Identify Level of Staffing by Function and Organizational Unit
  - Determine Staffing Needs during Period of Transition
- o Oversee Equipment Needs Definition
  - Determine Information Needs
  - Develop Management Plan Elements
    - Maintenance Management
    - Equipment Management
    - Performance Monitoring and Evaluation
- o Prepare Human Resources Action Plan
  - Career Development
  - Training Programs
  - Recruitment Policies
- o Confirm Funding Assumptions and Requirements
  - Confirm Funding Requirements and Sources
  - Define Financial Management Issues
- o Identify Applicable Legislative and Regulatory Changes
  - Identify Necessary Amendments to Existing State Legislation
  - Identify New Legislative Authority
  - Identify New or Amended Administrative Regulations
- o Develop Master Implementation Schedule
  - Define Timetable for Transition to Recommended Organizational Structure
  - Identify Organizational Changes, Staffing Levels and Program Requirements Associated with Each Schedule Milestone

**FIGURE 3 Key tasks of organizational assessment.**

## Impact of the Organizational Environment

The DPW is primarily an implementing agency, with a strong organizational culture oriented toward short-term action. Because of this orientation, agency action (and thus managerial attention) is often heavily influenced by events that occur outside the agency. For example, a truck accident on a major highway can demand the attention of several managers for an entire day. Other examples of such events include public controversy over important projects, media attention to the agency or agency projects, communication from influential political leaders, and legislative initiatives that need to be guided through the political process.

Because transportation agencies have such an important impact on the efficient operation of the economy of a state or city, it is not surprising that the organizational environment puts pressure on agency managers to focus their attention on the short term. However, this creates a serious challenge to successful implementation of a strategic management process.

## Upper Management Commitment

Almost every book and article written on strategic planning and management observes that successful efforts require top management commitment to the process. The DPW case once again illustrates this observation. Because of the demands placed on managerial time, upper management must make it clear that assessing the strategic direction of an agency is an important task for managers, and that time must be found to accomplish this task. Without such direction, managers will focus their attention on those issues that confront them day to day.

## Process Flexibility

One of the major criticisms of strategic management in the private sector has been its rigid structure, often dictated by the demands of the analytical procedures used for strategic planning. Such a rigid structure can stifle the creativity that is necessary to undertake strategic management. In the DPW case, the managers themselves defined what the structure was to be and did not allow the process to overly influence the results. It is important to note that upper management did not delegate the strategic planning function to the staff. Strategic planning was done by the managers themselves.

## Strategy Implementation

Successful strategic management provides a strong link between planning and implementation. In the DPW case, this link was seen in the organizational assessment that resulted in recommendations for specific organizational changes. A continuous strategic management effort would not necessarily result in periodic changes to the organizational structure, unless they were warranted. Such an effort, however, should provide a strong link between the planning component and the resource allocation functions (i.e., budget and personnel) in an organization. If this link does not exist, the strategic management effort may not accomplish its objectives.

## Human Resources

Assessing an organization's capability includes an examination not only of organizational structure but also of the skills and characteristics of the staff. This has been one of the major issues left out of most strategic management efforts. For transportation agencies, many of which are facing large turn-overs in professional staff, the human resources issue could become a critical component of strategic management.

## Outside Help

Although agency managers must be the most active participants in strategic management, it is often worthwhile to bring in expertise from outside the organization to help with the process. In the DPW case, outside help provided an organizational analysis capability that was not available in the agency. It is important to note that the consultants who conducted the organizational assessment did so in strong coordination with top management officials of the DPW. The consultants acted as a catalyst in helping DPW managers think about how the agency should be organized.

## CONCLUSIONS

The Massachusetts DPW case illustrates how strategic management has been applied in one situation. Clearly, such an effort would be structured differently in other contexts, with varying degrees of manager participation and levels of analytical sophistication. However, the DPW case does suggest that, especially for an agency that has an implementation orientation, some form of strategic management is necessary to focus managerial attention on the organization's future.

Strategic management consists of four major steps: understanding the organization's goals, identifying key changes likely to occur in the organization's environment, assessing an organization's capability for dealing with these changes, and establishing an institutional mechanism for monitoring the strategic management process. In this definition, strategic management is not only a planning tool but also an important management function. Given the rapidly changing policy environment facing transportation agencies, a strategic management process is critical for focusing the attention of managers on the likely implications of these changes.

Strategic management would appear to be most effective when upper management is committed to the process and has so informed agency managers, when the process is sufficiently flexible to allow wide-ranging participation of agency managers, when the strategic planning component is clearly related to implementation strategies such as budget and personnel allocation, and when organizational capability is viewed from a human resources perspective as well as from a structural point of view.

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