

# Asset Management and City Government

**Ernie Wittwer, Jason Bittner, and Char Kasprzak**

Midwest Regional University Transportation Center

University of Wisconsin-Madison

1415 Engineering Drive

Madison, WI 53706-1691

wittwer@engr.wisc.edu, bittner@engr.wisc.edu

## ABSTRACT

Asset management is an emerging set of tools and skills that can help managers of transportation facilities make better maintenance and investment decisions. Since local governments own and operate 78 percent of the streets and roadways in the nation, most of the airports and most of the transit systems, some effort must be made to determine how local officials are progressing in the use of asset management.

To this end a telephone survey was conducted with 40 small- and medium-sized cities. Officials in these cities were asked about their practices in defining system performance goals; in planning and programming; in the collection, storage and use of data; in program implementation; and in program monitoring.

Cities reported the use of fairly advanced practices in the collection, storage, and analysis of data. They also use a wide range of contracting methods to secure the services of private contractors for many activities ranging from construction to data collection. They also generally have strong procedures for defining system performance objectives, using strategic planning and public involvement techniques.

On the side of concerns, many reported that their primary investment decision criteria was “worst-first,” which would suggest the good efforts in the collection and analysis of data and the work in strategic thinking may not be fully utilized. Similarly, on the “soft” side of organizational issues, ensuring that the entire organization works toward the same goals, many cities continue to have challenges.

**Key words: asset management—local government—strategic planning—transportation investment**

## INTRODUCTION

Asset management has been a major topic of discussion in the transportation community of the U.S. since the mid-1990s. A great deal of that discussion has been on states and what state departments of transportation could do to improve the management of state facilities, particularly state highways. What these discussions have sometimes missed is the huge role that local governments play in managing the transportation system of the country. Local governments own and operate 78 percent of the roadway miles in the country. They also own nearly all of the 5,300 public airports, and nearly all of the 6,000 public transit systems with more than 120,000 vehicles. Given the importance of local management in transportation, some attention to local adoption of asset management concepts is appropriate.

To gain a better understanding of the efforts of local governments, a telephone survey was done of a randomly selected sample of forty small- and medium-sized cities. Survey questions focused on the management practices used that are generally included under the broad heading of asset management. The overall conclusion of this survey is that cities are doing most of the things considered asset management: they are defining goals, inventorying and monitoring conditions, trying to bring together all parts of their organizations, and experimenting with innovative program delivery techniques. It is also clear from the survey that much confusion exists over the meaning of asset management and that no cities have put together all of the parts into a comprehensive asset management program. Like most states, cities are also struggling to define how to best proceed with managing their systems and improving their services.

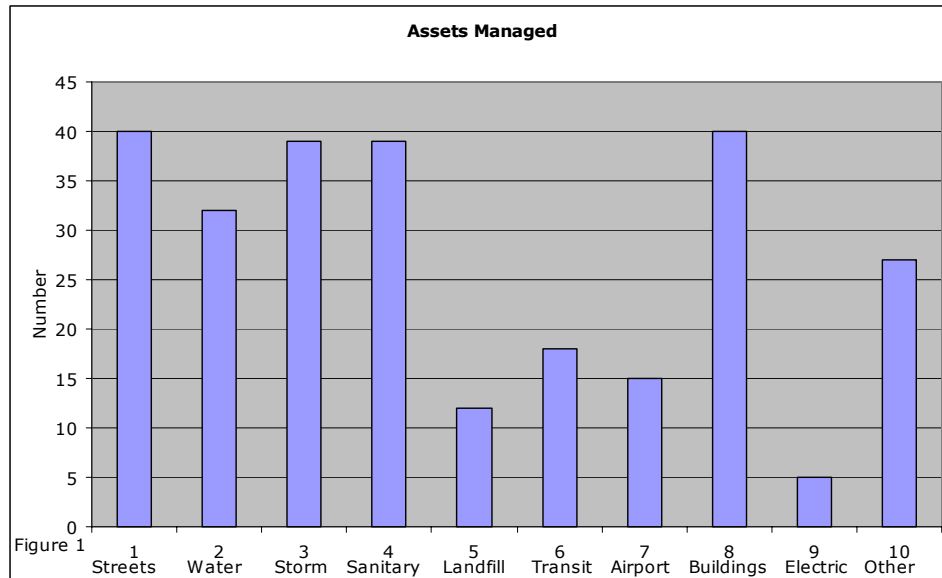
## WHAT IS ASSET MANAGEMENT

Since the survey used the term asset management in only one of twenty-five questions, it is important to understand how the authors defined the term as they structured the survey instrument. Following the model of the *National Cooperative Highway Research Program (NCHRP) Guide to Transportation Asset Management*, an asset management approach should have the following five components:

1. A strategic approach to defining the goals to guide the maintenance, operation and improvement of a transportation facility.
2. A planning and programming process that translates strategic goals into tangible actions that will result in the attainment of those goals.
3. An inventory, data and analytic system that measures the extent and condition of the facility, predicts the future condition of the facility, monitors progress toward defined goals, and supports the goal setting, planning and programming processes.
4. A program implementation process that maintains the strategic view of the facility, includes all relevant segments of the agency, and utilizes the most efficient and effective tools to implement programs.
5. A monitoring system that regularly measures the condition of the facilities, progress toward defined goals, predicts future conditions, and reports these findings to managers, professional staff and policy decision-makers.

Survey questions were designed to test each city's efforts in these five areas. Questions also allowed some assessment of how the cities defined asset management.

All the cities manage a wide range of asset types, as shown in Figure 1.



**FIGURE 1. Assets Managed**

When asked: Does your city have an asset management program? Thirty of the forty said that they did. Nine said they did not, and one was not sure. The activities of those who claimed to have an asset management program as compared to those who did not provides some insight into how the cities define asset management, although, given the size of the sample of those not claiming an asset management system (ten), the data should be used with some caution.

Those who claimed to have an asset management program were much more likely to look to non-transportation assets for their model. Ninety percent of those not using an asset management system chose streets as the asset to answer survey questions, as compared to only 55 percent of those claiming to have asset management systems.

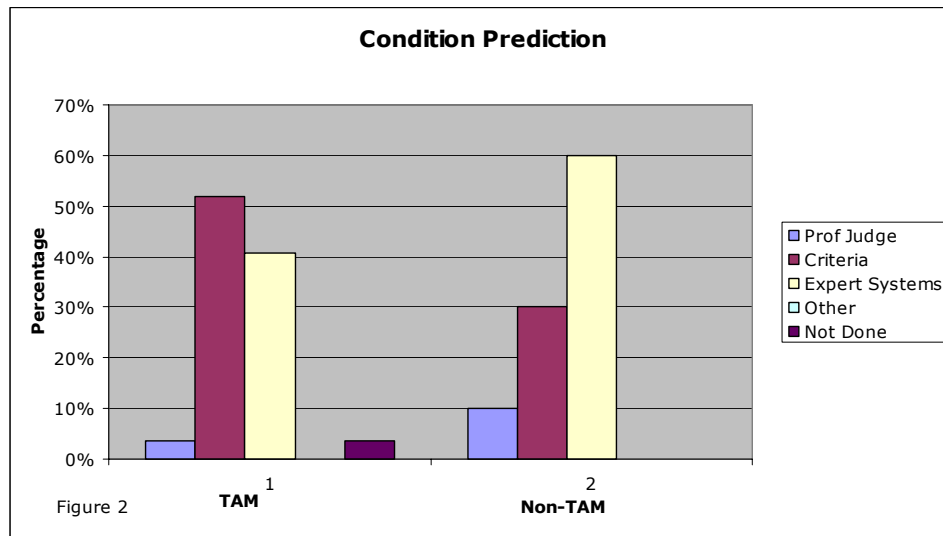
Automated data collection systems were more prevalent in those cities claiming to have asset management systems. Nearly 60 percent of the cities that claimed to have an asset management system reported that they used automated data collection. Only 30 percent of those without an asset management system used such methods.

Just as data collection tends to be more sophisticated among those claiming to have an asset management system, so do the data storage systems. Cities claiming to have an asset management program were much more likely to report having some sort of database system, as opposed to paper or simple desktop computer applications.

In keeping with the previous two data issues, the cities professing to have an asset management program were also more likely to use more sophisticated methods for evaluating the condition of their assets. They tended to be less reliant on professional judgment and more likely to use defined standards and various devices for evaluating the condition of their assets.

The responses to the question of how the future condition of the system is predicted are somewhat reversed. Those claiming to have an asset management system were less reliant on professional judgment,

more likely to use defined criteria, but less likely to claim the use of expert systems, as shown in Figure 2. One possible explanation for this apparent contradiction may be in the type of asset under review. Recall that those claiming to have asset management systems were more likely to select non-transportation assets for the detailed survey. Given the diversity of those assets, expert systems may not be as available as they are for highways, bridges or airports.



**FIGURE 2. Condition Prediction**

In all of those areas that might be considered “soft”: goal setting, implementation, and involvement of the entire agency, no significant difference was found between those who claimed to have an asset management system and those who said they had none. This tends to confirm the fear that cities tend to define asset management as data systems, or analytic systems, as opposed to management processes.

**SURVEY RESULTS**

The survey measured city activities in each of the areas outlined above. The results are provided in the following sections.

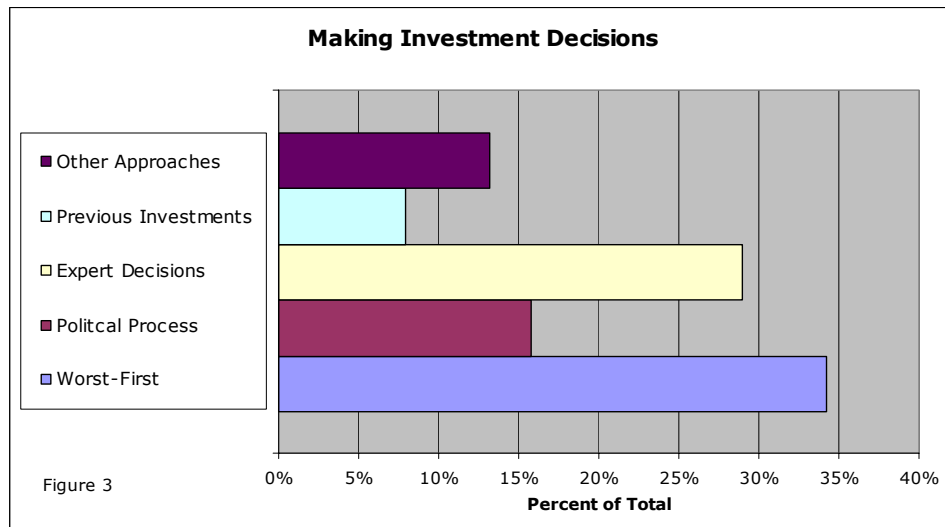
**Setting Goals, Planning, and Programming**

Performance goals for facilities are generally established through sophisticated processes. Thirty-seven of the forty cited the use of a strategic planning process. Thirty-four of forty said they used results of performance measures. Thirty cited the involvement of political processes. Twenty-four said they generally used a process that involved the public.

More than half, twenty-three of forty, revisit facility goals at least annually. While this seems impressive, only twenty-nine of the forty choose to answer this question, which suggests that many may have no defined schedule for refreshing system goals.

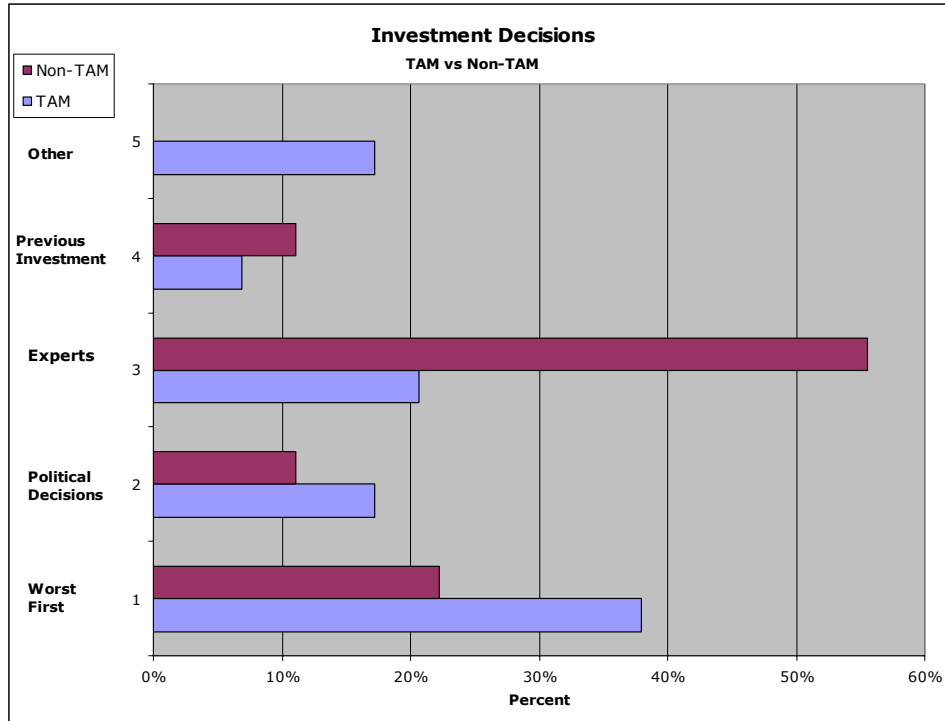
System goals and conditions are translated into specific long-term needs in three ways: (1) the application of professional judgment (39 of 40); (2) based on variance from defined standards (34 of 40); and (3) through a political process (30 of 40 responses).

Actual investment decisions are made based on several factors. The primary of these is worst-first (34 percent). The advocates for asset management will cringe at this finding, since it tends to undermine the entire notion of asset management and strategic decision-making. Figure 3 contains the full answer to the question: How would you describe the approach that is taken to invest funds?



**FIGURE 3. Making Investment Decisions**

Three variables noted in the survey might be thought to influence how decisions are made: (1) the degree of professional management in the city; (2) the type of planning agency involved with the city; and (3) The presence or lack of an asset management system. Of these, the third, the presence of an asset management system, seems to have the most significant impact, but not the impact expected. Those cities claiming to have an asset management system were more likely to make investment decisions based on a worst-first approach. They were also more likely to follow a political decision making process, as shown in Figure 4.



**FIGURE 4. Investment Decisions**

### **Inventory, Data Management and Analytic Systems**

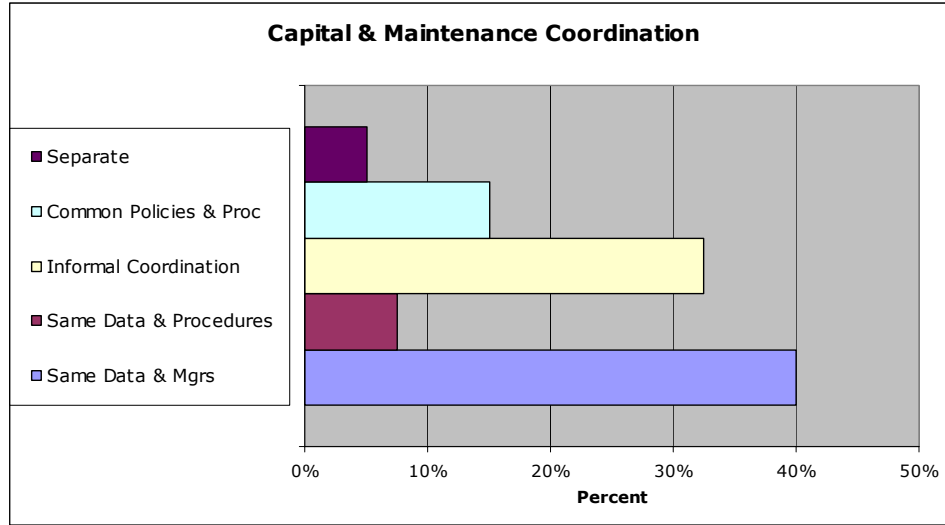
Inventory information is collected by all forty of the cities surveyed. Twenty reported using a manual process, and twenty, an automated process. Of those using an automated system, eighteen use laptop computers, or similar technology, twelve use digital or video photography, and eight use laser, or other sophisticated technology.

Data management systems vary significantly among the cities. Geographic information systems (GIS) are most commonly used, with twenty-three of forty reporting that they use them. Six cities use some other type of automated database. Five use desktop software, such a spreadsheets. Four still have paper files. And two had combinations of systems.

Predicting future facility conditions seems to be done somewhat more consistently. Half of the cities said they used an expert system. Nearly half, nineteen of forty, reported that they used professional judgment. All but two of those relying on judgment had some type of defined standards against which they assessed and predicted conditions. Only one said that no forecasts were made.

### **Implementation**

Carrying a strategic approach into program implementation seems to continue to be a challenge for cities. More than half of the cities rely on informal or no procedures to coordinate maintenance and capital programs, as shown in Figure 5.



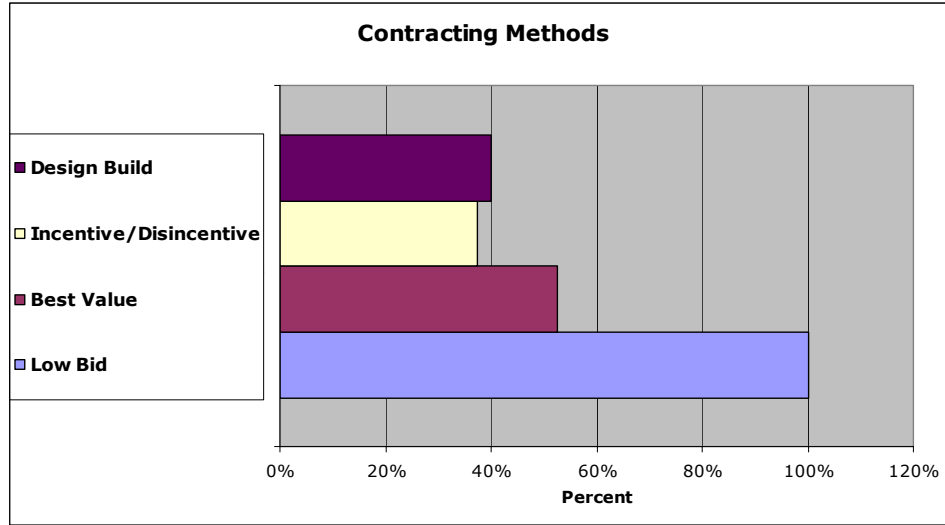
**FIGURE 5. Capital and Maintenance Coordination**

This separation continues in the implementation of investment programs. Seventeen cities say that the same people who develop programs implement them. Seventeen say there are different people in the two functions. Four report some of the same people in the two functions. And two do not know.

The private sector is involved in a number of ways in delivering the programs of cities. All use the private sector for construction. Nearly all use private providers of professional services. More than one-third said that private interests are used as program managers. And more than 60 percent use private firms for data collection.

Despite the wide and varied involvement of the private sector, more than a quarter of the cities said that the primary method used to deliver their programs was through public employees or arrangements with other municipalities.

The methods used to contract with the private sector also vary, perhaps reflecting experimentation, as shown in Figure 6.



**FIGURE 6. Contracting Methods**

### Program Monitoring

If the key to good program monitoring is good inventory information, the cities seem to be in fairly good shape. Ninety-five percent say that inventories are updated as needed or on a regular cycle.

Similarly, if the measure of program monitoring is the use of inventory information to evaluate condition, cities are doing well. All report that inventories are used in such a manner. Fifty percent say they monitor progress toward goals. Thirty five percent say they regularly evaluate current condition. And fifteen percent say they evaluate current condition on an irregular basis.

### Overall Assessment

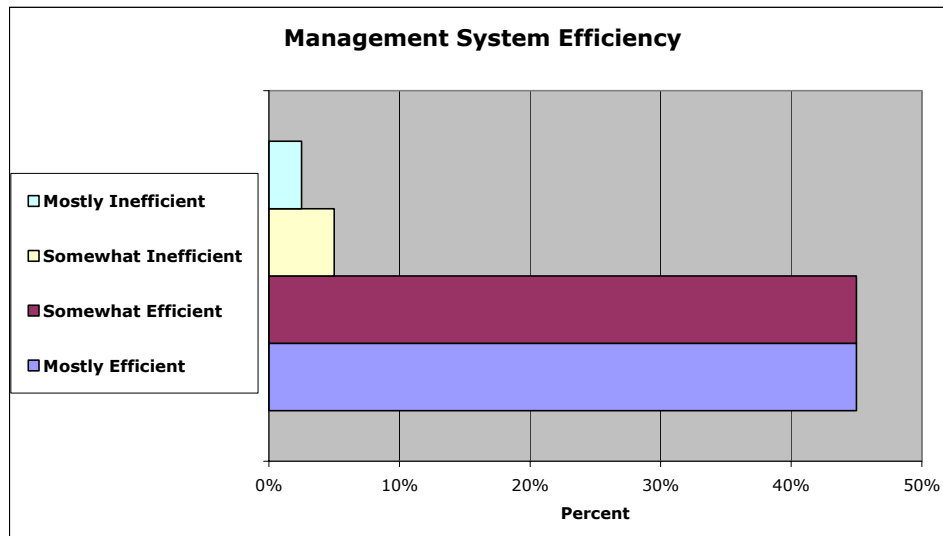
Based on the responses to questions about each of the areas of asset management, we can see something of a mix of successes and challenges. Successes include good approaches to defining strategic goals, good data systems and good use of data in evaluation and monitoring. On the side of challenges, strategic thinking may not be getting to the decision stage, as we see “worst-first” criteria still widely used and some weaknesses in the overall coordination of the agencies.

How city officials view their management processes seems to be more positive. Self-assessment questions provided insight in three areas:

First, if improvement strategy fitting the guidance of senior management is a measure of the success of the program, city officials feel they are doing well, with 80 percent saying that guidance is reflected very well or perfectly.

Second, only twenty-five of the forty said that they felt someone in their organization might want additional training on asset management. This suggests that fifteen are fairly content with their current levels of knowledge.

Finally, the cities were asked how efficiently their management systems work. Ninety percent of the respondents seem happy with the overall efficiency of their systems, as shown in Figure 7.



**FIGURE 7. Management System Efficiency**

## CONCLUSIONS

Several conclusions can be drawn from the above. Most suggest the need for significant work to make asset management techniques a reality for local governments.

- Cities have made progress in the use of sophisticated data collection, storage and analytic systems. They also use some very sound process, strategic planning and public involvement, to define system performance objectives.
- At a most basic level, confusion exists as to what asset management really is or ought to be. Too many city officials seem to equate it with automated data collection and storage systems. While data is critical to effective asset management, the softer issues of how the organization is brought together to use the information provided by data systems seems not to be emphasized in most cities. Informal or no tie between the people who build and the people who maintain the systems seems common. Similarly, informal arrangements between those who plan the investments on the system and those who actually construct them seem to be the norm. In at least one city, asset management must be equated to the Governmental Accounting Standards Board (GASB) Statement No. 34, *Basic Financial Statements and Management's Discussion and Analysis for State and Local Governments*, since the respondent said that it was something housed in the finance department.
- While cities use the private sector in many ways—construction, professional services, data collection, etc.—and many use a range of contracting procedures, from low bid to best value, more than a quarter said the primary method of program delivery was through public employees or contractual arrangements with other municipalities. This suggests that many may not be seriously trying to find the most efficient delivery methods available.
- Overall nearly 35 percent of respondents characterized their investment decision-making process as “worst-first.” Nearly 40 percent of those who said they had asset management systems claimed

“worst-first” as their decision-making process. This suggests that the strategic or systems approach to investment decision-making is not well understood or used.

- Ninety percent of the respondents characterized their asset management approach as either “mostly efficient” or “somewhat efficient.” In addition only twenty-five of forty said that they thought anyone in their organization would want training in asset management. These statistics suggest a degree of satisfaction that will make change very difficult.