January/February 2023 | Volume 27, No. 1

MICHIGAN PLANNER

APA MI
Michigan Chapter
American Planning Association

ASSET MANAGEMENT

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powerplant
by humberto moreno

Asset Management Planning
How to Implement Master Plan Goals

The construction, maintenance, or redevelopment of a community's capital improvements or assets have always been paramount to master plan implementation. The implementation section of most master plans are filled with projects. Of course, the actual implementing of those projects is often challenging and can take many years.

Planners are heavily involved in the community conversations about what types of projects or assets are wanted and needed. The Michigan Planning Enabling Act requirement that the planning commission develop an annual capital improvement plan helps to strengthen the connection between master plans and actual construction projects—bringing life to the master plan so it doesn't just sit on a shelf.

But once a project is constructed, the active management of those projects or assets are still largely left to engineers and finance directors. Scarce tax revenue and years of deferred maintenance have created a bit of a perfect storm when it comes to managing our community's assets. Engineers and finance directors do a good job figuring out the mechanics of how to keep things going, but they are generally not at the meetings when improvements are proposed or demanded.

Planners are uniquely trained to advocate and communicate the needs of the present while keeping an eye on the horizon. Acquiring a greater acumen on the overall price tag of wanted/needed projects is beneficial: in public meetings, realistic costs can be communicated when the projects are first being discussed; and at meetings with engineers and finance directors, knowing the overall cost allows planners to advocate for those projects with greater confidence.

Read on to learn more about this important topic.

Pipes
by Rick Kimpel

Nuts and Bolts of Asset Management

We wouldn't trust a banker that couldn't tell us how much money was in our account. We wouldn't buy a home without an understanding of what kind of maintenance was required and when (e.g., a new roof in the next 5 years). Yet across the country, taxpayers are asked to trust public officials who can't answer basic questions about what the public owns, and how much money will be required to keep it functional. Asset management is about equipping public officials with answers to these questions and enabling informed decision making.

All municipalities perform some form of asset management. Whenever a municipality replaces an asset or performs maintenance, they are practicing asset management. Every time a lawn is mowed, a watermain is repaired, and a road is plowed, the municipality is contributing toward an asset management goal.

Municipalities have been unable to build new or maintain existing infrastructure due to a lack of tax dollars. But another part of the infrastructure problem is due to "short-term thinking"--only thinking about the cost of construction of that new road – not the long term maintenance requirements of that same road. A Capital Improvement Plan accounts for the initial or replacement cost, but not the maintenance and/or operation of said improvement.

The municipality's mission should be the driving force for all asset-related decisions. However, mission statements are often lofty and qualitative. The Level of Service (LOS) statements/goals define HOW the municipality is going to achieve its mission. Each LOS goal should be supported by one or more quantitative Key Performance Indicators (KPIs). It is important that KPIs be quantitative because it is important that meeting LOS goals be defensible. See Sidebar on *The Measurable Road from Mission to KPI*.

If a municipality misses its goals, leadership wants to know, "in what ways?" and "by how much?". In most municipalities, work orders are the primary method of tracking what got done. In municipalities with a mature asset program, work orders are often tied to one or more KPIs.

TERMS

Asset management: the practice of managing infrastructure capital assets to minimize the total cost of owning and operating these assets while delivering the desired service levels.

Asset: An item, thing, or entity that has potential or actual value to an organization. Anything that has value. Assets can be almost anything from a logo or reputation to a buried sewer. Assets typically require inspection or maintenance and are typically expensive and critical to the success of the organization.

Level of Service (LOS): performance goal or objective; parameter(s) that define social, economic, or environmental success. LOS can be expressed in different ways; for example:

- Wastewater is treated to minimize risk to the environment or public health
- Water has no deleterious odor
- Good water pressure
- Reliable water, (no main breaks or boil water advisories)
- Water tastes good

Key Performance Indicator (KPI): a quantifiable measure used to evaluate the success of an organization in meeting objectives for performance. Examples of KPIs with regard to water could include:

- Number of Water Line Breaks
- Percentage of Capital Projects Completed on Time
- Amount of Non-Revenue Water
- System Age and Material

THE MEASURABLE ROAD FROM MISSION TO KPI

(with LOS in Between)

In this example, a municipality's mission statement includes the goal of "providing excellent customer service."

One of the level of service (LOS) objectives that embodies "excellent customer service" may be, "we will resolve customer issues promptly." For a telecom call center, that LOS may be supported by a key performance indicator (KPI) such as, "resolve 95% of calls to the customer service help line on first call without a transfer." For a wastewater utility, that LOS may be supported by a KPI such as, "initiate on-site investigation of all sewer back-up complaints within 90 minutes."

What data is necessary to determine if the KPIs are met? What tools or technology can capture that data? Continuing the example of the wastewater utility, a work order system that records when the call was received, the address of the back-up, and the arrival time of the field crew would enable the quick reporting on this KPI.

Consider how tracking information about the cost of the work order and the assets involved in this work order would improve decision making. Was the back-up caused by a clog in the sewer? Was that clog caused by root intrusion? Is this a common problem at this location? How much did it cost the municipality in labor, equipment, and materials to respond to and resolve this work order? Would a proactive root treatment program be more cost effective? If so, in what locations? Should the program include chemical or mechanical root treatment or both? Would it be more cost effective to line or replace the sewer than to perform root treatment?

Asset management cost projections are intended to inform the municipality leaders about what funds they should have available, not necessarily what funds they will use or what funds they actually have. For example, the asset management program may predict that a specific pump at a non-critical sanitary pump station will be at the end of its useful life next year. A proactive municipality will have the funds available to replace that pump when it breaks.

In the example above, the municipality should have already determined the cost-benefit of replacement vs refurbishment and the "benefit" should be measured as an overall reduction in risk score (not just lower overall cost of ownership). See Sidebar on Calculating Risk

Lead times for parts and equipment should be taken into consideration. In the example above, it is assumed that the pump or the parts necessary to refurbish the pump are on-hand or has a short lead time. Often, non-critical equipment becomes critical when it will be out of service for an extended period of time. "Maximum allowable time out of service" is often a parameter in a risk algorithm.

The benefits of having a robust asset management program include:

- Improved financial performance
- Informed asset investment decisions
- Managed risk
- Improved services and output
- Demonstrated social responsibility
- Demonstrated compliance
- Enhanced reputation
- Improved governmental sustainability
- Improved efficiency and effectiveness

Asset management often requires a change in the organization's culture as it moves from a reactive-mindset to a risk-reduction mindset. A team of champions from every level of the organization including planners can serve as catalysts for this change.

This article is an excerpt from MAP's Build Your Own Workshop's Asset Management presentation. That presentation was developed by **Adam Young, AICP** *and* **David Delia, PE** *of Wade Trim. The presentation goes into much greater detail on the topic of Asset Management. The upcoming Michigan Planner E-dition will have a link to the Build Your Own Workshop Series.*

CALCULATING RISK

Risk = Probability of Failure (POF) x Consequence of Failure (COF)

Probability of Failure Categories

- Physical condition
- Performance
- Operations & Maintenance history
- Obsolescence
- Redundancy

Consequence of Failure Categories

- Environmental
- Economic
- Social
- Regulatory compliance
- Safety
- Loss of Service
- Redundancy

Formulas for calculating POF and COF can be simple or complex and include weighted factors that reflect the municipality's values and mission. The use of algorithms and scores makes investment decisions more defensible. But getting the math right can be tricky. Municipalities that focus on POF tend to consider only the condition of the asset and/or run their assets to failure. Municipalities that focus on COF tend to over-maintain those assets that everyone knows are critical and miss the maintenance on assets that nobody realized were critical.

Typically, replacing an asset does not lower its COF score. The consequences of a new asset failing are usually the same as those of the old asset failing. (One exception would be the up-sizing of a watermain.)

It is possible to lower the POF with additional maintenance and inspections. A planned replacement typically has a lower COF than an unplanned failure. Therefore, for critical assets, monitoring equipment may be a good investment.