



APTA STANDARDS DEVELOPMENT PROGRAM
RECOMMENDED PRACTICE

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Creating a Transit Asset Management Program

Abstract: This *Recommended Practice* introduces asset management in the context of the U.S. transit industry and provides basic steps and resources for an agency to begin an asset management program.

Keywords: performance management, transit asset management, MAP-21

Summary: New Federal Transit Administration (FTA) requirements, increased stakeholder roles/responsibilities and funding uncertainties are just a few of the drivers for improving asset management within transit agencies. Improving an agency's processes and decision making tools will facilitate better management of assets throughout their lifecycles. Transit agencies may realize improved customer service, communications, and productivity; optimized resource allocation; and reduced costs.

Scope and purpose: The FTA's State of Good Repair grants and the recent enactment of Moving Ahead for Progress in the 21st Century (MAP-21) has put considerable focus on improving the U.S. transit industry's asset management activities. This document introduces asset management in the context of the U.S. transit industry and provides basic steps and resources for an agency to begin an asset management program.

This *Recommended Practice* represents a common viewpoint of those parties concerned with its provisions, namely, transit operating/planning agencies, manufacturers, consultants, engineers and general interest groups. The application of any standards, practices or guidelines contained herein is voluntary. In some cases, federal and/or state regulations govern portions of a transit system's operations. In those cases, the government regulations take precedence over this standard. APTA recognizes that for certain applications, the standards or practices, as implemented by individual transit agencies, may be either more or less restrictive than those given in this document.

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Creating a Transit Asset Management Program

1. Why improve transit asset management?

Transit asset management is a strategic and systematic process through which an organization procures, operates, maintains, rehabilitates, and replaces transit assets to manage their performance, risks, and costs over their lifecycle to provide safe, cost-effective, and reliable service to current and future customers.

Asset management addresses the following two concepts:

1. **Customer Level of Service** – Asset management can affect level of service by improving on-time performance and vehicle cleanliness, and by reducing missed trips, slow orders, and service and station shut-downs. It can also improve safety, security, and risk management. Asset management provides accountability and communicates performance and asset condition to customers.
2. **Lifecycle Management** – The core of asset management is understanding and minimizing the total cost of ownership of an asset while still maximizing its performance. Transit asset management integrates activities across departments and offices in a transit agency to optimize resource allocation by providing quality information and well-defined business objectives to support decision making within and between classes of assets.

1.1 Drivers for Improving Asset Management

The following list outlines the drivers for improving asset management within U.S. transit agencies:

- While still not finalized, the FTA released new requirements for transit agencies to follow related to asset management in Moving Ahead for Progress in the Twenty-First Century (MAP-21).
- Based on the 2010 National State of Good Repair (SGR) assessment, the FTA found that more than 40 percent of bus assets and 25 percent of rail transit assets are in marginal or poor condition. There is an estimated backlog of \$50 billion to \$80 billion in deferred maintenance and replacement needs for the top 40 transit agencies, of which the vast majority is rail-related.
- Transit investment has been heavily focused on expansion in recent years with 20 new light-, heavy- and commuter-rail lines since 2000.
- Investment decisions, including both capital and operations and maintenance (O&M) are traditionally based on limited data and have a short-term focus.
- Funding shortages/uncertainties have led to deferred maintenance.
- Agencies often lack integrated systems that support the strategic management of assets.
- Transit-agency customers, policy makers and public agencies are holding agency management accountable for performance and increasingly expect more business-like management practices.

1.2 Asset Management in Context

Asset management is an integral part of the business management of a transit agency – in fact, transit agencies manage their assets every day. In a highly performing transit agency, asset management is a core strategic

management process, along with risk management and performance management. These are agency-wide management processes that together support the accomplishment of the entire agency's goals and objectives. None of the processes can be entirely effective without the others (see **Error! Reference source not found.**).

FIGURE 1
Components of Agency Strategic Management



Asset management is most successful when it is integrated into an agency's existing management processes for establishing policy, strategy and business plans, as well as connected to the agency's performance management, capital request program and risk management processes. An agency's strategic plan is the starting point for developing asset management policy, strategy and business plans because the strategic plan provides the vision, mission and values of the organization, along with organizational goals, policies and strategies. To be most effective, transit asset management activities should be integrated into existing strategic, business and operational management processes.

1.3 Transit Asset Management Benefits

Through asset management, transit agencies can more effectively use available funds to improve the physical condition of their systems. This, in turn, has the potential to improve a system's performance, including on-time performance, mean distance between failures (MDBF) and reliability. **Table 1** highlights some of the benefits associated with improved asset management activities.

TABLE 1
Transit Asset Management Benefits

Transit Agency Business Benefits	Asset Management Approach
Improved customer service	<ul style="list-style-type: none"> • Improves on-time performance and service operations. • Improves vehicle and facility cleanliness. • Reduces missed trips, slow orders and station shutdowns. • Focuses investments around customer-centered goals and metrics.
Improved productivity and reduced costs	<ul style="list-style-type: none"> • Maintains assets more effectively, using condition-based approaches and using predictive and preventive maintenance strategies (where these can be employed) to reduce costs while improving service delivery.
Optimized resource allocation	<ul style="list-style-type: none"> • Better aligns spending with the agency’s goals and objectives to obtain the greatest return on investment (ROI) from limited funds. • Incorporates lifecycle cost, risk analysis and performance trade-offs into capital programming and operations maintenance budgeting.
Improved stakeholder communications	<ul style="list-style-type: none"> • Provides stakeholders with more accurate and timely customer-centered performance indicators. • Provides tools to communicate forecasted performance metrics (including level of service) based on different levels of funding.

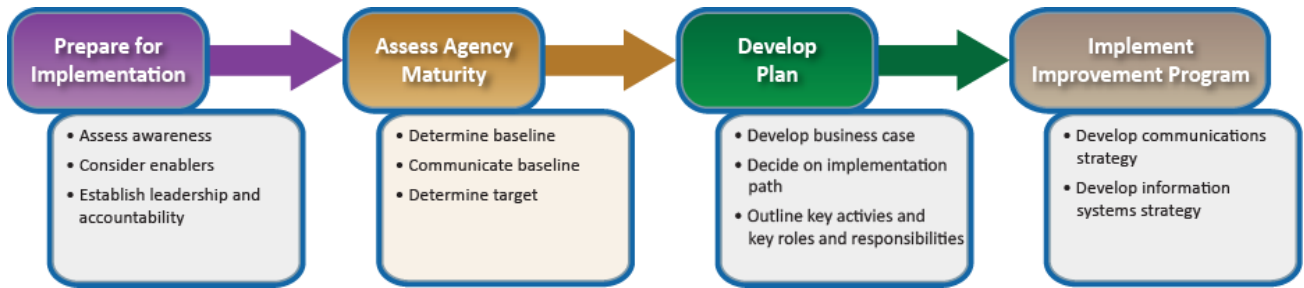
2. Getting started

The steps for implementing a transit asset management program include the following (**Figure 2**):

1. **Prepare for implementation:** The starting point for developing a transit asset management program requires identifying the level of awareness and understanding of asset management within the agency. The agency can establish a foundation for the TAM improvement program by establishing a leadership and accountability framework and considering enablers. Enablers are supportive processes and activities that form the foundation of a successful TAM program. They include leadership and accountability, training, communications, values and culture, project management, and continuous improvement. Good, accurate data on assets will establish a solid foundation for the program, which in turn will generate sound and timely investment decisions, prioritization and planning. The resulting effect is a state of good repair (SGR), improved reliability and predictable operation.
2. **Assess agency maturity.** An important next step is completing an appraisal of an agency’s current asset management maturity. This can help to establish the agency’s baseline and target. The FTA Transit Asset Management Manual, PAS 55 and the AASHTO Asset Management Guide all include self-assessment tools (see References).
3. **Develop a plan.** An asset management plan specifies the implementing actions for increasing asset management maturity. It outlines exactly how the agency will meet its target in the context of the agency’s awareness of asset management, readiness for change and ambitions for the asset management improvement program.
4. **Implement the improvement program.** With all foundational items in place, the TAM improvement program can be implemented. Key steps involved in the implementation include developing and implementing the communications and information systems strategies.

FIGURE 2

Asset Management Implementation Program Approach



3. Considerations for small agencies

A major consideration to take into account regarding the development of a Transit Asset Management (TAM) system in smaller agencies is the limited capital funding these agencies receives. For the most part, smaller agencies focus on bus operations, and the major assets that must be rehabilitated and replaced over time, which are buses, bus garages, and other fixed facilities. While buses are replaced on a more, frequent cycle and are less costly per unit to maintain than rail vehicles and infrastructure, smaller transit agencies have fewer options when faced with insufficient capital funds.

One of the consequences of limited funding includes less maintenance staff and replacement equipment, which in turn leads to a crisis-based approach for maintenance and operation of a transit system. As a result, the impact of important information such as operation duration and service quality, life cycle costs, environmental impacts, and safety requirements are not fully explored. Although a fixed asset inventory list may be in place, it may not always be up to date with the status of the existing assets.

There is no doubt that implementing an asset management system will provide many useful benefits to all agencies in the long term, but some small and rural agencies will struggle because of the budget shortages, lack of human and technology staffing and little to no training opportunities. While this is the case, it is still important for small agencies to maintain an inventory of their fleet and facilities, plan for and conduct preventive maintenance (as much as possible), and monitor their assets' condition to inform how and when investments are made.

4. Resources

See the References section for more information about these resources:

- The FTA “Transit Asset Management Manual” provides a transit agency-specific application of asset management concepts, processes and tools. The purpose is to support an agency’s drive to increase the maturity of its asset management practices and to provide tools and resources for agency managers and practitioners across the country. It also includes a transit agency-specific self-assessment tool.

- The FTA State of Good Repair Roundtable website provides a repository of presentations given by U.S. transit agency representatives describing their asset management activities, outcomes, and lessons learned.
- PAS 55 is the “publicly available specification” for the optimized management of physical assets published by the British Standards Institute.
- The “International Infrastructure Management Manual” is an asset management guide for the public works industry developed by the New Zealand Asset Management Support (NAMS) Group.
- ISO 55001—newly created in 2010—is the International Organization for Standardization (ISO)–approved project committee (PC251) to deliver an international asset management standard.
- The American Association of State Highway and Transportation Officials (AASHTO) provides a framework for addressing highway asset management. It includes two volumes of asset-management principles that provide implementation guidance for advancing the state of the U.S. highway industry’s asset management practices.

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Definitions

transit asset management: A strategic and systematic process through which an organization procures, operates, maintains, rehabilitates and replaces transit assets to manage their performance, risks and costs over their lifecycles to provide safe, cost-effective and reliable service to current and future customers.

Abbreviations and acronyms

AASHTO	American Association of State Highway and Transportation Officials
APTA	American Public Transportation Association
FTA	Federal Transit Administration
ISO	International Organization for Standardization
MAP-21	Moving Ahead for Progress in the Twenty-First Century
MDBF	mean distance between failures
NAMS	New Zealand Asset Management Support
O&M	operations and maintenance
PAS 55	the British Standards Institution's (BSI) Publicly Available Specification for the optimized management of physical assets
ROI	return on investment
SGR	state of good repair
TAM	transit asset management