2024 TAM Peer Working Group on
Condition Assessment

U.S. Department of Transportation
Federal Transit Administration

Overview

The Federal Transit Administration (FTA) Transit Asset Management (TAM) Program organizes peer program opportunities to support professional capacity building for transit agency staff. The peer working group brings together a small group of transit professionals to engage virtually on topics that go beyond the requirements in the TAM Rule (49 CFR 625).

The 2024 TAM Peer Working Group met monthly over the course of the year and focused on considerations for performing TAM condition assessments. Participants were transit agency staff who manage transit assets or otherwise contribute to fleet management planning and related practices. The goals of this working group were to:

1. Promote peer-to-peer education and collaboration around effective practices in performing TAM condition assessments;
2. Support transit agencies with understanding how condition assessments can support broader agency goals; and
3. Support agencies in aligning their TAM condition assessments with agency goals beyond traditional TAM planning.

This document highlights successes and challenges in performing TAM condition assessments as described by participants and summarizes perspectives shared during the facilitated discussion.

Introduction

Condition assessment data impacts multiple departments across an agency and can ultimately affect agency decision-making, so accurate evaluation and documentation of asset condition are crucial. Given the impact of this data, it is important to establish a consistent, repeatable process to establish high-quality data. Several strategies for developing and improving condition assessment processes and using that data to support agency actions were discussed in the Peer Working Group and are summarized in this document.

Key Takeaways/Summary of Discussion

1. Asset Assessment Criteria and Methodologies

Useful Life Benchmark

Evaluating vehicles based on federally established default Useful Life Benchmarks (ULBs), which use age as the measure, is a straightforward method of condition assessment; however, this may not always accurately reflect the actual condition or performance of assets. To better capture condition and performance, some agencies may choose to develop customized ULBs based on operational experience and specific asset performance data. When customizing ULBs, it is important to consider environmental, manufacturing, technological, and maintenance factors. When vehicles don't reach their ULB, agencies can investigate the underlying causes to further inform and estimate condition or performance of similar assets based on historical patterns.

Assessment/Rating Elements

Some agencies expressed the desire for increased guidance on the appropriate elements to consider when rating vehicles. They discussed methods used for assessing assets, with some agencies using multiple methods in conjunction with one another and/or using a scoring matrix to ensure consistency. Other assessment methods discussed were:

- **Condition-Based Assessments:** Conduct physical inspections and use condition ratings (e.g., good, fair, poor) to assess the asset's state.
- **Performance-Based Assessments**: Use metrics like reliability, speed, and maintenance costs to gauge asset performance. For example, on rail cars strain gauge tests can be performed to determine fatigue.
- **Criticality Scoring:** Weigh factors such as safety, service impact, cost, and redundancy to determine criticality.
- **Comprehensive Assessments:** Combine age, performance, condition data, and/or criticality in a matrix that reflects the priority goals for your organization.

Data Systems (Vehicles)

Agencies expressed challenges when there is no direct linkage between their asset information and maintenance information. Many of them are actively seeking ways to improve integration. One agency is currently developing an Enterprise Asset Management (EAM) system, which is used to track data related to asset inventory, inspection, and work performed. Transitioning data into an EAM and integrating the processes within an agency is a large undertaking that may be done in phases. One agency suggested that a potential approach would be to start with the finance system and then build out the other areas such as the maintenance module. They recommended aligning finance, budgeting, and maintenance systems where possible.

One issue noted regarding EAMs or other data systems is that there can be complications with external collaborators having access to agency databases. IT departments may oppose those external to the organization having such access. In some cases, condition assessment contractors may maintain their own database, which agencies can monitor for reference. This can affect the integration of data systems and hinders comprehensive data analysis.

Consistency

It is crucial to establish processes that are both consistent and repeatable in order to address the subjectivity of condition assessments. Inconsistent data is less impactful and less useful in decision-making. Uniform, reliable evaluations can be compared effectively over time, help achieve agency goals and support advanced (predictive) maintenance. Some examples of methods to improve consistency that were discussed are providing more guidance on the internal evaluation, recognizing that staff with different areas of specialty may have different viewpoints, and developing standard procedures or a how-to document. These approaches can help maintain uniformity in evaluations, ensuring that results are reliable, and can be compared effectively over time.

The discussion addressed the benefits and drawbacks of agencies providing previous year's condition ratings to those conducting new assessments. There may be a benefit for some staff, such as those who are inspecting infrastructure at an elemental level and those who may use the prior assessments to understand what information is expected. However, one potential concern was that providing previous scores may influence the new ratings. Given that there are differences between organizations and asset classes, asset managers can evaluate whether to provide this information for each assessment type independently. Another concern was that asset stakeholders might fear that poor condition ratings would reflect negatively on themselves. Organizations can work to communicate the importance of accurate ratings in order to reflect organizational needs.

Electric Buses

Agencies acknowledged that electric buses require different maintenance practices and have different reliability and performance patterns than traditional buses. Assessment criteria and processes may need to be adjusted to account for the unique needs of electric buses, such as charge time, battery life, and additional infrastructure. Despite this, some agencies have found that they are still able to apply the standard ULB for electric buses.

Since a lot of electric buses and charging infrastructure are new assets, much of the equipment may be under warranty. One agency is using the information about the assets during the warranty period to see what they can learn and apply moving forward.

Another agency shared their experience when looking at degradation of batteries. The agency is able to look at the output of the bus to assess the condition of the drivetrain since some manufacturers have struggled to provide an accurate assessment. This agency has experienced small parts failing and has been able to replace them throughout the entire lifecycle of the bus, as opposed to a diesel engine which may fail all at once.

2. Facility-Specific Assessment Criteria and Methodologies

Databases (Facilities)
Facilities data is sometimes maintained in a different system than rolling stock or infrastructure data, leading to data silos. This separation hinders collaboration and makes it hard to comprehensively view an agency's asset data. Effective processes for data exchange, transfer, analysis, and visualization are important time savers.

One agency shared information about their personalized facilities data management system which hosts inspection data for all structures and facilities maintained by the agency. This system allows for efficient tracking and analysis of inspection summaries through a dashboard powered by ESRI. The dashboard integrates GIS data and work orders to produce metrics which compare and analyze facilities data as well as highlight deficiencies. This allows for more comprehensive understanding of condition ratings. PowerAutomate is then utilized for tracking and communicating this data. Reviewing problem types and communication within work orders can provide detailed information and identify patterns of issues.

One system was described as having different work order types, ensuring information is communicated to the appropriate teams for action. Emergency deficiencies are relayed directly to the appropriate teams for immediate action. Agencies discussed their methods for transferring deficiency information, which varied between using the work order system and direct email. An appropriate response window is established for these types of requests and, at one agency, a photo of the completed repair is returned for documentation.

Equipment and Sub-equipment Organization
Organizing elements of facilities can be beneficial for tracking and maintenance. One agency organizes their systems in a nested hierarchy by site, building, floor/level, room, and piece of equipment. This way they are able to group and use their information in different ways to glean insights on equipment. The organization of data also helps inform TAM reports. When establishing the level of data to record, organizations should ensure they will be able to maintain that level of detail on a regular basis.

Frequency and Phasing

Agencies employ various methods and timing for performing their condition assessments. Some of the methods discussed include:

- Performing facility inspections in a three-year cycle to provide a buffer, as evaluations are required every four years.
- Performing semi-annual ratings of facilities, with a focus on those anticipated for investment. It is emphasized that ratings should reflect the organizational needs rather than an individual interest.
- Reviewing of inspection reports on an annual basis. This review can be done internally or with contractor support for a more formalized assessment.
- Requiring asset owners to perform condition assessment as a prerequisite for requesting grant funding and/or new resources.

Rating

For reporting purposes, agencies are required to use the TERM scale; however, many contractors use a facility condition index. These tools are different and present a challenge for agencies in this situation to bridge the data. One approach to address this issue is to use both a TERM and overall condition score.

3. Address Data Gaps and Gray Areas

No Previous Records

The absence of historical records makes it difficult to set targets. Agencies discussed strategies to estimate particular data points when information was not recorded during asset onboarding. To address this issue, agencies can implement a baseline assessment process to establish initial conditions for assets without records and use industry standards and manufacturer guidelines as starting points.

Expand Upon Data

Agencies can explore connections between data from various sources to enhance understanding and further inform decision-making. In other words, agencies can use data as a jumping off point to seek relationships between elements that can tell a story. For example, one agency noted that they supplement quantitative data with qualitative notes to provide additional context, such as observations from field inspections or reports on slow zones.

Condition inspections can generate a large amount of data. In order to determine what actions are necessary for each asset, agencies have to interpret the data. Different types of data speak to different owners. By analyzing condition data, agencies should be able to better understand and address asset needs. There were a few ways discussed to do this:

- State of Good Repair: Repair or replace existing assets and bring them up to code with modern requirements.
- Risk Mitigation: Where a risk has been identified and a project has been developed around addressing the risk. Mitigate risks to safety and reliability, including technical obsolescence.
- Call for Projects: Response to stakeholder request or notice of funding availability
- Enhancements, creation of new service, assets, or amenities (ex: prioritization of customer service investments)

Organization/Coordination

The lack of written procedures can be challenging and inefficient. To enhance operational efficiency, agencies can develop written procedures, create task lists, and streamline data repositories wherever possible. One potential tool to enhance clarity and coordination is a process map that outlines stakeholders and EAM roles and responsibilities. This map can be shared with operating groups and vetted by appropriate staff members. One agency emphasized the importance of succession planning and establishing processes for future staff members to ensure consistency when there is turnover.

One additional item discussed to improve coordination is grouping condition assessments with preventative maintenance actions. This can help streamline operations when an asset is already being worked on.

4. Supporting Agency Actions

TAM Plan Development and Flexibility

Agencies shared the helpful perspective to view the TAM plan as a living document that should evolve alongside new data, technologies, and operational insights. Periodic reviews and updates to the plan are important to maintain accurate information on asset conditions, organizational goals, and external factors (e.g., regulatory changes). Consistently incorporating changes helps to ensure that the TAM plan remains relevant and effective in guiding asset management strategies.

Creating a prioritized list of projects with assigned asset values can help outline what needs to be done and help to understand the magnitude of the needs. Project prioritization is a helpful tool to inform funding strategy. Agencies may also consider creating a list of projects that have a high criticality. How to rank criticality can be determined by an individual agency. One method discussed was using a formula which considered the number of deficiencies in an asset rated 1 and 2, where more deficiencies mean a higher criticality.

Integrate TAM with Capital Planning and Budget Requests

Agencies can use TAM to support work toward agency priority goals by aligning the TAM plan and TAM strategies with organizational objectives. Asset management efforts should align and reinforce the agency's mission and vision.

Condition assessment data can be used to support and justify important requests for assets during the budget process. To optimize the performance of TAM condition assessments, one agency recommended aligning the process with the capital planning cycle. When identifying assets in need of replacement or rehabilitation, agencies can incorporate these needs into the prioritization of capital projects.

Additionally, the onboarding of Capital Projects should inform the Asset Inventory. When new facilities are constructed or otherwise obtained, there are a number of items that should be added to the asset inventory in order to keep track of their condition and plan for future investment. One agency detailed their emphasis on this step in the process through the creation of an asset onboarding form and SOP.

There are times when Asset Management and Capital Planning might have conflicting priorities. For instance, revitalizing an aging system can be enormously expensive. Agency staff must work together to balance priorities between Capital Planning and TAM and to focus on what will advance their mission. These conversations can be difficult because saying yes to one project often means saying no to another.

Interdepartmental Engagement

Effective communication about the importance of TAM is essential for engaging other departments. Assets affect many departments and processes throughout an organization. Agencies can integrate TAM practices into the broader organizational framework by working to ensure that all departments are aligned in their efforts.

Having a TAM champion(s) at the executive staff level can greatly help to provide support and increase buy-in throughout the agency. TAM staff and leadership can foster collaboration and support by highlighting the value that TAM provides to all asset stakeholders. For example, good TAM practices contribute to improved safety outcomes, operational efficiency, and improved financial planning. One agency uses their Public Transportation Agency Safety Plan (PTASP) as a method to communicate asset management condition information to key stakeholders.

Conclusion

In summary, the peer working group participants were able to gather insights that highlight the importance of reliable condition assessments. Condition assessments provide data that informs important decision-making and contributes to effective asset management. Agencies can

enhance their evaluation and rating methods to ensure that condition assessments accurately reflect agency-specific patterns and unique local impacts. To make data more comprehensive, agencies can expand upon and organize current data to better inform their specific needs. By aligning TAM practices with organizational goals, making interdepartmental connections, and allowing TAM to influence planning, agencies can use TAM to support agency actions. Implementing continuous improvements will further enhance the effectiveness of an agency's asset management framework.

Related Resources

Discussion Forum Summary: TAM Considerations for Zero-Emission Bus Fleets

NTI Course: Enhancing your TAM Program with Lifecycle Management (Course Listings)

TAM Systems Handbook

TAM Facility Performance Measure Reporting Guidebook

FTA Transit Asset Management Guide

Asset Management Guide Supplement

APTA TAM Resources