

OM-09: Maintenance Management System

1-15 points

Goal: Leverage a Maintenance Management System (MMS) to inventory, assess, analyze, plan, program, implement, and monitor maintenance activities to effectively and efficiently extend the life of the system, improve the service, and reduce the impacts to the human and natural environment.



Affected Triple Bottom Line Principles

Sustainability Linkage

Utilizing an MMS supports all of the triple bottom line principles by facilitating efficient and cost-effective decision-making, better leveraging funds, improving system quality and customer satisfaction, and more effectively maintaining assets, which reduces cost and the environmental impacts of construction and raw material use.

Background and Scoring Requirements

Background

An MMS is a computerized database that is designed to integrate an agency's asset management and maintenance management systems to optimize the management of maintenance. The MMS provides managers with processes, tools, and data necessary to make decisions to help maintenance staff do their jobs more effectively and to help management make informed decisions.

This criterion is largely based on AASHTO's *Guidelines for Maintenance Management Systems*¹ (GMMS). The following definitions from the GMMS apply:

- **"Maintenance Management"** – refers to all the actions that managers undertake in their daily responsibilities of overseeing the maintenance program.
- **"Maintenance Management System"** – the set of tools, technologies, and processes that help the manager make better decisions and manage more effectively.

Scoring Requirements

Requirement OM-09.1

1 or 2 points. Incorporate Key Elements of MMS

The agency has an MMS that includes, at a minimum, modules for:

- **Planning**, including asset inventory, maintenance activity guidelines, customer input, performance targets, and condition assessment.
- **Programming and Budgeting**, including performance-based budget analysis, annual work program, and annual budget.
- **Resource Management**, including resource needs analysis, staffing allocations, equipment management, and private contracting.
- **Scheduling**, including work needs identification, customer service program, and short-term workscheduling.
- **Monitoring and Evaluation**, including performance measures, work reporting, and management analysis.

- **Maintenance Support and Administration**, including permit processing and tracking, Adopt-a-Highway program, risk management, and stockpile management.

One of the following scores applies:

- **0 points.** The agency does not have an MMS or has an MMS that has less than three of the modules listed above.
- **1 point.** The agency has an MMS that has three or four of the modules listed above.
- **2 points.** The agency has an MMS that has five or six of the modules listed above.

Requirement OM-09.2

2 points. Integrate Vehicle-Based Technology

Leverage automated vehicle and connected vehicle technologies, such as GPS, weather information systems, surface temperature measuring devices, on-board freezing point and ice-presence detection systems, salinity measuring devices, visual and multi-spectral sensors, traffic speed, crash reporting, etc. to provide input information to the MMS and leverage MMS outputs to maintenance vehicles to optimize operations and maintenance activities.

Requirement OM-09.3

1-5 points. Integrated Maintenance Management System

The agency has an MMS that integrates, at a minimum, a Pavement Management System (PMS, see OM-07), a Bridge Management System (BMS, see OM-08), Road Maintenance Plan (RMP, see OM-10), and a Traffic Control Maintenance Plan (TCMP, see OM-11). Points will be assigned for the integration of additional, specific features listed below (see GMMS for more definition). Scoring is based on the following, cumulative requirements:

- **Requirement OM-09.3a**
1 point. Roadway Inventory Systems
- **Requirement OM-09.3b**
1 point. Financial Management Systems
- **Requirement OM-09.3c**
1 point. Construction/Project Management Systems
- **Requirement OM-09.3d**
1 point. Equipment Management Systems
- **Requirement OM-09.3e**
1 point. Environmental Commitment Tracking System (see OM-02)
- **Requirement OM-09.4**

3 points. Leverage MMS to Define Projects

The MMS ties into the agency's PMS and BMS and exchanges information. That information is used to link pavement/bridge repair, preservation, and maintenance projects to adjacent maintenance needs (e.g., updating traffic safety devices and signage within the same project limits).

Requirement OM-09.5

2-3 points. Maintenance Quality Assurance

Maintenance Quality Assurance (MQA) is a process that uses quantitative quality indicators to assess the performance of maintenance programs. These programs are outcome-based and provide statistically valid, reliable, and repeatable measures of asset conditions.

Scoring is based on the following, cumulative requirements. The first requirement must be accomplished to earn the second.

- **Requirement OM-09.5a**

- **2 points. MQA Relates Maintenance to Performance**

- The agency has a MQA program that relates highway maintenance to highway performance.

- **Requirement OM-09.5a**

- **1 additional point. MQA Used to Understand Relationship between Costs and Outcomes**

- The MQA program is being used to help managers to understand maintenance conditions, set priorities, and document the relationship between costs and outcomes.

Resources

The following resources are referenced in this criterion and consolidated here:

1. AASHTO, *Guidelines for Maintenance Management Systems*,
https://bookstore.transportation.org/item_details.aspx?id=413

Scoring Sources

The program is considered to have met this criterion if the requirements above can be reasonably substantiated through the existence of one or more of the following documentation sources (or equal where not available):

1. Existence and use of a MMS.
2. Documentation of features and elements of the MMS.
3. Documentation of MQA processes and procedures.