INVEST
ECONOMIC • SOCIAL • ENVIRONMENTAL

TOTAL SCORE

9/15

Criterion Example:

Arizona Department of Transportation Sustainable Transportation Program

Arizona

Module: Operations & Maintenance (INVEST Version 1.2)

Criterion: OM-09 Maintenance Management System (1-15 points)

Lead Agency: Arizona Department of Transportation (ADOT)

Link: https://www.azdot.gov/business/environmental-planning/programs/sustainable-transportation-program

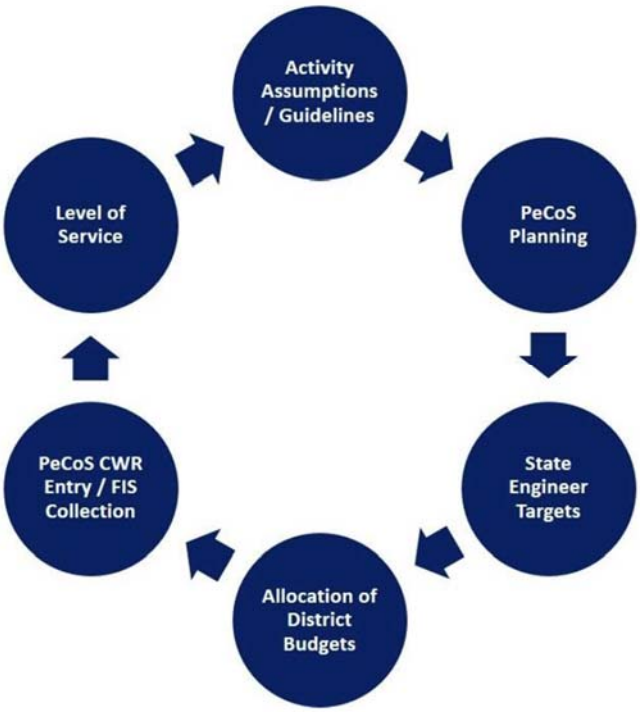
Sources: https://www.sustainablehighways.org/779/78/arizona-dot-using-invest-to-benefit-planning-programming-and-maintenance-in-arizona.html

Description: Using the INVEST OM module in 2015 and 2016, ADOT assessed the state of its operations and maintenance activities. In scoring criterion OM-09, INVEST allowed ADOT to systematically assess the strengths and limitations of its maintenance management system (MMS). Stemming from the INVEST evaluation, ADOT identified ways the current MMS can be expanded and improved such as adding automated short-term work scheduling and using the MMS to define projects and exchange information with the agency's Pavement Management System (PMS) and Bridge Management System (BMS).

Scoring Details:

OM-09.1: Integrate Key Elements of MMS (2/2)

ADOT received two points under this area for its integration of five of the six key elements of an MMS (see the figure to the right for a flow model of ADOT's maintenance management core elements). ADOT uses the Performance Controlled System (PeCoS) as its maintenance performance control system. PeCoS performs resource management tasks, work needs identification, and monitoring and evaluation, with robust reporting capabilities. Many of the maintenance support and administration tasks, including risk and stockpile management, exist outside of PeCoS. For example, ADOT's districts



currently handle permit processing and tracking. The agency also employs the Feature Inventory System (FIS) for asset management, and PeCoS and a predecessor system (Level of Service) for other planning functions including performance targets. The budget module exists outside of ADOT's MMS but pulls data from PeCoS. ADOT currently does not have an automated short-term work scheduling module.

OM-09.2: Integrate Vehicle-Based Technology (2/2)

ADOT leverages vehicle-based technologies to connect to its MMS, earning it two out of two points under this requirement. Specifically, the agency employs GPS in its snow plows, has equipped many of its vehicles with Automatic Vehicle Locators (AVL), and uses telematics to track mileage and fuel efficiency. Drivers and equipment operators provide end-of-shift reports that are entered into ADOT's systems. Moreover, ADOT is currently equipping some of its drivers with tablets to gather additional data and better manage its activities in the field.

OM-09.3: Integrated Maintenance Management System (2/5)

- **OM-09.3a: Roadway Inventory Systems (0/1)**

  ADOT was unable to fulfill this sub-requirement as it does not yet have a roadway inventory system; however, it is currently working on establishing a connection between its FIS and PeCoS for this purpose.

- **OM-09.3b: Financial Management Systems (1/1)**

  The agency scored one point as its MMS includes a financial module.

- **OM-09.3c: Construction/Project Management Systems (0/1)**

  ADOT scored zero points in the area of construction and project management systems as it has not yet added this capability.

- **OM-09.3d: Equipment Management Systems (1/1)**

  ADOT received full points in this area as its MMS automatically pulls equipment management information.

- **OM-09.3e: Environmental Commitment Tracking System (0/1)**

  The agency received zero points for this sub-requirement since ADOT lacks a formal environmental commitment tracking system and its MMS does not automatically access relevant environmental commitment information.

OM-09.4: Leverage MMS to Define Projects (0/3)

ADOT did not score any points in this area as the MMS is not fully integrated with the agency's PMS and BMS, though information is shared manually.

OM-09.5: Maintenance Quality Assurance (MQA) (3/3)

- **OM-09.5a: MQA Relates Maintenance to Performance (2/2)**

  ADOT received full points in this area due to its LOS system, which relates highway maintenance

activities to performance.

- **OM-09.5b: MQA Used to Understand Relationship between Costs and Outcomes (1/1)**

  ADOT scored one point in this area as its LOS system helps the agency staff to develop strategies (such as preventative maintenance), set priorities, and document the relationship between costs and outcomes.

Sustainability Improvements:

While ADOT achieved many of the requirements included under OM-09, the agency has put forth multiple recommendations to improve ADOT's maintenance activities and continue to enhance its MMS. These recommendations include automating short-term work scheduling in the MMS and integrating the MMS with the FIS (this is currently underway), construction/project management systems, and a formal environmental commitment tracking system. Additionally, moving forward ADOT is looking to use its MMS to define pavement/bridge repair, preservation, and maintenance projects and exchange information with the agency's PMS and BMS.