

Criterion Example:

Arizona Department of Transportation Sustainable Transportation Program

Arizona

Module: Operations & Maintenance (INVEST Version 1.2)

Criterion: [OM-07 Pavement 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. Through the use of INVEST, ADOT has been able to expand its knowledge of current and evolving sustainability best practices, move its Sustainable Transportation Program and related activities forward, and foster intra-agency collaboration. Even though ADOT received all the points available for OM-07, it identified additional areas for improvement including further implementing sustainable pavement solutions, such as using Ultra-Thin Bonded Overlay in areas with high turning movements.

Scoring Details:

OM-07.1: Develop a Pavement Management System (PMS) and Collect Data (1/1)

ADOT received one point in this area as it has a PMS that includes an up-to-date inventory, a condition assessment, an annual budget needs assessment, a prioritization of projects needing maintenance and rehabilitation, a method to determine the impact of funding decisions, and a feedback process.

OM-07.2: Track Pavement Network Performance (3/3)

• **OM-07.2a: Use Common Metrics (1/1)**

ADOT received one point for OM-07.2a as it tracks overall network condition using common metrics, including the International Roughness Index (IRI).

• **OM-07.2b: Measure Project Timelines (2/2)**

ADOT received full points in measuring project timeliness as it identifies projects and activities to be completed within three years and includes detailed project histories.

OM-07.3: Set Goals and Monitor Progress (2/2)

ADOT earned two out of two points for PM-07.3 as it sets quantifiable goals for pavement condition, such as a target percentage of roads in acceptable or better condition. The agency has monitored progress toward these goals for several years. The ADOT pavement team reports conditions to FHWA's Highway Performance Monitoring System (HPMS) and the ADOT Multimodal Planning Division's performance management system.

OM-07.4: Leverage Data to Demonstrate Sustainable Outcomes (7/7)

- **OM-07.4a: Leverage PMS Data to Prioritize Projects (2/2)**

ADOT meets all the requirements in this area, scoring full points for its success in leveraging PMS data and employing traffic counts to prioritize projects.

- **OM-07.4b: Leverage Life Cycle Cost Analysis (LCCA) to Predict Costs (2/2)**

ADOT scored full points for OM-07.b as it leverages LCCA to predict both short- and long-term costs every year.

OM-07.4c: Include Pavement Preservation in Annual Plan (1/1)

ADOT includes pavement preservation needs in its State Transportation Improvement Program, so it was able to receive one point for this sub-requirement.

- **OM-07.4d: Link Pavement Repair, Preservation, and Maintenance to Projects (2/2)**

ADOT received full points in this area as its pavement preservation and maintenance activities are linked to capital projects.

OM-07.5: Sustainable Specifications (2/2)

ADOT has standard specifications and special provisions for numerous sustainable pavement solutions and requires that these sustainable solutions be considered first before considering other options. Sustainable pavements are used when they are the best option available, as some pavements made from recycled products require replacement after only 15 years (meaning that, from a lifecycle perspective, they may not provide the best value or be the most sustainable option for some applications).

ADOT also maintains an end of life sustainable pavement application decision making process. In particular, if pavement begins to deteriorate and the residual asphalt is determined to be sufficient, ADOT uses a rejuvenation agent to recycle the pavement a second time. If the residual asphalt content is deemed insufficient, only then is it replaced with a newly produced asphalt pavement.

ADOT has an array of sustainable application types it uses to complete roadway maintenance work. For more information, check out [ADOT's Operations & Maintenance Implementation Report](#).

In addition to the aforementioned sustainable pavement solutions, in the early 2000s ADOT and the Maricopa Association of Governments discovered that certain areas of freeways were quieter than others. Looking into the engineering standards of the freeways, ADOT determined that the quieter stretches of road belonged to those paved with rubberized asphalt, rather than cement concrete pavement. In addition to noise reduction benefits, rubberized asphalt roads reduce the disposal volume of used rubber tires if they are processed and used for the roadway surface. Acknowledging these financial and environmental benefits, ADOT conducted a three-year, \$34 million dollar “Quiet Pavement Program” to resurface roads in the Phoenix area with rubberized asphalt.

Sustainability Improvements:

Although ADOT received all of the available points for OM-07, the agency recognizes that further sustainability gains can be achieved, particularly by leveraging recent FHWA research and resources such as FHWA’s January 2015 Toward Sustainable Pavement Systems document. ADOT hopes to partner with FHWA to pilot a selection of suggested sustainable practices and to further recognize sustainable pavement innovations and applications by ADOT staff.

One such innovation that ADOT would like to employ is the use of Ultra-Thin Bonded Overlay (UTBO) as an alternative to the currently used Friction Course in areas that have high turning movements. The 1/2 inch to 5/8 inch UTBO may be a worthwhile substitute, as the 1/2 inch Friction Course tends to deteriorate more quickly in urban areas. ADOT has previously used UTBO; however, those projects were completed over ten years ago, so there is a need to reassess UTBO and determine its effectiveness and durability.