

Road Weather Management Capability Maturity Framework



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FACTSHEET

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Background

The concept of a capability maturity framework (CMF) emerged from the Strategic Highway Research Program 2 (SHRP2) L01 and L06 projects that promoted a process-driven approach to improve Transportation Systems Management and Operations (TSM&O).

Adapted from the software development world, the notion of CMF rests on the following three tenets:

- Process matters: Projects fail or do not achieve desired functionality for a variety of reasons not related to the technology.
- Prioritizing the right action is important: Is an agency ready, how do they know, and what should they do next?
- Focus on the weakest link: What is holding the agency back in becoming a leader in a particular area?

Building on SHRP2 results, the American Association of State Highway and Transportation Officials (AASHTO) continued development of this concept and a capability maturity concept was published as

part of the TSM&O guidance. SHRP2 implementation activities have successfully used the overall framework to work with State DOTs to develop action plans to improve their TSM&O capabilities.

To continue the emphasis on capability maturity and to provide program-level guidance, Federal Highway Administration (FHWA) developed additional frameworks that focus on improvement actions for specific TSM&O program areas including:

- Traffic Management
- Traffic Incident Management
- Road Weather Management
- Planned Special Events
- Work Zone Management
- Traffic Signal Management

These frameworks are designed for agencies and regions to assess the current strengths and weakness and develop a targeted action plan for the program area.

More details can be found of the FHWA Operations web site: <http://www.ops.fhwa.dot.gov/tsmoframeworktool/index.htm>.

Table 1. Capability Maturity Framework Process Overview

Process Improvement Areas		Capability Levels			
Dimensions or Process Areas	What is it	Level 1 Ad-Hoc, Low Level of Capability	Level 2 Managed, Medium Level of Capability	Level 3 Integrated, High Level of Capability	Level 4 Optimized, Highest Level of Capability
Business Process	Plans, Programs, Budgets	Statement of Capability			
Systems & Tech	Approach to Building Systems		Step 1 Self-Assessment. Work with your stakeholders to assess where you are in terms of the capabilities in each area		Step 2 Identify areas of improvement and the desired levels of capability to improve program effectiveness
Performance Measurement	Use of Performance Measures				
Workforce	Improving Capability of Workforce				
Culture	Changing Culture and Building Champions		Step 3 Identify actions that you need to take to move to the desired levels of capability		
Collaboration	Improving Working Relationships				

Road Weather Management Capability Maturity Framework

The Road Weather Management (RWM) framework assesses the institutional capacity of an agency or a region to respond to adverse weather conditions from both a maintenance and operations perspective. By involving stakeholders from maintenance, operations, meteorology, and emergency management, reviewing the framework will result in a set of prioritized actions for improvement in addressing institutional barriers for effective RWM. Use of the framework is recommended especially for agencies or regions that are:

- Implementing new weather-responsive traffic management practices
- Updating maintenance practices or implementing new approaches to winter maintenance such as deploying a Maintenance Decision Support System (MDSS)
- Updating or creating new program plans for RWM
- Undergoing organizational realignments for TSM&O

In all these instances, the use of the framework will provide a structured approach to review the complex institutional architectures and business processes required to make RWM a success. By reviewing the “non-technical” issues in detail and implementing the prioritized actions, agencies will increase the capability and sophistication of their RWM program.

Structure

Consistent with the SHRP2 guidance, the frameworks are all described as a matrix that defines the process improvement areas and levels (from Level 1, low-level to Level 4, optimized high-level) of capability. Following a self-assessment process, specific actions are identified to increase capabilities across the desired process areas. Capabilities are described for the following six areas:

1. Business processes
2. Systems and technology
3. Performance measurement
4. Organization and workforce
5. Culture
6. Collaboration

Using the Framework

A Road Weather Management CMF and a supporting interactive tool have been developed. The current version of the framework is available at http://www.ops.fhwa.dot.gov/tsmoframeworktool/availableframeworks/road_weather.htm.

A collaborative process is recommended for using the CMFs for any program area. Typically, a local agency champion will pull together stakeholders for a day-long workshop to walk through the framework. RWM stakeholders may include maintenance staff, operations staff, meteorologists, and emergency operations managers. The outcomes of the workshop are a consensus of the current capabilities across all the dimensions and an initial list of prioritized actions.

The champion might then convene future meetings or identify existing forums where the identified actions will be championed and implemented.

The framework is not intended as a benchmarking tool, but rather as a resource for agencies to identify appropriate actions for improving management and operations of road weather management. While periodic assessments are not required, revisiting the tool is recommended when significant organizational change occurs or prior to major investments in the area.



Figure 1. Screenshot of Tool

Get involved:

If interested in using the framework, or hosting a CMF workshop for your agency or region, please contact the FHWA leads for this activity:

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