

EUM Implementation: Infrastructure Strategy and Performance – Practices

Instructions

For this exercise, you will focus on only one of the four Key Management Areas from the *Roadmap* document – Infrastructure Strategy and Performance. This Key Management Area directly corresponds to the Infrastructure Strategy and Performance Attribute from the *EUM Primer*. Please follow the steps identified below for the exercise.

Infrastructure Strategy and Performance: This core management area relates to the management of infrastructure and other physical assets.

Step 1: Assess your current activity relative to each example practice in Levels 1 & 2. Choosing from the options “Don’t Have,” “In Progress,” or “Complete,” check the description that best characterizes your utility’s current activity for each example practice.

Example Practices	Assessments and Actions			
Work orders linked to asset inventory.	Assessment:	<input type="checkbox"/> Don’t Have	<input type="checkbox"/> In Progress	<input type="checkbox"/> Complete
	Actions:	<input type="checkbox"/> Adopt	<input type="checkbox"/> Improve	<input type="checkbox"/> Maintain

Step 2: Determine what action to take relative to each example practice. Choosing from the options “Adopt,” “Improve,” or “Maintain,” check the box that describes what you believe your utility needs to do for each practice.

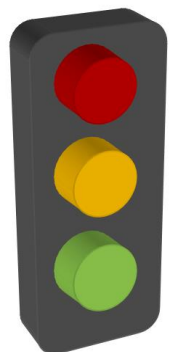
- **ADOPT:** Check this box if your utility does not currently have a management practice that represents the example practice and that it needs to have this practice to reach its desired level of implementation.
- **IMPROVE:** Check this box if your utility has a management practice that is related to the example practice, but improvement is needed to reach your desired level of implementation for it.
- **MAINTAIN:** Check this box if your utility has the example practice already in place and that you want to continue using this practice.

Example Practices	Assessments and Actions			
Work orders linked to asset inventory.	Assessment:	<input type="checkbox"/> Don’t Have	<input type="checkbox"/> In Progress	<input type="checkbox"/> Complete
	Actions:	<input type="checkbox"/> Adopt	<input type="checkbox"/> Improve	<input type="checkbox"/> Maintain

Step 3: Add any alternative or additional practices that you believe are relevant to Infrastructure Strategy and Performance. In each level of Infrastructure Strategy and Performance, your utility may have in place or be aware of management practices that you believe are either a good substitute for one of the existing example practices or that you see as a good addition to the suite of example practices that are included. For each alternative or additional practice, you will need to write in a written description, and complete STEP 2 for each practice (as you did for all of the other example practices).

Step 4: Draw a conclusion for each practice statement. At the end of each practice statement section, you will draw a conclusion about what your utility needs to do relative to the practice statement. You will draw this conclusion based on the assessment of your current activity under Levels 1 & 2 and actions that you determined (STEP 1).

Practice Statement Conclusion: Green Yellow Red



Each practice statement section has check boxes at the end for “Green,” “Yellow,” and “Red,” which represent the following:

RED: Stop and take a more in-depth look at what needs to be done in this area to bring your utility to the level that it wants to be at. Check this box if you have mostly “Don’t Have” and “Adopt” boxes checked.

YELLOW: Slow down and assess how you can improve your current practices (including completing those that you have already begun to implement, but are not yet fully in place). Check this box if you have mostly “In Progress” and “Improve” boxes checked.

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GREEN: You are good to go in this area – keep up the good work. Check this box if you have most or all example practices in place (or have additional or alternative practices), and if you have mostly “Complete” and “Maintain” boxes checked. Do not forget to come back to these practices on a regular basis to make sure they are up to date.

STEP 5: Make any notes that you need to. At the end of each practice statement section, make notes as needed, considering the following questions:

- Why did I select the Practice Statement Conclusion that I chose? Was it a close decision between one conclusion and another?
- What level of implementation does my utility want to be at for Infrastructure Strategy and Performance? Is my utility close to meeting this goal (or have we already met it)?

Infrastructure Strategy and Performance

Scope: This core management area relates to the management of infrastructure and other physical assets.

Level 1: Providing Adequate, Fundamental Services

Practice Statement → Infrastructure O&M: Maintenance is undertaken as performance deficiencies dictate, backed up by an explicit maintenance management system for assets above and below ground.

Example Practices	Assessments and Actions
Work orders linked to asset inventory.	Assessment: <input type="checkbox"/> Don't Have <input type="checkbox"/> In Progress <input type="checkbox"/> Complete Actions: <input type="checkbox"/> Adopt <input type="checkbox"/> Improve <input type="checkbox"/> Maintain
Ongoing training and certification/licensing requirements for maintenance staff.	Assessment: <input type="checkbox"/> Don't Have <input type="checkbox"/> In Progress <input type="checkbox"/> Complete Actions: <input type="checkbox"/> Adopt <input type="checkbox"/> Improve <input type="checkbox"/> Maintain
Record retention of asset maintenance performed (e.g., work order system in place to keep maintenance records).	Assessment: <input type="checkbox"/> Don't Have <input type="checkbox"/> In Progress <input type="checkbox"/> Complete Actions: <input type="checkbox"/> Adopt <input type="checkbox"/> Improve <input type="checkbox"/> Maintain
Estimated useful life and depreciation policy (in accordance with generally accepted accounting principles).	Assessment: <input type="checkbox"/> Don't Have <input type="checkbox"/> In Progress <input type="checkbox"/> Complete Actions: <input type="checkbox"/> Adopt <input type="checkbox"/> Improve <input type="checkbox"/> Maintain
Manufacturer's recommended maintenance regimens followed for all equipment.	Assessment: <input type="checkbox"/> Don't Have <input type="checkbox"/> In Progress <input type="checkbox"/> Complete Actions: <input type="checkbox"/> Adopt <input type="checkbox"/> Improve <input type="checkbox"/> Maintain
Emergency maintenance procedures.	Assessment: <input type="checkbox"/> Don't Have <input type="checkbox"/> In Progress <input type="checkbox"/> Complete Actions: <input type="checkbox"/> Adopt <input type="checkbox"/> Improve <input type="checkbox"/> Maintain
Alternative or Additional Practice:	Assessment: <input type="checkbox"/> Don't Have <input type="checkbox"/> In Progress <input type="checkbox"/> Complete Actions: <input type="checkbox"/> Adopt <input type="checkbox"/> Improve <input type="checkbox"/> Maintain
Alternative or Additional Practice:	Assessment: <input type="checkbox"/> Don't Have <input type="checkbox"/> In Progress <input type="checkbox"/> Complete Actions: <input type="checkbox"/> Adopt <input type="checkbox"/> Improve <input type="checkbox"/> Maintain
Alternative or Additional Practice:	Assessment: <input type="checkbox"/> Don't Have <input type="checkbox"/> In Progress <input type="checkbox"/> Complete Actions: <input type="checkbox"/> Adopt <input type="checkbox"/> Improve <input type="checkbox"/> Maintain

Practice Statement Conclusion: Green Yellow Red

Notes on Statement Conclusion:

Practice Statement → Asset Management: Asset management program basics are understood and recognized as important for EUM. Assets are inventoried with information stored in a standalone database.

Example Practices	Assessments and Actions
Critical infrastructure and assets inventory (includes original cost, with new assets recorded at the time of purchase and retired assets removed from inventory).	Assessment: <input type="checkbox"/> Don't Have <input type="checkbox"/> In Progress <input type="checkbox"/> Complete Actions: <input type="checkbox"/> Adopt <input type="checkbox"/> Improve <input type="checkbox"/> Maintain
Critical infrastructure asset mapping (e.g., GIS-located mains, hydrants, valves, services, and tanks).	Assessment: <input type="checkbox"/> Don't Have <input type="checkbox"/> In Progress <input type="checkbox"/> Complete Actions: <input type="checkbox"/> Adopt <input type="checkbox"/> Improve <input type="checkbox"/> Maintain
Photographic documentation of assets to compare baseline conditions to pictures taken after the asset is impacted during an emergency event.	Assessment: <input type="checkbox"/> Don't Have <input type="checkbox"/> In Progress <input type="checkbox"/> Complete Actions: <input type="checkbox"/> Adopt <input type="checkbox"/> Improve <input type="checkbox"/> Maintain
Alternative or Additional Practice:	Assessment: <input type="checkbox"/> Don't Have <input type="checkbox"/> In Progress <input type="checkbox"/> Complete Actions: <input type="checkbox"/> Adopt <input type="checkbox"/> Improve <input type="checkbox"/> Maintain

Effective Utility Management Workshop

Alternative or Additional Practice:	Assessment: <input type="checkbox"/> Don't Have <input type="checkbox"/> In Progress <input type="checkbox"/> Complete
	Actions: <input type="checkbox"/> Adopt <input type="checkbox"/> Improve <input type="checkbox"/> Maintain
Alternative or Additional Practice:	Assessment: <input type="checkbox"/> Don't Have <input type="checkbox"/> In Progress <input type="checkbox"/> Complete
	Actions: <input type="checkbox"/> Adopt <input type="checkbox"/> Improve <input type="checkbox"/> Maintain

Practice Statement Conclusion: Green Yellow Red

Notes on Statement Conclusion:

Level 2: Optimizing Operations and Services

Practice Statement → Infrastructure O&M: Proactive, risk-based maintenance, repair, and replacement are used and technology and equipment standardization efforts undertaken with specific actions under way to improve the efficiency of infrastructure repair and rehabilitation.

Example Practices	Assessments and Actions
Level of service and planned maintenance targets (with performance measures in place and tracked as part of the budget process).	Assessment: <input type="checkbox"/> Don't Have <input type="checkbox"/> In Progress <input type="checkbox"/> Complete Actions: <input type="checkbox"/> Adopt <input type="checkbox"/> Improve <input type="checkbox"/> Maintain
Collection system line inspection and cleaning (for sanitary sewer overflow prevention).	Assessment: <input type="checkbox"/> Don't Have <input type="checkbox"/> In Progress <input type="checkbox"/> Complete Actions: <input type="checkbox"/> Adopt <input type="checkbox"/> Improve <input type="checkbox"/> Maintain
Joint maintenance partnerships with other systems.	Assessment: <input type="checkbox"/> Don't Have <input type="checkbox"/> In Progress <input type="checkbox"/> Complete Actions: <input type="checkbox"/> Adopt <input type="checkbox"/> Improve <input type="checkbox"/> Maintain
Root cause analysis for failures used to drive maintenance of asset decisions.	Assessment: <input type="checkbox"/> Don't Have <input type="checkbox"/> In Progress <input type="checkbox"/> Complete Actions: <input type="checkbox"/> Adopt <input type="checkbox"/> Improve <input type="checkbox"/> Maintain
Underground asset replacement or restoration innovative solutions or restoration (i.e., water main relining, ice pigging, bursting).	Assessment: <input type="checkbox"/> Don't Have <input type="checkbox"/> In Progress <input type="checkbox"/> Complete Actions: <input type="checkbox"/> Adopt <input type="checkbox"/> Improve <input type="checkbox"/> Maintain
Critical spare parts inventory and all equipment either in operation or in fully ready standby mode.	Assessment: <input type="checkbox"/> Don't Have <input type="checkbox"/> In Progress <input type="checkbox"/> Complete Actions: <input type="checkbox"/> Adopt <input type="checkbox"/> Improve <input type="checkbox"/> Maintain
Visible SCADA and GIS to enhance O&M.	Assessment: <input type="checkbox"/> Don't Have <input type="checkbox"/> In Progress <input type="checkbox"/> Complete Actions: <input type="checkbox"/> Adopt <input type="checkbox"/> Improve <input type="checkbox"/> Maintain
Underground replacement/repair coordination with other projects (e.g., street paving).	Assessment: <input type="checkbox"/> Don't Have <input type="checkbox"/> In Progress <input type="checkbox"/> Complete Actions: <input type="checkbox"/> Adopt <input type="checkbox"/> Improve <input type="checkbox"/> Maintain
Alternative or Additional Practice:	Assessment: <input type="checkbox"/> Don't Have <input type="checkbox"/> In Progress <input type="checkbox"/> Complete Actions: <input type="checkbox"/> Adopt <input type="checkbox"/> Improve <input type="checkbox"/> Maintain
Alternative or Additional Practice:	Assessment: <input type="checkbox"/> Don't Have <input type="checkbox"/> In Progress <input type="checkbox"/> Complete Actions: <input type="checkbox"/> Adopt <input type="checkbox"/> Improve <input type="checkbox"/> Maintain
Alternative or Additional Practice:	Assessment: <input type="checkbox"/> Don't Have <input type="checkbox"/> In Progress <input type="checkbox"/> Complete Actions: <input type="checkbox"/> Adopt <input type="checkbox"/> Improve <input type="checkbox"/> Maintain

Practice Statement Conclusion: Green Yellow Red

Notes on Statement Conclusion:

Practice Statement → Asset Management: Asset management is adopted as a core utility business function, guided by explicit service levels. Complete asset inventory and asset condition assessment is combined with the capability to make infrastructure repair and replacement decisions on a managed risk basis.

Example Practices	Assessments and Actions			
Regular asset performance assessments.	Assessment:	<input type="checkbox"/> Don't Have	<input type="checkbox"/> In Progress	<input type="checkbox"/> Complete
	Actions:	<input type="checkbox"/> Adopt	<input type="checkbox"/> Improve	<input type="checkbox"/> Maintain
Asset full life-cycle cost estimates and depreciation studies to determine expected life cycles. Program to replace underground infrastructure on either a regular cycle (e.g., 100-year life cycle) or at the asset depreciation rate.	Assessment:	<input type="checkbox"/> Don't Have	<input type="checkbox"/> In Progress	<input type="checkbox"/> Complete
	Actions:	<input type="checkbox"/> Adopt	<input type="checkbox"/> Improve	<input type="checkbox"/> Maintain
Hydraulic modeling analysis for the design of new and replacement infrastructure.	Assessment:	<input type="checkbox"/> Don't Have	<input type="checkbox"/> In Progress	<input type="checkbox"/> Complete
	Actions:	<input type="checkbox"/> Adopt	<input type="checkbox"/> Improve	<input type="checkbox"/> Maintain
Condition assessment, monitoring, and failure analysis of infrastructure assets.	Assessment:	<input type="checkbox"/> Don't Have	<input type="checkbox"/> In Progress	<input type="checkbox"/> Complete
	Actions:	<input type="checkbox"/> Adopt	<input type="checkbox"/> Improve	<input type="checkbox"/> Maintain
Service interruption tracking conducted relative to established levels of service targets.	Assessment:	<input type="checkbox"/> Don't Have	<input type="checkbox"/> In Progress	<input type="checkbox"/> Complete
	Actions:	<input type="checkbox"/> Adopt	<input type="checkbox"/> Improve	<input type="checkbox"/> Maintain
Short-term and long-term asset management and capital plan supported by commitments for necessary funding.	Assessment:	<input type="checkbox"/> Don't Have	<input type="checkbox"/> In Progress	<input type="checkbox"/> Complete
	Actions:	<input type="checkbox"/> Adopt	<input type="checkbox"/> Improve	<input type="checkbox"/> Maintain
Condition/functional performance standards defined for each type of capital asset.	Assessment:	<input type="checkbox"/> Don't Have	<input type="checkbox"/> In Progress	<input type="checkbox"/> Complete
	Actions:	<input type="checkbox"/> Adopt	<input type="checkbox"/> Improve	<input type="checkbox"/> Maintain
Alternative or Additional Practice:	Assessment:	<input type="checkbox"/> Don't Have	<input type="checkbox"/> In Progress	<input type="checkbox"/> Complete
	Actions:	<input type="checkbox"/> Adopt	<input type="checkbox"/> Improve	<input type="checkbox"/> Maintain
Alternative or Additional Practice:	Assessment:	<input type="checkbox"/> Don't Have	<input type="checkbox"/> In Progress	<input type="checkbox"/> Complete
	Actions:	<input type="checkbox"/> Adopt	<input type="checkbox"/> Improve	<input type="checkbox"/> Maintain
Alternative or Additional Practice:	Assessment:	<input type="checkbox"/> Don't Have	<input type="checkbox"/> In Progress	<input type="checkbox"/> Complete
	Actions:	<input type="checkbox"/> Adopt	<input type="checkbox"/> Improve	<input type="checkbox"/> Maintain

Practice Statement Conclusion: Green Yellow Red

Notes on Statement Conclusion:



Level 3: Transforming Operations and Services for the Future

Practice Statement → Infrastructure O&M: Commitment to utility and community sustainability is explicitly incorporated into infrastructure investment and management efforts. Collaborative partnerships are sought and used to improve operational efficiency, manage risk, and improve resiliency.

Example Practices	Assessments and Actions		
Infrastructure project rating systems (e.g., Institute for Sustainable Infrastructure).	Assessment: <input type="checkbox"/> Don't Have	<input type="checkbox"/> In Progress	<input type="checkbox"/> Complete
	Actions: <input type="checkbox"/> Adopt	<input type="checkbox"/> Improve	<input type="checkbox"/> Maintain
Alliance partnerships for infrastructure development. (Avoid low-bid constraints).	Assessment: <input type="checkbox"/> Don't Have	<input type="checkbox"/> In Progress	<input type="checkbox"/> Complete
	Actions: <input type="checkbox"/> Adopt	<input type="checkbox"/> Improve	<input type="checkbox"/> Maintain
International Organization for Standardization (ISO) certification for asset management.	Assessment: <input type="checkbox"/> Don't Have	<input type="checkbox"/> In Progress	<input type="checkbox"/> Complete
	Actions: <input type="checkbox"/> Adopt	<input type="checkbox"/> Improve	<input type="checkbox"/> Maintain
Innovative solutions to leverage capital markets for infrastructure sustainability (e.g., equipment manufacturer partnerships, public-private contractual arrangements, design build operate).	Assessment: <input type="checkbox"/> Don't Have	<input type="checkbox"/> In Progress	<input type="checkbox"/> Complete
	Actions: <input type="checkbox"/> Adopt	<input type="checkbox"/> Improve	<input type="checkbox"/> Maintain
SCADA integrated with Computerized Maintenance Management System and GIS Enterprise system for optimizing asset management (e.g., tie maintenance and repairs to system assets).	Assessment: <input type="checkbox"/> Don't Have	<input type="checkbox"/> In Progress	<input type="checkbox"/> Complete
	Actions: <input type="checkbox"/> Adopt	<input type="checkbox"/> Improve	<input type="checkbox"/> Maintain
Alternative or Additional Practice:	Assessment: <input type="checkbox"/> Don't Have	<input type="checkbox"/> In Progress	<input type="checkbox"/> Complete
	Actions: <input type="checkbox"/> Adopt	<input type="checkbox"/> Improve	<input type="checkbox"/> Maintain
Alternative or Additional Practice:	Assessment: <input type="checkbox"/> Don't Have	<input type="checkbox"/> In Progress	<input type="checkbox"/> Complete
	Actions: <input type="checkbox"/> Adopt	<input type="checkbox"/> Improve	<input type="checkbox"/> Maintain
Alternative or Additional Practice:	Assessment: <input type="checkbox"/> Don't Have	<input type="checkbox"/> In Progress	<input type="checkbox"/> Complete
	Actions: <input type="checkbox"/> Adopt	<input type="checkbox"/> Improve	<input type="checkbox"/> Maintain

Practice Statement Conclusion: Green Yellow Red

Notes on Statement Conclusion:

Practice Statement → Asset Management: Capital and natural resource asset diversification are used to manage risks and boost resiliency, while collaborative partnerships are used to improve efficiencies.

Example Practices	Assessments and Actions		
Cluster asset management partnerships (implementing identical asset management at multiple neighboring utilities and sharing staff to maintain program support).	Assessment: <input type="checkbox"/> Don't Have	<input type="checkbox"/> In Progress	<input type="checkbox"/> Complete
	Actions: <input type="checkbox"/> Adopt	<input type="checkbox"/> Improve	<input type="checkbox"/> Maintain
Multi-sector asset management relationships (e.g., with transportation sector).	Assessment: <input type="checkbox"/> Don't Have	<input type="checkbox"/> In Progress	<input type="checkbox"/> Complete
	Actions: <input type="checkbox"/> Adopt	<input type="checkbox"/> Improve	<input type="checkbox"/> Maintain
Options purchasing for future, diversified source water supply (e.g., taking an option on the future purchase of a natural water storage source, like a quarry).	Assessment: <input type="checkbox"/> Don't Have	<input type="checkbox"/> In Progress	<input type="checkbox"/> Complete
	Actions: <input type="checkbox"/> Adopt	<input type="checkbox"/> Improve	<input type="checkbox"/> Maintain
Fully developed enterprise asset management system.	Assessment: <input type="checkbox"/> Don't Have	<input type="checkbox"/> In Progress	<input type="checkbox"/> Complete
	Actions: <input type="checkbox"/> Adopt	<input type="checkbox"/> Improve	<input type="checkbox"/> Maintain
Alternative or Additional Practice:	Assessment: <input type="checkbox"/> Don't Have	<input type="checkbox"/> In Progress	<input type="checkbox"/> Complete

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	Actions: <input type="checkbox"/> Adopt <input type="checkbox"/> Improve <input type="checkbox"/> Maintain
Alternative or Additional Practice:	Assessment: <input type="checkbox"/> Don't Have <input type="checkbox"/> In Progress <input type="checkbox"/> Complete
	Actions: <input type="checkbox"/> Adopt <input type="checkbox"/> Improve <input type="checkbox"/> Maintain
Alternative or Additional Practice:	Assessment: <input type="checkbox"/> Don't Have <input type="checkbox"/> In Progress <input type="checkbox"/> Complete
	Actions: <input type="checkbox"/> Adopt <input type="checkbox"/> Improve <input type="checkbox"/> Maintain

Practice Statement Conclusion: Green Yellow Red

Notes on Statement Conclusion:

