

Integrating leading practices into an existing maintenance program

Leading Practices and Key Performance Indicators for Asset Maintenance (SAM1R06k)

The Central Issue

Sound maintenance practice is integral to extending asset effective life, reliability, and performance and learning from others' experiences can save time and money. A central compilation of leading asset maintenance practices helps define competencies and practices needed to implement an efficient and successful asset maintenance program.

Context and Background

The primary objective of this project was to identify leading practices and key performance indicators for asset maintenance. Through personal interviews, reports, data sheets, and surveys, the researchers gathered information from utilities related to leading practices and key performance indicators of asset maintenance. The information was used to create five case studies which include information about the utility, its process of implementing maintenance practices, current program, KPIs to support the practice, value, and lessons learned. The research provides a perspective of the time and resources needed to apply and/or integrate the maintenance practice into an existing maintenance program, summarizes a list of KPIs used by the utilities to support the maintenance program, and shares helpful tips and recommendations to utilities



considering applying or improving the maintenance practice. The five utilities included in the case studies are:

- Toronto Water
- JEA
- Sacramento Regional County Sanitation District
- Sanitation Districts of Los Angeles County
- Seattle Public Utilities

Findings and Conclusions

Three broad areas of competency for best maintenance practice were identified and defined. Case studies for each facility that was a top performer in one or more of the areas of competency were prepared.

Management and Policy Implications

The implementation and integration of new maintenance practices can be far reaching. They can impact an organization's structure, technologies in use, and maintenance practices. This research provides a perspective of the time and resources needed to apply or integrate leading maintenance practices into an existing asset maintenance program.

Competency	Leading Practice	Key Performance Indicators
Strategy and Tactics	CMMS* that is capable of managing maintenance tactics.	Preventive maintenance compliance.
	Clear maintenance strategy.	Work distribution by type of work order.
	Periodically update maintenance strategy.	Preventive maintenance compliance (mandated by legislation/regulations).
Work Flow Management	Asset identification is common in all systems.	Total maintenance labor reported to work order.
	CMMS user rights are defined based on roles and responsibilities.	Work order scheduling effectiveness.
	The CMMS is used to plan, schedule, and assign work orders.	Backlog work order by trade or crew.
Managing and Monitoring	Use common information to prioritize capital improvement program.	Maintenance budget tracking.
	Use a common business case process to justify asset-based investments.	Back up tracking.
	CMMS can support the capital management program.	Maintenance related safety incidents.

*Computerized Maintenance Management System

Executive Summary



Leading Practices and Key Performance Indicators for Asset Maintenance

Related WERF Research	
Project Title	Research Focus
Condition Assessment Strategies and Protocols for Water and Wastewater Assets (03CTS20CO)	Provides information on how to effectively use condition assessment tools and techniques to improve both long-term planning and day-to-day management of assets. The report is structured for two distinct audiences: 1) Utility planning managers who want to use cost-effective condition and performance assessment programs to support long-term planning decisions. 2) Engineering/maintenance managers that want to identify and understand the advantages and disadvantages of tools and techniques for measuring the condition and performance of utility assets to support daily maintenance and operation of assets.
Leading Practices for Strategic Asset Management (SAM1R06h)	Leading practices are presented in an easy-to-follow format that cites and explains the practice and provides examples. The research is intended to assist utility managers in the practice areas of Organization and People, Strategic Asset Planning, Business Risk, Maintenance, Secondary Data and Knowledge, and Accounting and Costing.
Assessing Utility Practices with the Strategic Asset Management Gap (SAMGAP) Analysis Tool (SAM2R06COa)	Presents an overview of the development and structure of the SAMGAP tool and summarizes 37 utility self-assessments using the tool in a benchmarking research project.
Gresham, Oregon Case Study: Measuring Progress Towards a Sustainable Asset Management Program (SAM6PR08)	Documents the lessons learned when the Gresham, OR WSD and other city departments set out to implement an asset management program and began thinking about their assets in a way which allowed for increased inter-departmental cooperation.
Condition Assessment for Wastewater Pipelines (INFR9SG09caww)	Describes technologies and methodologies currently in use for condition assessment of wastewater pipelines. Provides a synthesis of condition assessment technologies contained in WATERiD.

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