

A Simplified Approach to Asset Management

Asset Management is a critical aspect of master planning efforts. While the term Asset Management is widely used by most practitioners in the field, it can take on different meaning for utilities depending on the complexity of their operations and existing maintenance systems. Asset Management is a continuous improvement process with two fundamental goals:

1. Develop and prioritize short- and long-term capital needs.
2. Classify maintenance tasks on a priority basis so that limited resources are channeled toward tasks that are most critical.

When implementing an Asset Management approach to a project, four basic steps are followed as shown in the figure below.

Step 1 Planning: Since any piece of equipment is destined to fail, Asset Management is ultimately about anticipating failure and managing your operations to avoid equipment failure. The first step is to define the level of effort that will be exerted to match users' or customers' level of service expectations. Is the expectation achievable? Precisely what level of maintenance will be required to keep the system at this desired operational level? The decision may be made to under maintain or over maintain the equipment based on the answers.

Step 2 Condition Assessment: The next step is to complete a condition assessment and evaluate the current state of assets. This is accomplished by performing various predictive maintenance assessments on major components. The assessments can include visual inspections, vibration analyses, alignment checks oil analyses on rotating equipment and Closed Circuit Television Inspection. Thermal imaging can be performed on electronics and on mechanical equipment where excessive heat may be an issue.

The condition data gathered is used in conjunction with criticality determinations (discussed below) to prioritize maintenance and capital improvement needs.

Step 3 Evaluate Level of Risk: Assets are defined individually and in asset groups. The importance of each asset is determined based on how its failure would impact the overall delivery of service. For example, determinations are made whether the loss of a pump has a greater impact on delivery of service than the loss of an HVAC unit. Using this thought process; a criticality factor is assigned to each piece of equipment.

Through these failure scenarios, the true level of risk can be evaluated. The planning and evaluation process enables the probability of failure for each asset to be determined and the consequence of those failures identified. A simple mathematical function is then used to assign a numerical value to risks allowing prioritization of the CIP and determination of any mission-critical single points of failure.

Step 4 Ongoing Reliability: In simplest terms, Steps 1-3 lead to a determination of the level of service being provided versus the level of service that should be provided. Step 4 looks at curing deficiencies and keeping the system performing at maximum level. This entails the development of capital repair and replacement plans as well as an overall plan for preventive and predictive maintenance. A state-of-the-art

record keeping and cost tracking program should also be initiated such as a Computerized Maintenance Management System (CMMS).

The objective of any maintenance program is to minimize the total costs of executing or not executing proper facility maintenance. Since these costs generally accrue in small increments, through the execution of many small maintenance efforts, the ability to track each activity and its costs is important. Gathered cost data must be interpreted and appropriate actions taken. Because computers can store and manipulate large amounts of data, they can be a valuable asset to the facilities maintenance manager. A computer can quickly scan the data and report specific findings, trends or discrepancies. The advantage of the computer over manual methods lies primarily in the ability to store, process, and report large volumes of various types of information.

