

2010 Showcase in Excellence Award Recipient

Maricopa County Facilities Management Operations & Maintenance “Preventive Maintenance Process”



Testimonial of Value of the Arizona Performance Excellence Award Program

“Preventive Maintenance programs should be a combination of time-based and predictive technologies. Changing filters and component lubrication based on run-time won't stop, but using predictive tools and techniques to find potential problems before they become catastrophic is planning for the future.”

Company Information:

Highest Ranking Official: David R. Smith, County Manager, Maricopa County, Arizona

Contact Person: Ken Burt, Operations & Maintenance Division Director; 602-506-5839; ken.burt@fm.maricopa.gov

Type of work: Facilities Management is responsible to plan for, design, construct, operate, maintain and protect the physical assets of Maricopa County which is comprised of approximately 9.3 million square feet of properties which generally include offices, clinics, laboratories, detention facilities and court facilities.

Workforce: Facilities Management – 205 employees

Ken Burt, Division Director, Facilities Management, Operations & Maintenance

Highlights of Organizational Process:

The Preventive Maintenance Process (PM) is the process used by the Facilities Management Operations and Maintenance (O&M) division to track need and completion of preventive work orders on systems equipment for Maricopa County facilities. The PM process allows the participants from FMD the ability to proactively manage their work-flow and extend the life of the facilities and included equipment. This, in turn, allows the external participants, FMD's customers, to have functional, safe facilities in which to work and receive services with reduced downtime for repairs and fewer interruptions for corrective maintenance.

Process:

- A new piece of equipment is received that requires future preventive maintenance, which generally is based on the manufacturer's recommended maintenance schedule.
- The equipment is assigned a barcode number that identifies it uniquely. The pertinent equipment information is then entered into the County's work order system, along with the maintenance required and frequencies of the preventive maintenance.
- A PM work order is automatically generated pursuant to the established schedule and assigned to the appropriate supervisor.

- The supervisor then assigns the work to a technician, internal or external, who completes the maintenance.
- The technician enters time, parts used and other relevant data into a barcode scanner and marks the work order complete.
- Technicians upload the data from the barcode scanners (BCR – Bar Code Reader) into the information validation software – BCR Validator.
- The BCR Validator information is validated by a Supervisor.
- The data is uploaded into the County’s work order system.

Key Requirements & Process Improvement:

- Timeliness - The key requirement of *timeliness* was improved by having the Work Order Software generate the PM work orders automatically on a set schedule utilizing the manufacturer’s equipment recommendations. Previously, this feature was not utilized and PM work orders were generated manually, which led to many PM work orders not being generated. With the greater importance given to PM work orders, job specifications were updated and a PM supervisor with more technical expertise was hired.
- Accuracy - The key requirement of *accuracy* was improved by creating the time validation process (BCR Validator). This is a two-step process which requires verification of time spent and resources utilized when the technician initially uploads the completed work orders from the hand-held barcode reader into the computer system. The second step is initiated following the technician’s approval. The technician’s supervisor approves the time and resources for the upload before this information is merged into the Work Order database.
- Regionalization Model - In addition to activating the PM module of Maximo, FMD accepted the consultant’s recommendation that O&M should go to a regionalized model to better distribute the preventive maintenance and corrective maintenance workload allowing for faster response time and better facility and equipment knowledge by assigned technicians.
- Work Order Management - O&M has adopted the best practice of combining like PMs into one work order, which is called a Facilities Inspection and Maintenance Program (FIMP). For example, when a technician inspects and repairs all the locks in a specific area of the jail at one time with one work order instead of one work order per lock. FIMPs reduce paperwork, travel time, and costs and allows technicians to manage their time more efficiently. One of the strategies incorporated to save cycle time, productivity and create efficiencies was to add predictive maintenance to the O&M processes. Predictive Maintenance, a sub-set of preventive maintenance, is utilized to evaluate systems and equipment in a non-invasive manner to determine its current level of functionality. Thermal imaging of electrical components contained within a motor control center, for example, can notify a technician of failing system components without having to disassemble the motor control center. Time, materials, labor and safety savings are achieved.
- Stakeholder Feedback – By establishing a culture of improvement, O&M staff, management and departmental management have integrated innovation into the fabric of FMD. Ideas are presented by stakeholders, including customers and staff, with confidence of having those improvement ideas received positively.
 - Semi-Annual Survey
 - Provided by County Research & Reporting Department
 - Report with comments generated by County Research & Reporting
 - Evaluated by FMD Management and O&M Supervisors
 - Results shared with O&M staff
 - Customer and stakeholder comments received are investigated and processes reviewed for revision and incorporation of recommended changes when possible