

PREVENTATIVE MAINTENANCE

Preventative Maintenance - triggered by time, events, or meter readings.

Predictive Maintenance - is based on the actual condition of the equipment rather than time or age factors. Analysis may include infrared thermal imaging, vibration analysis, and oil analysis.

Both preventative and predictive approaches can help with management of the value of and the full life cycle of any asset. If you are just beginning – start with the equipment most likely to impact your district either positively or negatively. That may include cost or impact on customers.



- All PM work should be done according to the manufacturer's maintenance manual.
- Before doing work, verify whether there is warranty coverage for the job for all new installations and construction.
- Know your limits and when to call in a contractor to be sure the repair is done right.
- Frequency for some work will vary. For instance, roofs should be checked after every significant storm for debris as well as in the late fall to clean off leaves and then again in the spring to be sure it's clean. HVAC filters may only need to be changed twice a year or more frequently depending on environmental conditions and the location of the filters.
- Developing district policies and procedures will help simplify and streamline the PM process.

1.) Develop an asset list.

- a. May include all assets from hand tools and small equipment to major building components to motorized equipment or may simply be anything with a value over a certain dollar figure established by your district.
- b. Should include all relevant information about the equipment such as the date of installation, serial numbers, last service date, next scheduled service date, etc.
- c. Don't leave out buildings (will expansion be required in the future; either a new building, addition or interior space management) and other structures (bridges, play equipment, signage, underground pipes, conduits needing regular maintenance, etc.)
- d. Will the asset require an upgrade and is this accounted for both in time and money?

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Continued

- 2.) Determine what tools, parts, and safety equipment are required to work on each piece of equipment.
 - a. This can be a trigger for necessary staff development
- 3.) Develop a calendar to identify when work will be scheduled for both types of maintenance.
 - a. Build the calendar with flexibility. For instance, filter changes in a large facility may be completed over a month's time while a roof inspection after a storm needs to happen within a day or two.
 - b. A phone tree for emergency contacts should be reviewed annually or whenever staff changes are made that impact emergency contacts.
- 4.) Consider seasonal work, for instance air conditioning units should be checked in the spring before hot weather and heating units should be checked in the fall before cold weather.
- 5.) The asset list should contain all the components of a building including HVAC, fire suppression and monitoring, burglar alarms, plumbing, doors and door hardware, windows and window hardware, sump pumps, flooring, etc.
- 6.) Record all work, parts changed out, issues identified that may need immediate attention (parts on order) or may change the next PM date (filter is not lasting the full time expected) or requires the work of a more skilled technician (fan is rattling with no obvious cause).
- 7.) Review life expectancy of equipment and plan for replacement.
- 8.) Identify parts and equipment that are not performing as expected.
 - a. Was this a poor choice of equipment (i.e. cheaper to avoid initial costs or not properly specified in the original design)?
 - b. Was this poor workmanship? Is it still under warranty – call the contractor!
- 9.) What are the disposal costs?
 - a. Is there hazardous material that needs to be removed? ¹
- 10.) Are supplies that are disposable or have a life expectancy are included on the list to be checked?
- 11.) Consider predictive maintenance using infrared analysis of motors and electrical panels to find hot spots; vibration analysis of motors and other rotating machines and oil analysis on transformers.



¹ This is an example of when a district policy and procedure are helpful