



Light Bulbs & Light Fixtures PM

By Howard McKew, P.E., C.P.E.

Preventive maintenance (PM) of lighting is more than just changing out a light bulb when the light goes out in a room or an outdoor light fixture. Whether the light bulb is incandescent, halogen, fluorescent, or light-emitting diode (LED), maintenance staff responsible for changing out light bulbs should acknowledge that these lamps along with the fixtures require annual PM.

Please refer to this month's [Asset Management](#) column where we discuss in more detail the types of light bulbs that are in use, the pros and cons of each of these bulbs, and what a facility manager should consider when evaluating energy retrofitting of light fixtures, replacement of existing fixtures one-for-one, or planning the specification of new light fixtures when renovating an existing area and/or adding an addition or new building.

For a building with existing light fixtures, a good maintenance program starts with an adequate inventory of replacement light bulbs. Aside from the inconvenience of not having the right bulb when a light goes out, is the issue of safety e.g., lighting in an exit stairway and the urgency to get the light bulb replaced. Buying in bulk can save on cost but a facility person should also consider changing out the light bulb to reduce energy consumption if it is an incandescent light or halogen light bulb with a energy efficient LED bulb/ fixture. Today lighting manufacturers offer simple, screw-in LED fixtures for many incandescent and halogen fixtures with LED's using 80% less electrical energy. One must just confirm the fixture replacement fits and that the voltage is correct.

Next is the correct method of disposal of light bulbs. Incandescent bulbs can be safely disposed of in regular trash. Halogen bulbs can also be disposed of in regular trash. Bulbs that cannot be disposed of so conveniently in trash bins are compact fluorescent and LED light bulbs. These fluorescent light bulbs contain mercury and are hazardous to the environment so they should



be taken to a recycling center where the center accepts them along with antifreeze, batteries, oil, and certain types of paint. LED bulbs should also be taken to a recycling center because this type of bulb contains hazardous lead and arsenic, as well as copper that can threaten aquatic life if disposed of in a river or lake.

With a PM program, standardizing the inventory simplifies the PM work when it comes to replacing light bulbs. Buying in bulk financial benefits go along with standardizing the inventory but here again the maintenance person should research opportunities to replace incandescent and halogen light bulbs with LED before stocking up on these two types of less energy efficient light bulbs.

Scheduled PM Work Orders

We have discussed PM work orders in past columns and we will reiterate the establishing of a scheduled PM work order process is essential to good facility

management and to contributing to a safe and secure facility inside and out.

To start the development of a light bulb-light fixture PM work order template the type of lighting and fixture needs to be considered with the following:

- The type of light bulb. Based on energy consumption and preservation of the environment, the building owner and facility personnel should consider replacing incandescent bulbs and halogen bulbs in lieu of continuing to maintain these specific lights/fixtures. Their energy increases utility costs and is responsible for creating higher levels of greenhouse gas emissions.
- A compact fluorescent lamp uses approximately 75% less energy than the incandescent and LED bulbs LED will use even less energy but States are looking very closely at each type of lamp going forward, restricting light bulbs based on current energy and environmental performance so the PM work order may require edits in the coming year.
- Does the specific light/fixture have energy savings lighting controls, e.g., dimmer? If not, enhancing the existing on-off controls with energy conservation features should be considered and included in the PM work order template.
- The age and existing conditions of the fixture holding the light bulb should be added into the work order special instructions, e.g., age and efficiency of ballast.
- Time of day PM work would be scheduled e.g., in an open place of work with several office workers occupying the area, the PM work order should be completed on off-hours so as not to disrupt the work being done.
- Replace one bad light bulb or all the light bulbs in the space? If the area to be serviced is a large open workspace, then consideration should be given to changing out all the bulbs at one time so as to avoid performing bulb replacement one at a time as it can be assumed that if one or two bulbs fail then the remaining bulbs will soon follow. This should prove to be more cost effective relative to the disruption to the office workspace.

Work Order Special Instructions:

1. This segment of the work order is intended to be a “heads-up” to the individual assigned to complete the work order beginning with highlighting materials to be disposed of, e.g., do not discard fluorescent bulbs in the regular trash.
2. Personal protection equipment (PPG), e.g., safety glasses should be used when removing certain lamps such as fluorescent bulbs.
3. Required equipment and tools should be specified on the PM work order, e.g., 8-foot ladder, trash bucket for discarded light bulbs, etc.
4. An important thing to remember for these fixtures is to avoid abrasive materials or cleaners that can damage the coating. Instead, clean polished metal fixtures with a soft cloth. With the electrical power off/disconnected, clean fixture with plain water and mild detergent soap. For added protection, you can wipe the fixture down with a non-abrasive paste or liquid wax.
5. Use correct replacement lamps. While all four-foot fluorescent tubes might look alike, they can have different performance characteristics.
6. A maintenance note pad to document additional comments from a visual inspection should also be included for the maintenance person to document unscheduled work requirements and incomplete PM work due to sufficient materials, damage e.g., frayed electrical wire and/or additional parts to be requisitioned. This note pad should include a prepared checklist of standard things to look for, noted above when writing down maintenance comments made from visual inspection.

Tasking:

- Weekly and/or monthly walk-thru inspection of light fixtures working or not working should be performed although occupants will also notify the maintenance person when a bulb goes out where the occupant is sitting. This survey should include inspection of outdoor light fixtures after dark to make sure the lamp(s) is working, as well as the outdoor light sensor (where applicable) is functioning correctly. Also check outdoor lighting

time clock schedule to make sure lights are on as darkness arrives and are off with sun-rise.

- Cleaning of lamp and fixture should be scheduled, at a minimum of once a year. A fixture's output can diminish by 10 percent a year just from dust accumulation, even in a relatively clean environment.
- Straighten and adjust fixtures to ensure design integrity.
- For light fixtures located on the ground outdoors, remove mulch and debris that might cover or diminish lighting output
- Check all electrical connections for tightness.

Summary:

Lighting is so essential to all of our lives and preventive maintenance shouldn't be taken for granted until a bulb goes out. Lamps consume energy, impact our environment, and deplete the ozone layer. Facility managers of churches, parish buildings, senior centers, etc. have an obligation to those who come and go from the facility that the lighting operates as intended and lights and fixtures are maintained. These places need to have adequate lighting, efficient lighting levels, and lighting for safety of the occupants in the building and around the building.

There is an important job satisfaction feature of going to work when its occupant acknowledge that this building is well maintained, well lit, and routinely cleaned providing for a healthy space environment.

For more on preventive maintenance refer back to our [“What a Preventive Maintenance Work Order Includes”](#), October 2020 [“A Facility Maintenance Checklist”](#), and November 2020 [“Embracing Checklists for Your Job Description”](#).

<https://www.facilitiesnet.com/lighting/tip/Lighting-Systems-Six-Maintenance-Tips--21421>

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