



**AkitaBox**

# **Understanding and Implementing Preventive Maintenance for Facility Management**

# BACKGROUND

Preventive maintenance (PM) strategies are utilized by facility and operations teams to prevent asset and equipment failure prior to the end of the asset's useful life. A quality PM plan promotes the overall health of a facility, such as optimized cleaning routes and workload balances, higher return on investment (ROI) on mechanical and structural investments, and accurate data for capital planning purposes.

While developing a robust PM schedule is the goal of every facility leader who plans to reduce operating costs and maximize the lifespan of their facilities and assets, many building leaders do not know where to begin.

## INTRODUCTION

There are numerous ways building leaders should prepare for new PM procedures before implementation. First, it is critical to understand the basic terminology behind preventive maintenance practices before discussing approaches and strategies to maintenance, as use of these terms vary between industries:

**Preventive Maintenance (PM):** These larger scheduled maintenance tasks are performed by trained staff to prevent unexpected system failures to help improve energy efficiency and reduce future repair costs. These tasks are derived from operation and maintenance (O&M) instructions and asset-specific factors, such as age, run time and application.

**Predictive Maintenance (PdM):** These larger scheduled maintenance tasks are also performed by trained personnel based on O&M instructions, but are also planned for when internet of things (IoT) sensors detect any performance fluctuations.

**Routine Maintenance:** These quicker, scheduled maintenance tasks prevent future damage and reduce general system wear and tear, extending equipment life. Lesser-trained personnel typically complete these duties on a more frequent basis, as directed by O&M documentation and institutional knowledge.

**Reactive Maintenance:** Unexpected failures, system damage and occupant requests prompt these unscheduled maintenance tasks, which are usually more costly and can result in longer downtimes than scheduled maintenance.

Second, facility teams should create a baseline for the new program by evaluating and understanding the current state of their facility data, such as if it's being stored, and, if so, how it's being stored, accessed and tracked. This is done by combining accurate space data, with asset locations. A facility management software (FMS) is the most convenient tool to fuse this data, but it is usually managed with paper or spreadsheet-based systems.

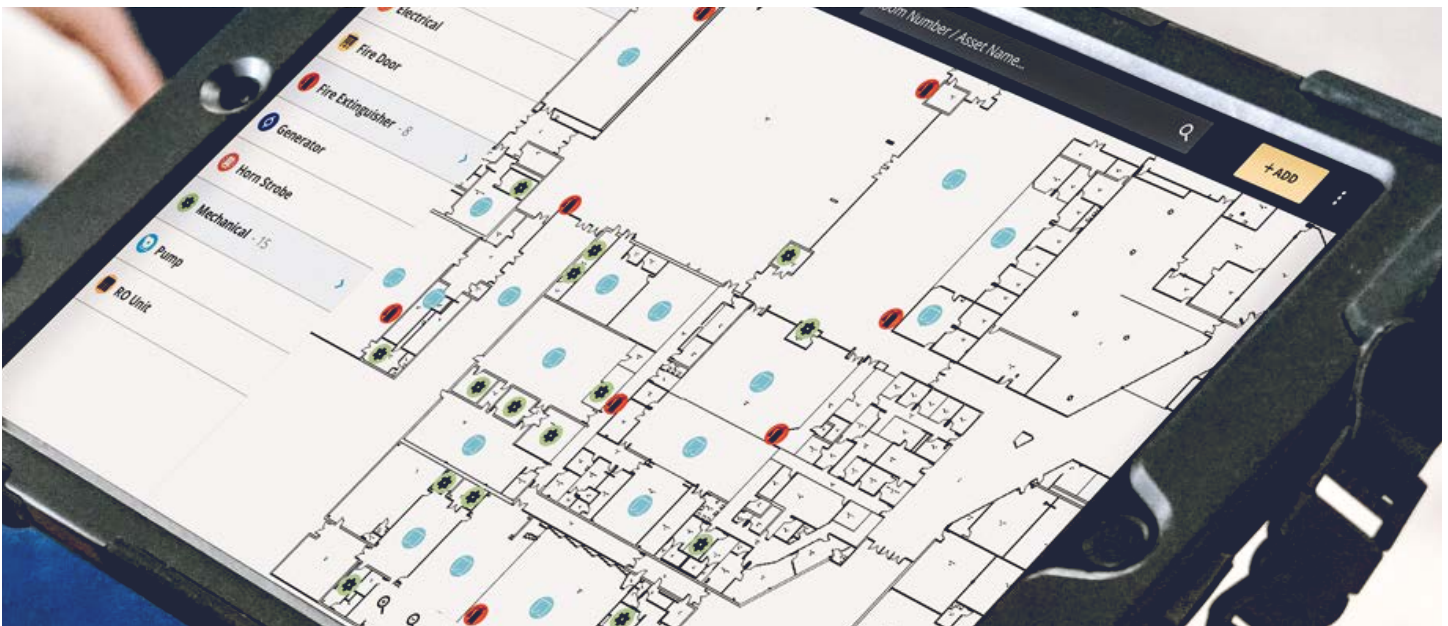
Capturing accurate room and asset data can be an overhaul for facility teams due to the time and resources investment required to walk buildings and grounds, log and/or validate assets and corresponding unit documentation, create condition reports, and standardize and input data into a software system. However, this information is essential to structuring an effective PM plan and quantifying its impact.

Some facilities have used creative solutions to collect this data, such as structuring internships for aspiring facility managers around data collection, asking facility teams to log the data during regular cleaning or maintenance schedules or using it as a training opportunity for new facility management staff. For facilities with limited time and budget, this can still be a challenge. [Data collection services are available](#) if outsourcing is easier for building teams, and, in some cases, these third parties are a cheaper, faster alternative than an internal initiative.

Regardless of what method facility teams choose to utilize for data collection, the information acquired needs to follow a standardization process so it can be imported into a facility software. Examples of what is needed in this initial import include:

- Paper and digital floor plans, which include all new construction projects, expansions and remodels
- Space use validations, including space use by department and room numbers and/or names
- Asset name and location on a floor plan, including its type, condition, make, model, serial number, photo and any corresponding documentation pertaining to the asset, such as O&M manuals
- Equipment documented should include mechanical, HVAC, electrical, plumbing and standard life safety assets
- Number of team members by department/specialty
- Number of net and gross square feet assigned to each staff member to maintain and documentation on what they are responsible for maintaining
- Understanding of how issues are submitted from occupants to facility maintenance staff and how the facility management team communicates issues to its own team

After space information is captured, facility managers and directors should utilize a central information repository that can be accessed and updated by building staff as the buildings age and evolve over time. A permissions-based and device-agnostic FMS is ideal for housing this data, but to truly benefit from a PM model, the software solution should include a location-based room and asset module. This will help users understand where the facility's assets are located. Successful, timely PM practices can only be achieved in facilities when building teams know which assets are housed where, have an understanding of an asset's service history and which assets need maintenance next. If a FMS does not easily provide this historical and locational data, a PM plan will be difficult to establish and implement.



### ***Facility Management Software's Role in Preventive Maintenance***

Using the right FMS is critical to creating a robust PM strategy. In addition to serving as a central repository for every building's asset data and space information, facility software should allow work orders to be tied to documented assets on a floor plan and proactively schedule maintenance. If a facility lacks a management software or utilizes an existing software incapable of displaying this information, then a complementary program should be chosen to supplement the legacy program. Creating a PM plan is possible without software, since variations of these systems have only been around as early as the 1990s, but software ensures long-term success by making data easier to update and access for users across multiple buildings.



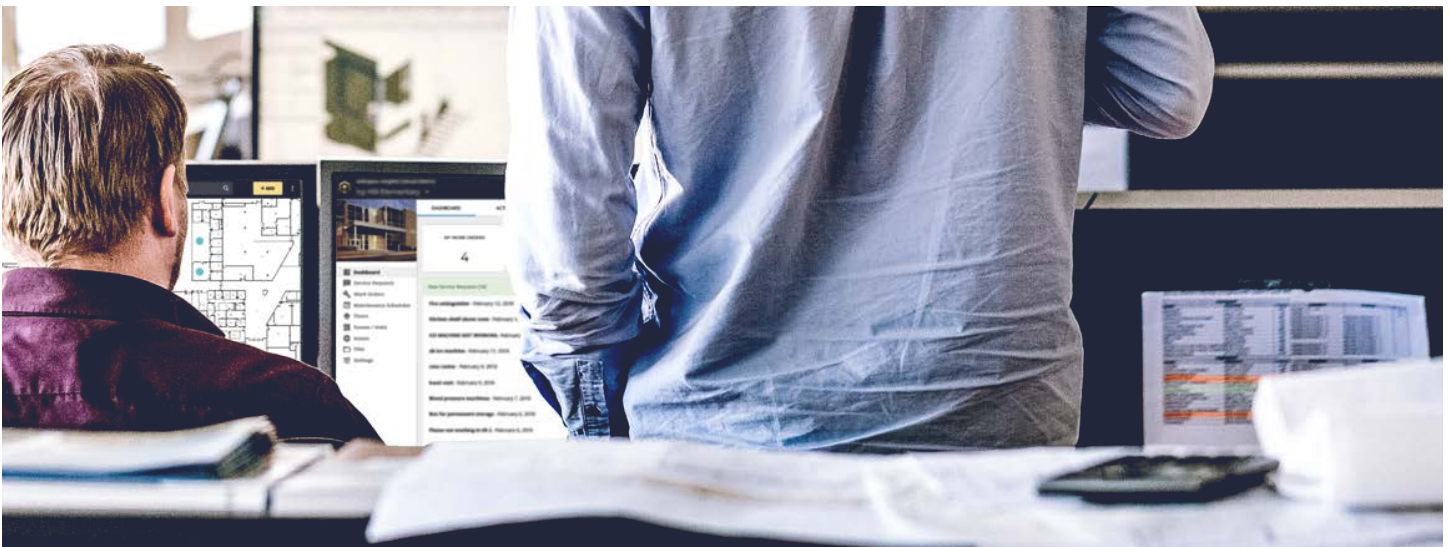
## DEVELOP A PLAN

Facility managers and directors will coordinate the rollout of a PM plan, but the program's effectiveness is often determined by the technicians, custodians and sub-department managers who interact with the buildings on a daily basis. All successful strategies start with interdepartmental collaboration, so start with a facility management team meeting about current PM challenges and opportunities. This will help increase investment in the program. It is also important to include other departments, such as operations, accounting and information technology, in the planning process as necessary. Each of these departments will directly impact the success of, benefit from and potentially oversee parts of the PM plan.

Before entering the meeting, do research on the facility maintenance team and its approaches so they can be accurately and intelligently debated. Also, look at the current FMS and see if it will meet the department's needs for a PM system; if it does not, research alternatives to propose to the group. With research in hand, make sure meeting discussion points include:

- Pain points in workload balancing
- Service request communication challenges
- Current PM approaches, if any
- Current routine maintenance approaches, including timing, scheduling and overall processes
- Current reactive maintenance approaches

Following the meeting, have each manager list every asset category their team manages, and what PM tasks are associated with these assets.



### ***What is Considered Institutional Knowledge?***

Institutional knowledge is any information stored in the minds of employees that is not documented in official protocols or asset documentation. For instance, perhaps a facility has two boilers; one is the primary and the other is a back up. This means each unit requires different routine maintenance and PM. If this information is not documented anywhere, then this would be considered institutional knowledge and could be forgotten and lost if an employee with this information leaves the organization. Facilities with career-long employees tend to have more of these mental archives, and it becomes a problem during staff transitions. Institutional knowledge should be captured and documented in a FMS.

## COMMIT TO BOTH UTILIZATION AND FEEDBACK

Once each department has committed to a PM plan, ensure that data is consistently being utilized and updated within the FMS by monitoring incoming service requests, work orders and scheduled PM tasks. Within a matter of weeks, a facility leader should see an increase in visibility to what is and is not getting done.

After the system is implemented, continue talking with those involved in the implementation. Discuss what is and is not working. Identify challenges for each department, and, as a group, find ways to start addressing these issues. Most issues surrounding PM plans center on data inaccuracy, technology accessibility or consistent use. Throughout the implementation process, facility teams may need to capture more space data, consider the limitations of the existing FMS or remind teams to stay dedicated to the process.

*Example: If the fleet management department has issues with vehicle maintenance competition times, perhaps the environmental health and safety manager could share workflow changes they implemented to reduce room turnover times.*

In the same vein of collaborating to address challenges, also share strengths between each departments, because even though each department is unique, workflow and problem-solving strategies often cross disciplines. Some managers might be resistant to sharing, but all sub-departments should work together for better efficiency as a team.

*Example: The facility security team has the fastest service request response time because they use tablets in the field instead of check-ins on a desktop computer. Could the facility operations team share that approach?*

## MEASURE SUCCESS

How a facility management department measures success depends on their goals, so facility teams should identify what the department as a whole is trying to achieve. There are a variety of metrics to get facility teams started, and they are centered around:

**Wrench Time:** Analyzing how many work orders are completed by technicians before and after the implementation of a PM plan can show the improvement in wrench time. This should result in less time spent finding or researching an asset and more time spent responding to service requests or conducting PM.

**Service Request Response Efficiency:** Average response times to an occupant's service request can be compared before and after a PM implementation, in addition to the number of uncompleted requests. This data can also be used to create a Service Level Agreement (SLA) for facility teams to help define value back to the organization, with building leaders and occupants.

**Costs:** In addition, data can be collected to show costs year-over-year of reactive maintenance versus PM. In most cases, reactive maintenance and total failure costs will exceed PM costs exponentially. By switching to a PM model, the organization will see a higher ROI on asset purchases.

### ***Creating a Service Level Agreement***

Service Level Agreements (SLAs) are created at the leadership level with stakeholders in all departments, and they specify “actual services required and the performance expected of the service provider”, according to [The Facilities Society](#). This helps improve interdepartmental communication of expectations. Many times a SLA includes a tiered priority for each request type and a service request response time commitment.

FMS provide many additional data, so figuring out which metrics are important and what story they tell is the challenge. For the above examples, consider monitoring the following metrics:

- Number of assets maintained
- Number of PM work orders scheduled
- Average time to complete a PM work order
- Number of routine work orders completed
- Average time to complete a routine work order
- Number of reactive maintenance service requests completed
- Average time to complete a reactive maintenance service request

## COMMUNICATE SUCCESSES AND OPPORTUNITIES

The organizational leadership team will most likely be included at a high-level in the PM plan, since it will affect strategic company direction and heavily impact the budget. Besides the metrics mentioned above, include anecdotal information from teams about how the roll out went and communicate what leaders can expect to see in the future. For instance, they can anticipate:

- **Streamlined Training for Future Facility Staff:** All asset and maintenance documentation lives in one central hub that is easy to reference and update, which reduces the time it takes a facility leader to learn the building and assets for which they are responsible. Partnering with the vendor who supplies the facilities' FMS is a great way to get custom-tailored training on the platform.
- **Improved Capital Forecasting/Budgeting:** Define how scheduled PM and routine maintenance will help outline the materials and personal resources needed for the next year, so larger PM projects are not a surprise or skipped due to inaccurate budgeting of time and funds. PM reduces operating costs due to fewer reactive maintenance requests and unexpected downtime, so, while there should still be a budget for these unknown circumstances, it should not be as large after a few years of consistent PM.
- **Increased Accountability and Transparency:** Facility management departments will have a better handle on group and individual performance thanks to the metrics collected in the FMS, so it is easier to communicate how the departments are doing with other department leaders.

## CONCLUSION

Developing a PM strategy is a department-wide initiative, and support from the whole team - leadership, managers, middle-managers and employees - is critical to its success. The four parts to creating an effective PM plan include collecting accurate space data, managing data with the right FMS, gathering organizational buy-in, and communicating how the program performs. With these steps in mind, facility managers will have a higher success rate at implementing a PM plan on an organizational-wide level.

## About AkitaBox

*AkitaBox is the leading FMS and data collection provider dedicated to improving the way people manage and interact with the buildings they occupy. Founded in 2015, AkitaBox currently supplies accurate facility data management tools to over 200 million square feet of educational, healthcare and governmental organizations in the United States. For more information, visit [AkitaBox.com](https://AkitaBox.com).*

