

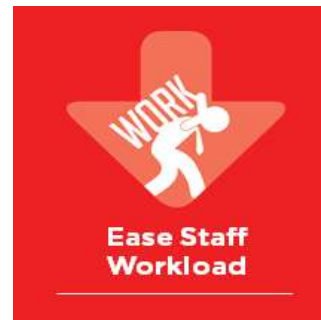
Deferred Maintenance Done Right

By Thomas O'Connell, Jr., CEO, PRETECT

Preventative Maintenance (PM) is vital to ensuring the reliability and efficiency of equipment. To be effective, PM must be done properly, consistently, and timely. **The goal of maintenance is to reduce the risk of asset failure and to increase asset efficiency.**

In today's reality, Facility Engineers juggle constant demands and ever-tightening constraints – smaller staffs, greater expectations, and shrinking budgets – so adhering to a strict time-based PM schedule is incredibly difficult. To adapt to these pressures and rationalize the budget, many facilities have migrated from routine PM to a **Deferred Maintenance (DM)** program. DM postpones maintenance activities, spreading out the costs associated with them and lightening the workload on smaller staffs.

The goals of DM are:



But when you extend the time between maintenance activities, you theoretically increase the risk of asset failure and decrease asset efficiency. Scientific studies of DM programs appear to prove this.

STUDY 1

Conclusion: Every \$1 deferred in maintenance costs \$4 in capital expenditures in the future.

Source: Rick Biedenweg, former AVP of Information Resources at Stanford University and current President of Pacific Partners Consulting Group, has worked with 225 institutions to help predict operating and capital budget needs.

Methodology: By analyzing and comparing the Current Replacement Value (CRV) of numerous institutions, his analytics demonstrate that as ongoing maintenance spending decreased in relation to CRV, annual capital repair costs increased at a rate of 4 to 1.

STUDY 2

Conclusion: When everything is factored in, the cost of catastrophic failure – including idle personnel costs, business stoppage losses, and equipment repair/rehabilitation – could skyrocket to 30x the cost of routine PM activities.

Source: Stanford University White Paper, *Guidelines for Life Cycle Cost Analysis*.

Methodology: Analytical review of case studies and financial data.

This does not mean DM won't work or that it's not a viable solution for your facility. You can DM and maintain an appropriate level of risk and efficiency. But, the only way to do so, is by first answering these 3 questions:

1. How long can you defer maintenance before the risk of failure or diminished efficiency outweighs the cost savings?
2. Which assets can handle DM and which cannot?
3. How can you optimize assets now, so you can move to a DM program?

To get these answers, you must perform a baseline Asset Condition Assessment to determine the current health of your assets and where your actual risks and inefficiencies lie. Then you must implement monitoring mechanisms to continuously update your understanding of the health of your assets and re-prioritize maintenance activities appropriately.

This can only be achieved by implementing a **Predictive Diagnostics & Maintenance (PdM)** Plan. PdM gives you the baseline health information for your Asset Condition Assessment and prescribes when and what kind of maintenance should be performed on which assets. **Once you know when maintenance absolutely needs to be done, how to prioritize it, and which assets are at the highest risk for failure or expensive repairs, then you can properly defer maintenance without exposing yourself to unacceptable risk.** PdM also involves periodic or continuously monitoring of your assets' health so your maintenance plan can be optimized within your budget and unique facility needs.

DM and **PdM** have the same goals:



Reduce Maintenance Costs. Like DM, PdM is designed to achieve cost savings **because activities are only performed when they are warranted.** PdM analyzes the actual condition of your assets so you can reliably modify your maintenance schedule to only perform the type of maintenance that is needed at the frequency that it's needed.

Ease Staff Workload. Preventative Maintenance (PM) utilizes manufacturer and industry standards and average life expectancies to dictate when maintenance should be performed. PdM takes an individualized approach to each asset and tailors maintenance programs to the actual needs of the equipment. **PdM allows staff to pinpoint activities with the highest value and trains them to focus on the key life-extending and efficiency aspects of their equipment.**



But PdM also provides the following advantages that neither PM or DM can:



Reduce Unscheduled Downtime. On a DM program, you have to take corrective actions as they are incurred. Even under a PM program, you encounter a number of unplanned activities because you aren't in tune to the actual health of individual assets. But by adding PdM diagnostics, you can identify and schedule corrective actions when it's convenient and prevent unexpected events. You can also ensure you pre-order stock and replacement parts reducing the amount of lead time, and consequently, the amount of downtime for a repair. **The beauty of planned maintenance is that it takes less time than unexpected repairs do. Unlike other maintenance activities, PdM can often be performed while equipment is operating, further minimizing disruption.**

Mitigate Catastrophic Failure. Problems will develop in between maintenance activities regardless of the type of maintenance program you design, but utilizing PdM diagnostics helps you identify those problems in advance and troubleshoot them. PdM is designed to identify issues with individual assets in advance of failure, so you can initiate the cure before a breakdown is imminent. Neither PM or DM alone can provide this benefit. In addition, **failures have other significant expenses – idle personnel costs, business stoppage losses, tenant monetary disputes. As these costs add up, they can make the expense of an asset repair or replacement seem inconsequential.** When these contingencies are factored in, deferring maintenance without the right predictive information could cost 30x as much as a simple repair.



Predict & Budget Capital Expenditures. Because PdM continuously re-assesses the health of your equipment, you can **plan and budget both operating and capital expenditures on a rolling basis, giving you more, less expensive options to rehabilitate assets and improving your actual performance against budget.** You may also be able to find additional cost rationalizations so you can implement projects that have been shelved due to lack of funds.

Extend Equipment Lifecycle. Your equipment will last longer when using PdM than either a strict PM or DM regime. By optimizing how the equipment is functioning on a daily basis and monitoring it prospectively, you can reduce wear and tear on the asset. But you can also identify problems with existing maintenance activities regardless of their frequency. Maintenance must be done properly to be effective no matter how often it is performed. **PdM assesses the quality of maintenance procedures and pinpoints areas for improvement and staff training needs.**



Strengthen Facility Safety

When assets fail less frequently, risk to health and safety is dramatically reduced. There are fewer accidents. But there is also less stress on the workforce. **As the health of your assets improves, so does the health of your workforce.**

What is PdM?

PdM pinpoints the optimal time to perform maintenance – when it's most cost-effective and performance-enhancing. PdM techniques include:

- Vibration Analysis
- Critical Speed Analysis
- Infrared Analysis
- Isolation Verification
- Motor Current Waveform Analysis
- Motor Circuit Analysis
- Ultrasonic Analysis
- Weatherization Testing
- Building Envelope Testing

DM + PdM = Optimization

Because PdM only occurs on a periodic basis, optimally quarterly or bi-annually, and is performed by experts in mechanical and electrical systems with cutting-edge diagnostic tools, the cost of adding these techniques to an operating budget are minimal in comparison to the cost of ongoing, traditional maintenance activities and the opportunity costs of not employing those activities. PdM is easy and cost effective once you've identified the right partner to help you assess and preserve your facility's health.

Only by coupling Deferred Maintenance with Predictive Diagnostics & Maintenance can you ensure the continuing health of your assets by approximating the risk mitigation and efficiencies achieved under a Preventative Maintenance Plan. You can reduce

maintenance costs even more if you utilize these techniques in tandem. When considering the other intangible benefits provided by PdM, you can even surpass the results of a traditional PM program.

$$\text{DM} + \text{PdM} > \text{PM}$$

Conclusion

On its own, DM saves you a dollar today, but costs you four dollars down the road. And that road might not be very long. While the intention of your DM program may be to push expenses out into future periods, unless you know the current health of your assets, you can't reliably ensure against a failure in the near term. Such a failure would completely negate the current cost savings you anticipated with DM. **By implementing a PdM program in conjunction with a DM program, you can better estimate future costs and even mitigate their impact on your budget, reducing overall expenses across all periods.**

By coupling DM and PdM, you can, not only save more, but reduce unplanned downtime, get a better handle on future operating and capital budget requirements, and ease your staff's workload. You end up with an individualized, cost-effective Maintenance Program that provides more benefits than traditional Preventative Maintenance routines.