

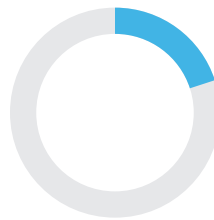
Quantifying the ROI of Cost-Cutting Technology

The Business Case for an Integrated Operations and Maintenance Platform



56%

of commercial real estate executives believe that the COVID-19 pandemic exposed shortcomings in their organizations' digital capabilities¹



20%

The amount commercial real estate executives plan to reduce operating costs going forward²

The COVID-19 pandemic has made digital transformation a business imperative for commercial real estate.

Softening operating fundamentals have put pressure on landlords to cut costs while maintaining capabilities and resilience going forward – to do more with less.

While digitization has successfully been integrated into information-only aspects of the industry such as leasing and rent rolls, building operations and asset management remain mired in paper, spreadsheets, and human memory.

Part of the reason for this is the inherent difficulty in gathering data from physical assets and workflows. But data collection challenges have been solved by numerous innovations in software and hardware over the last several years.

A larger barrier, especially at portfolio scale, is that many decision makers have not been presented with a compelling business case for investing in cost-cutting technology.

The challenge is that there is no silver bullet or prescriptive path that can apply to every property or portfolio. Differences in organizational and investment structures, systems in place, weather patterns, building size and property types influence which technologies are most applicable and what expected returns will be.

The goal of this white paper is to break out, by pro forma line items, the financial ramifications of maintaining the status quo and the ways technology can, and has, produced attractive returns.

Jump to Section

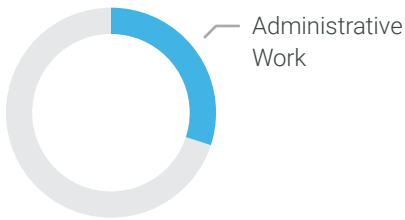
- [Maintenance & Repairs](#)
- [Capital Expenditures](#)
- [Utilities](#)
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- [Technology Costs](#)

Maintenance & Repairs

Maintenance & repairs (M&R) is the single largest non-tax operating expense line item according to BOMA's most recent benchmarking survey⁶.

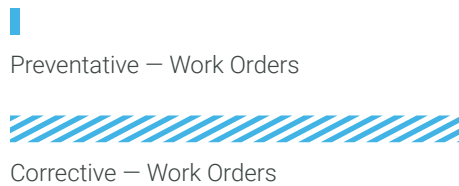
30%

of building operators' days are spent on administrative work³



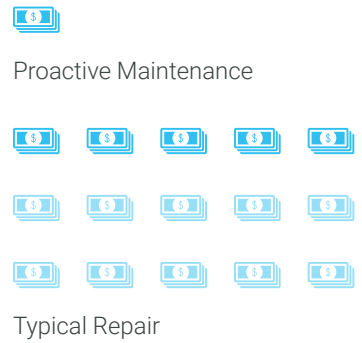
2%

of work orders are preventative in nature. The other 98% are corrective⁴



5–15x

the cost of a typical repair compared to the cost of proactive maintenance that would have prevented the failure from occurring⁵



M&R costs can be reduced in three primary ways:

1 | Productivity

Contrary to popular belief, even time savings for salaried employees flow to the bottom line. Less time spent on administrative tasks, searching for information, troubleshooting, return visits, etc. means more time spent can be spent on preventative maintenance (PM). More PM means fewer equipment breakdowns and expensive repairs calls to outside vendors.

2 | Speed

Not every issue can be prevented. When problems do occur, there is a small window of time to take corrective actions before total failures occur and expensive repairs are required.

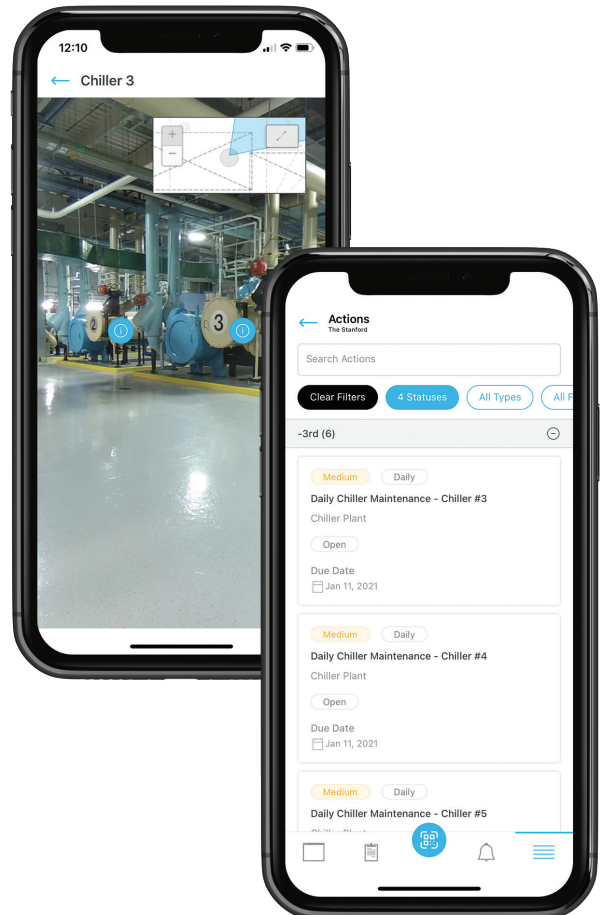
3 | Parts

The process of bidding and ordering parts to fix equipment is done on a manual and ad hoc basis in most portfolios. Over ordering results in higher costs and inventory issues, while under ordering often means paying for rush deliveries when supplies are not available on site.

Technology

There are two types of technologies to increase productivity, speed, and efficiency in M&R.

The first is broadly known as computerized maintenance management systems (CMMS) or work order ticketing systems. These are software solutions, usually mobile apps, that serve as a documentation repository and provide task management tools for operators and technicians.



Value Proposition

A CMMS can:

- “Tag” assets to create a dynamic repository of equipment lists, meter lists, brochures and manuals, nameplate information, warranties, service agreements, etc.
- Create and manage workflows such as rounds, inspections, preventative maintenance, and meter readings. Ideally there is a library of best practices to pull from.
- Provide a way to communicate between teams, assign work and follow specific activities.

Extra credit:

- Remote building access to enable “walkthroughs” without being on site.
- Parts inventory management.

Recommended Deployment

A CMMS should be deployed in every asset, regardless of size, type or location.

Expected ROI

1–1.25 cents / sq ft
to deploy

1.5–2 cents / sq ft
In M&R savings through improved productivity and better parts inventory management

The second type of technology is equipment monitoring, which uses sensor data to optimize maintenance schedules and identify faults the moment they occur.



Value Proposition

Equipment monitoring can:

- Be installed without depending on the building management system (BMS) or the building’s internal network.
- Apply advanced fault detection, not just threshold-based rules.
- Calculate runtime hours to optimize preventative maintenance schedules to how much equipment is used.

Extra credit:

- Predictive analytics that can determine degradation in equipment.

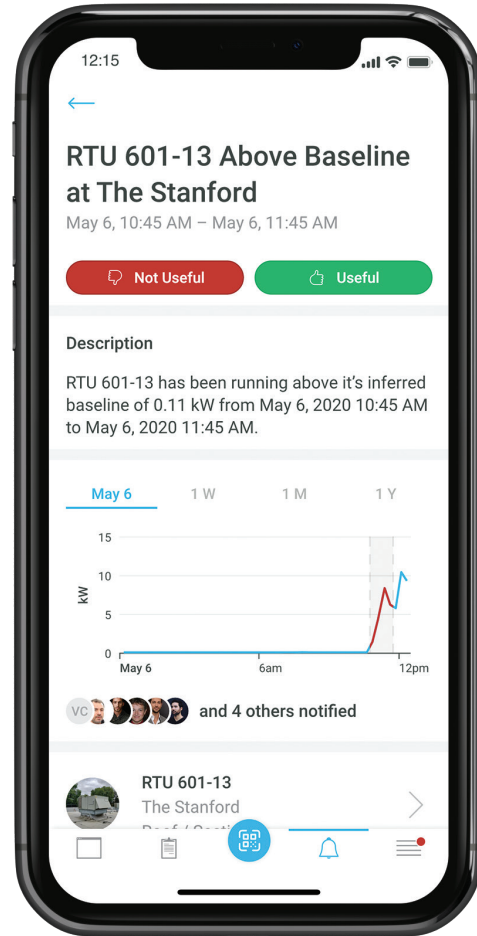
Recommended Deployment

Equipment monitoring is applicable to nearly every asset type because it can be scaled up or down depending on the systems on site. Target equipment is usually elevators, pumps, boilers, chillers, cooling towers, and exhaust fans.

Expected ROI

4–6 cents / sq ft
to deploy

7–9 cents / sq ft
In M&R savings through faster issue resolution, less troubleshooting and return visits, and fewer third-party repair calls





Case Study

Asset

High rise multifamily tower.

Technology

Equipment monitoring on elevators and integration with CMMS.

Results



75%

Reduction in entrapments



25%

Lower elevator maintenance costs

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Metric	Unit	January 2020	February 2020	Change
# of Entrapments Reported		4	1	↓ 75%
# of Repair Tickets (Excluding Maintenance)		45	22	↓ 51%
Total Reported Work Time	Hours	184.5	138.0	↓ 25%
Total Reported Repair Time	Hours	162.5	52.0	↓ 68%
Total Reported PM Time	Hours	22.0	86.0	↑ 291%
Enertiv Monitored PM Time	Hours	1	13.8	↑ 14x
% PM Time Verified		4.55%	15.99%	↑ 252%
Average Reported Time per Ticket	Hours	3.62	2.26	↓ 38%
Average Reported Time per Repair Ticket	Hours	3.62	2.26	↓ 38%
Average Reported Time per PM Ticket	Hours	3.58	2.26	↓ 37%

Capital Expenditures

JLL found that preventative maintenance has a 545% ROI when you factor in the net present value (NPV) of not spending money on replacing equipment. Even if NPV is not factored in, there can be a direct ROI in the reduction in CapEx reserves necessary.

Equipment life can be extended in three primary ways:

1| Preventative Maintenance

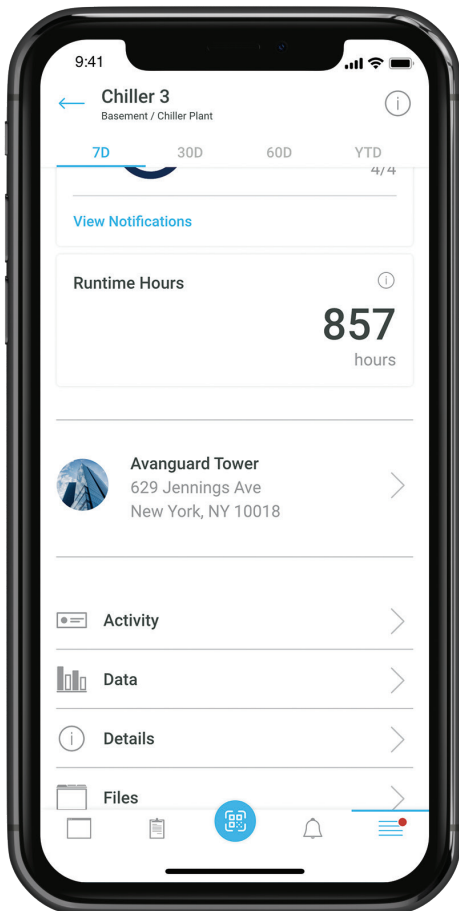
A run-to-failure approach is all too common in commercial real estate. Doing basic preventative maintenance on a calendar-based schedule can ensure equipment lasts as long as originally intended.

2| Predictive Maintenance

With sensor data, preventative maintenance schedules can be optimized to runtime hours and analytics can identify small anomalies and deviations that indicate an issue so that major failures can be avoided.

3| Distributing Runtime Hours

There is often redundant equipment in commercial real estate. One option is to run one piece of equipment to failure and then switch to the other. The more optimal approach is to use data to alternate between equipment to maximize the useful life of each.



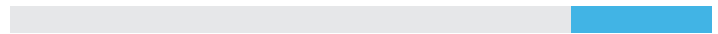
20–36%

Equipment degradation without proper maintenance⁷



20%

Potential increase in useful life of aging equipment with predictive maintenance⁸



Technology

Capital expenditures and maintenance and repairs are closely linked. As such, equipment monitoring provides the best source of extending equipment useful life.

Value Proposition

Equipment monitoring can:

- Maintain a digital repository of equipment with current and historical performance.
- Predict remaining equipment useful life.
- Benchmark equipment makes and models by total lifetime costs.

Extra credit:

- Facilitate equipment purchasing based on industry-wide benchmarks and vendor network.

Recommended Deployment

Equipment monitoring is applicable to nearly every asset type because it can be scaled up or down depending on the systems on site. Target equipment is usually elevators, pumps, boilers, chillers, cooling towers, and exhaust fans.

Expected ROI

4–6 cents / sq ft
to deploy
(redundant to M&R section)

5–7 cents / sq ft
Lower CapEx reserves
necessary*

*This does not take into account the NPV of investing capital not spent on equipment.

Case Study

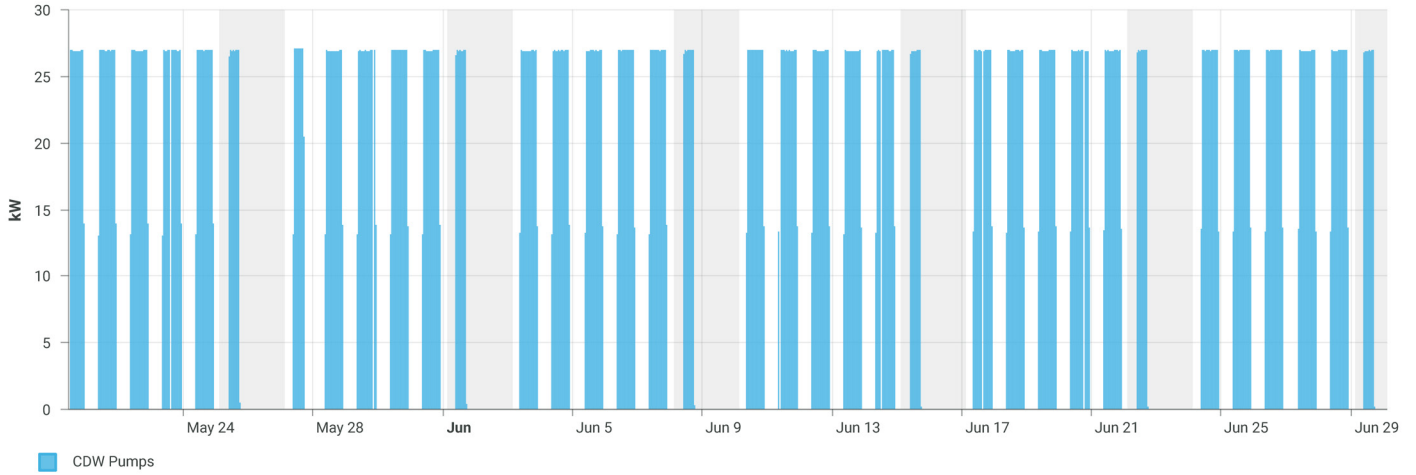
Asset

Suburban office.

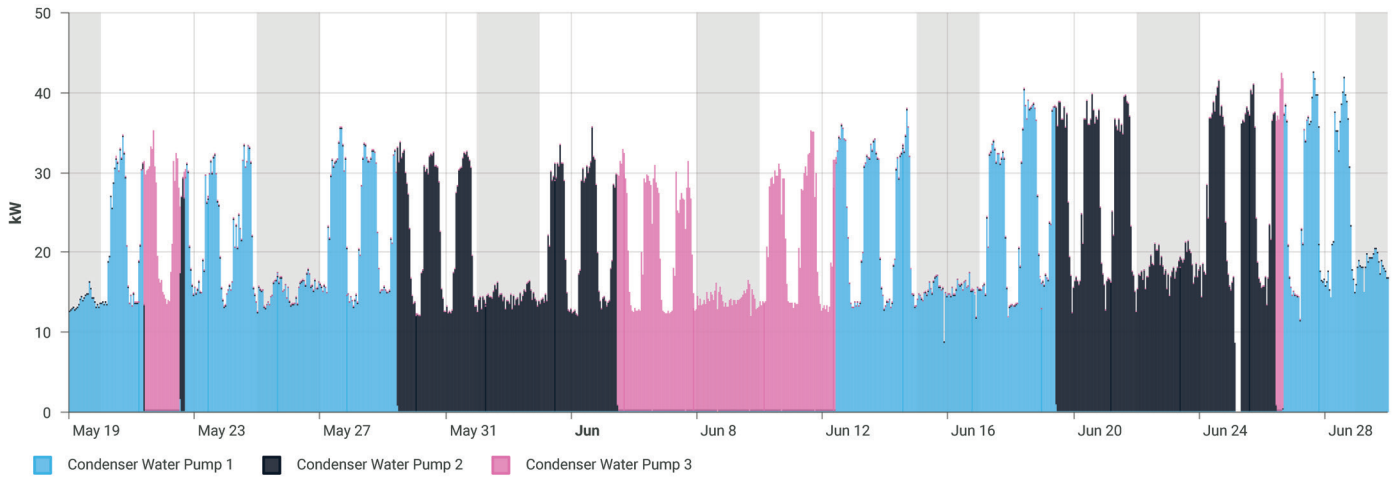
Technology

Equipment monitoring on pumps.

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Example of only one pump running instead of alternating to extend equipment life



Example of three pumps alternating on a bi-weekly basis, thus extending equipment life

Utilities

Reducing energy consumption is the most direct way to cut operating expenses in commercial real estate.

Utility costs can be reduced in three primary ways:

1 | Optimize Schedules & Set Points

Equipment-level data can pinpoint systems that are running when the building is unoccupied as well as scenarios where HVAC equipment is heating when it's hot outside or cooling when it's cold outside.

2 | Retrofit Equipment

Equipment retrofits, such as through variable frequency drives which allow for modulating of pump speeds, require some upfront investment but often have attractive payback periods. Data and analytics can help identify and prioritize these opportunities.

3 | Maintenance

Poor maintenance practices can result in reduced flow rates, sub-optimal refrigerant levels, oil contamination, and airflow problems that increase energy consumption in HVAC equipment.

Technology

There are two primary sources of collecting the data necessary to drive energy optimizations.

The first is integrating with the building management system (BMS) to pull data into the cloud.

Value Proposition

Integrating with an existing BMS can:

- Pull hundreds or thousands of data points with the installation of only one device.
- Make the BMS accessible in the cloud, not just from one desktop computer in the building.
- Trend data over time, which many BMS cannot do

Extra credit:

- Remotely control equipment*

Recommended Deployment

Obviously, BMS integration is only applicable to properties that have a BMS that can be accessed through a standard protocol such as BACnet or Modbus.

Expected ROI

The second approach is to install equipment monitoring to track the real-time energy demand from individual circuits, which correspond to pieces of equipment.

2–3 cents / sq ft
to integrate

7–9 cents / sq ft
in utility savings through optimized equipment schedules and set points



30%

energy waste in the average building⁹



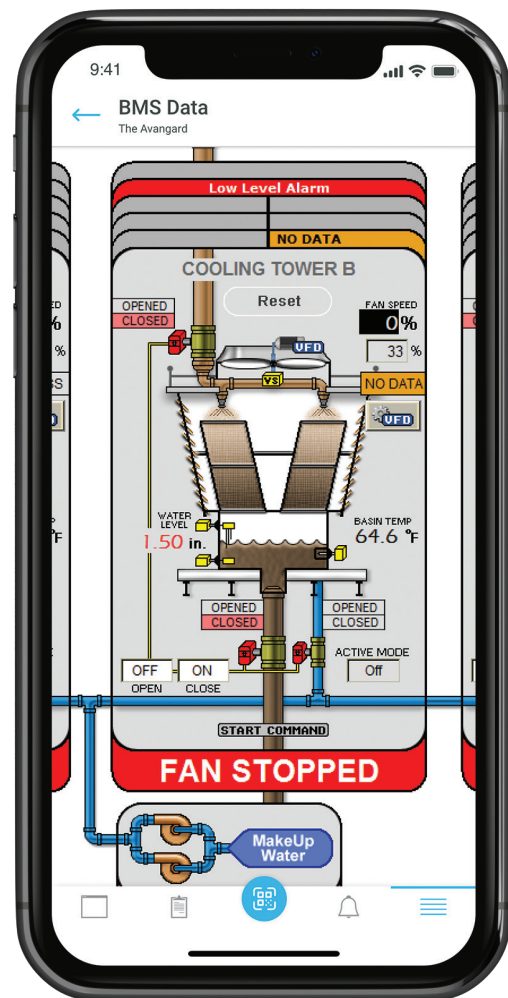
20%

of energy wasted on improperly configured building management systems¹⁰



60%

potential increase in energy costs due to poor maintenance practices¹¹



*There are serious cyber security concerns with this approach.

Value Proposition

Equipment monitoring can:

- Be deployed in buildings without a BMS.
- Calculate real-time energy costs and efficiency of equipment.
- Provide maintenance insights and fault detection

Extra credit:

- Enhanced equipment monitoring can bring in additional sensors to monitor data streams such as flow rate, temperature, and pressure to identify deeper efficiencies.

Recommended Deployment

Equipment monitoring can be deployed in any asset. However, for energy savings, deployments should be focused on properties on a schedule (such as offices) and on larger HVAC equipment (such as boilers and chillers).

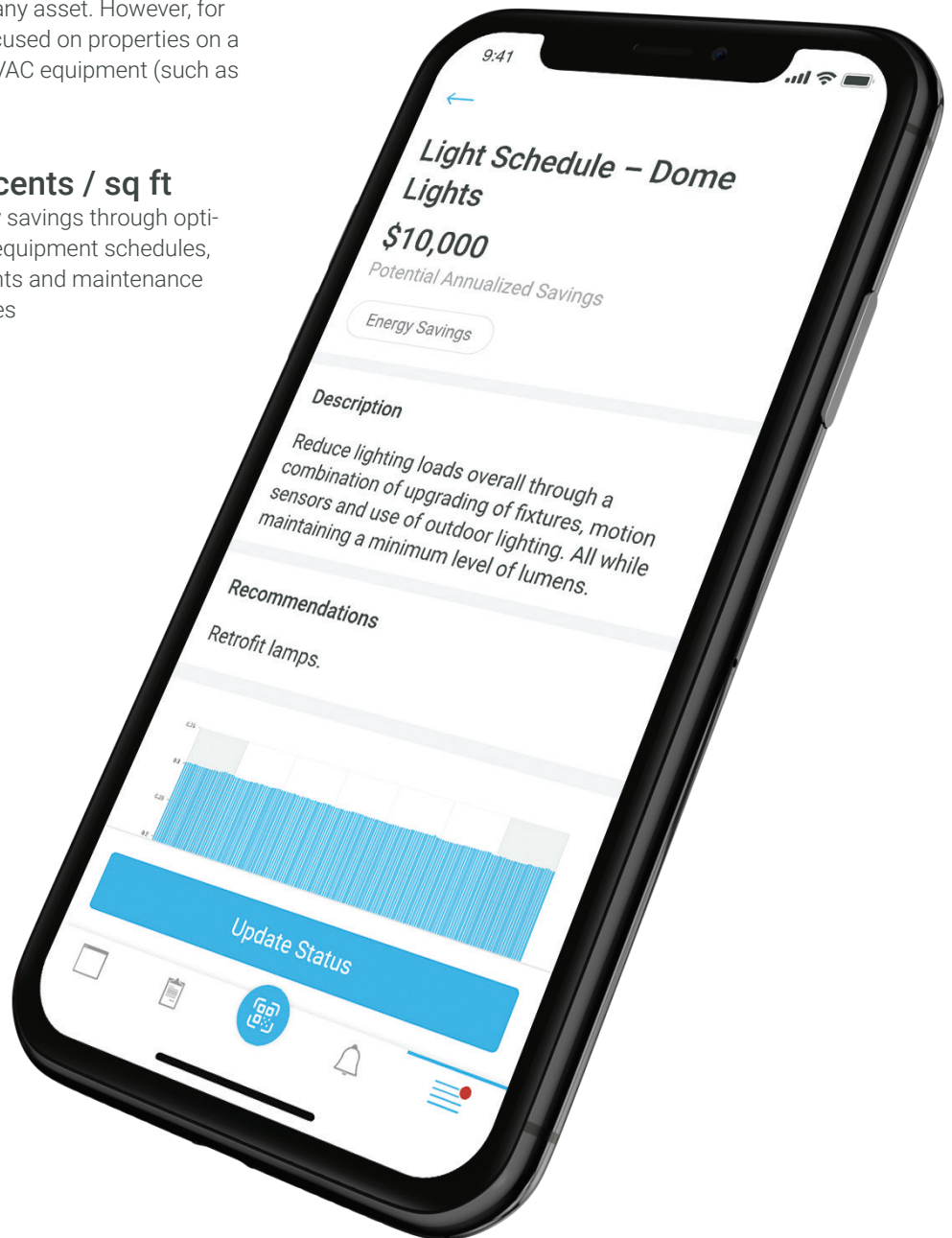
Expected ROI

4–6 cents / sq ft

to deploy (redundant to M&R and CapEx sections)

5–7 cents / sq ft

in utility savings through optimized equipment schedules, set points and maintenance practices



Case Study

Asset

High rise office tower.

Technology

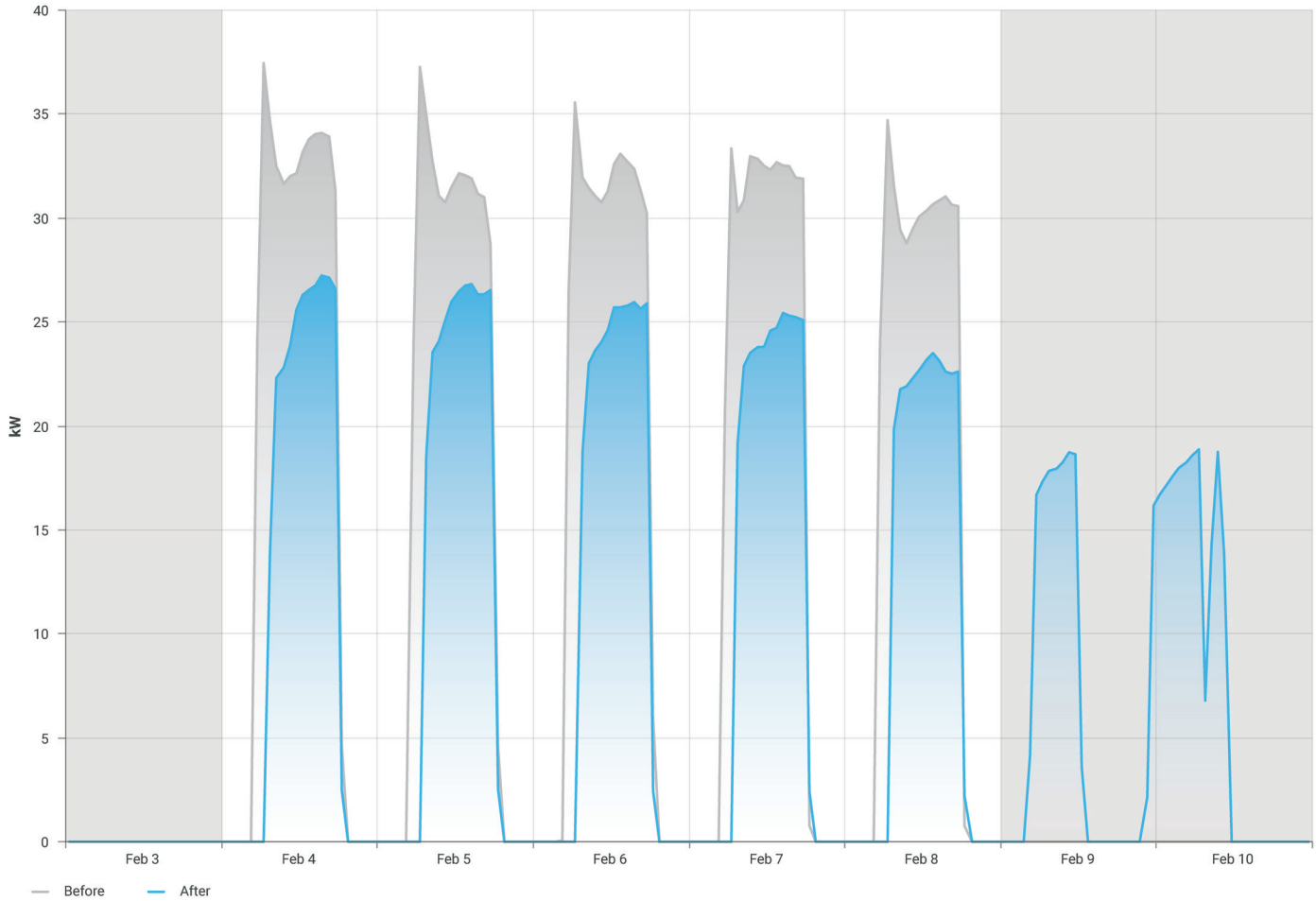
Equipment monitoring.

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Results

\$170,000

in energy savings from optimizations and retrofits identified



Power Draw Comparison Before/After implementing delayed-start-up on interior supply fans

Insurance

Avoiding non-weather water damage claims can help reduce your premiums and avoid deductible payouts, as well as decrease business income losses.

Insurance costs can be reduced in two primary ways:

1 | Early Warning

Sometimes water damage is caused by issues such as pipes freezing and bursting. In these cases, sensors can alert to operators to impending freezing conditions so that corrective measures can be taken.

2 | Immediate Response

There will always be unexpected leaks and other sources of water damage. In those cases, getting notified immediately to exactly where the leak is can prevent the worst of the damage.

Technology

The technology best suited to catching potential sources of water damage are wireless Internet of Things (IoT) sensors placed in critical points throughout a building.

Value Proposition

Wireless IoT sensors can:

- Be easily installed anywhere in a building.
- Send push notifications and SMS messages to operators in the field.
- Track resolutions to issues

Extra credit:

- Data rolls up to dashboards that give a high-level overview of a portfolio.

Recommended Deployment

Any portfolio that has had issues with water damage in the past and is at risk of dramatically higher premiums if another occurs.

Expected ROI

2–3 cents / sq ft
to deploy

3–4 cents / sq ft
in lower premiums and out-of-pocket expenses



Claims Exclusive of Water Damage



Water Damage Claims

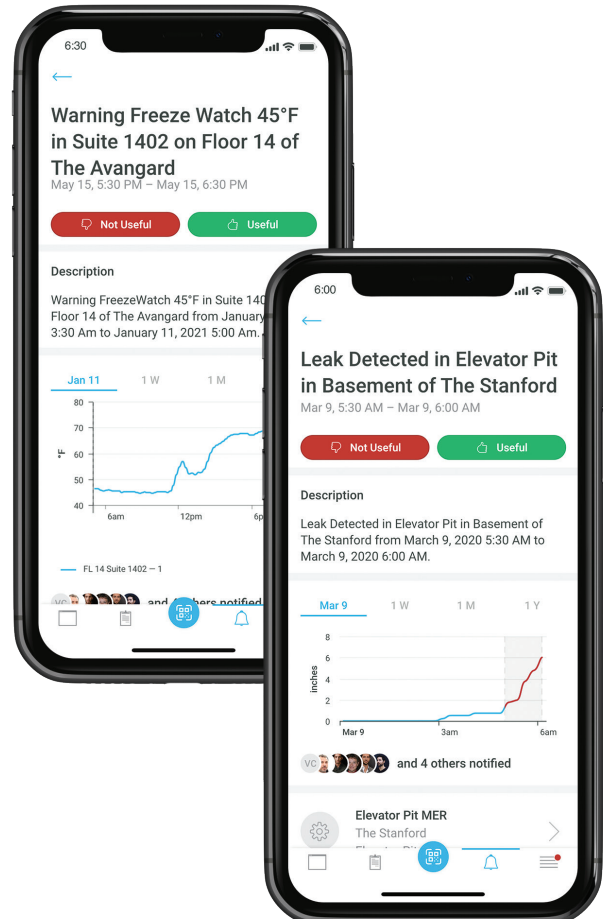
3x

the cost of water damage claims compared to claims that do not involve water¹²



50%

water damage claims account for more than half of all CRE insurance claims¹³



Case Study

Asset

Mixed use office and retail.

Technology

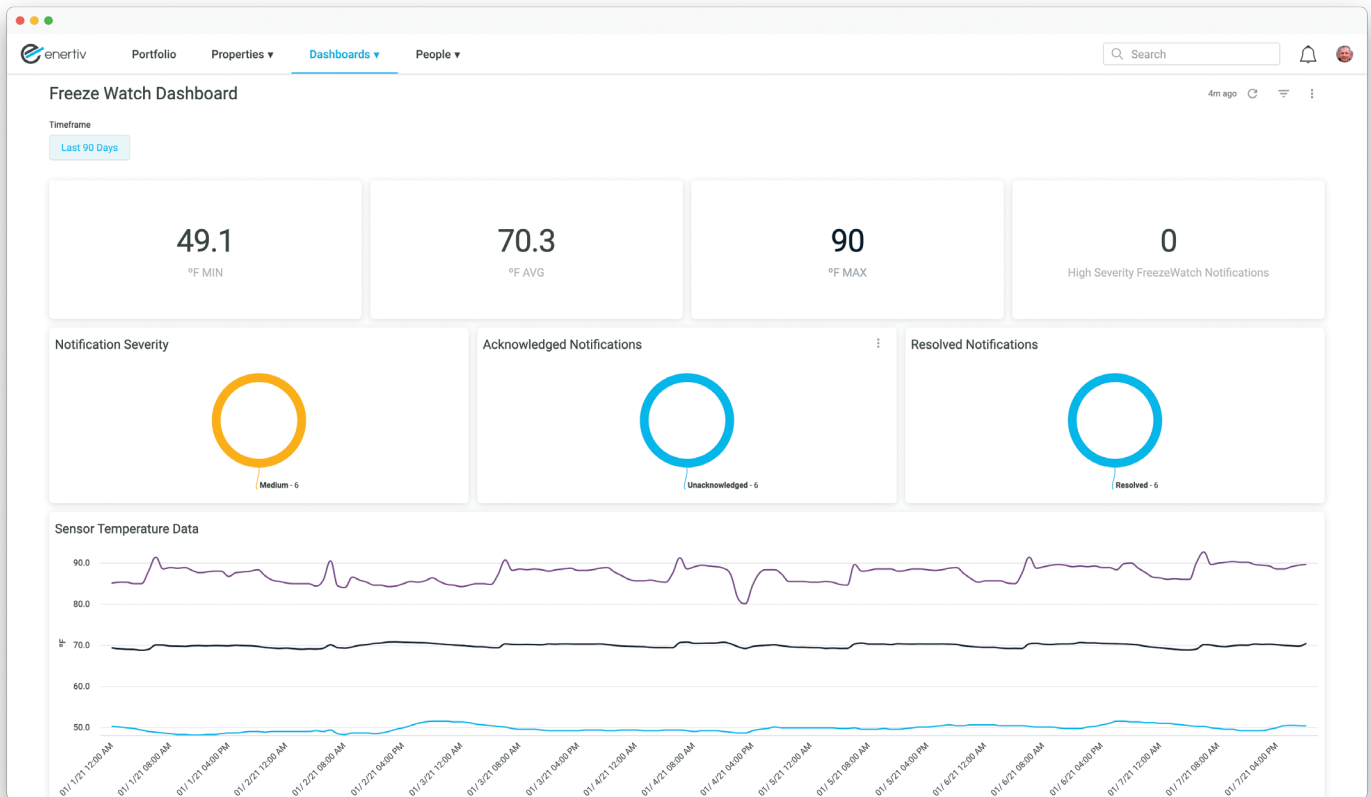
Temperature monitoring.

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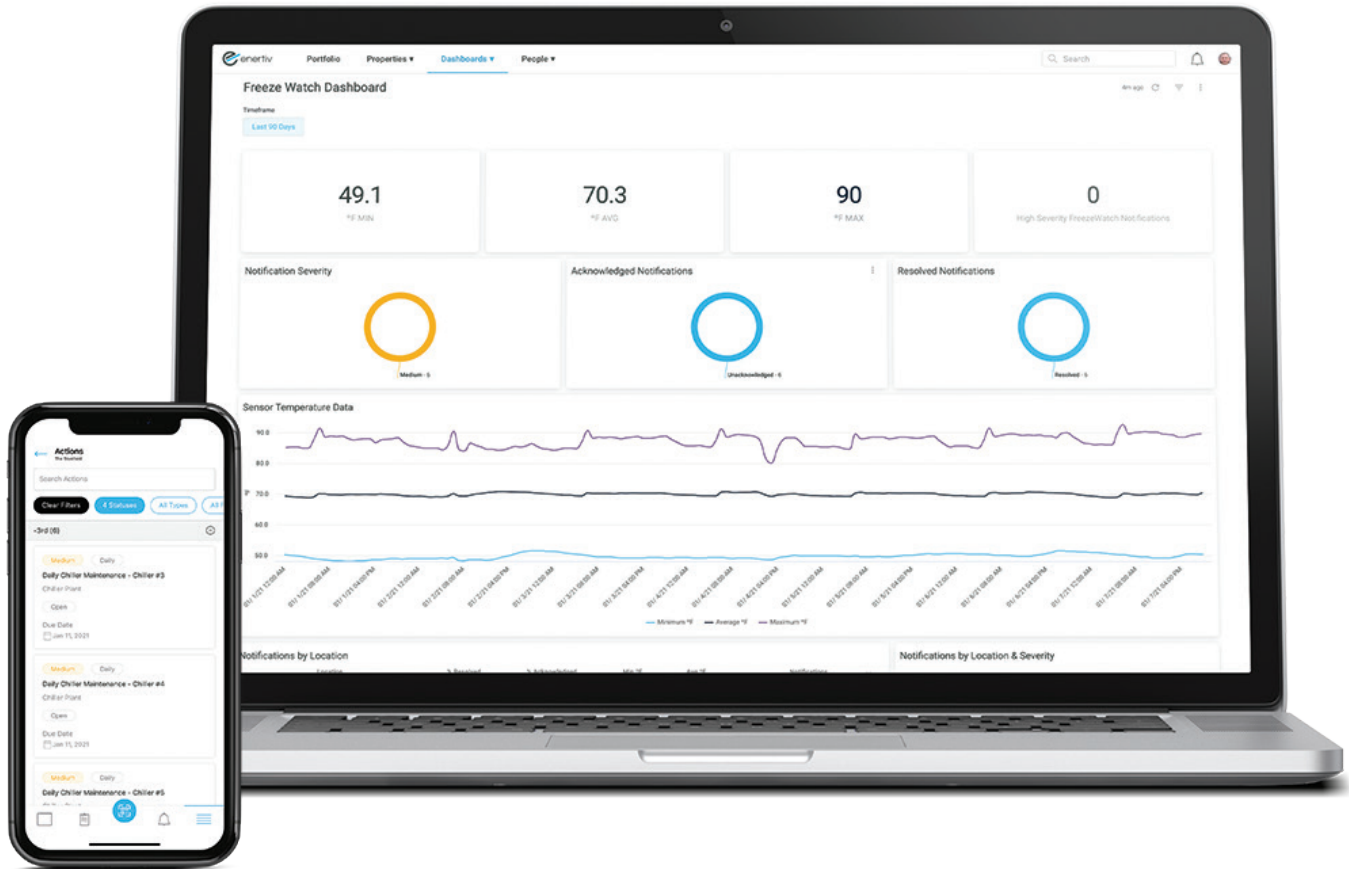
Results

18

potential pipe freezes identified in first winter



FreezeWatch Dashboard



Technology Costs

As may have been clear, there are redundancies in technology costs. That’s a good thing. That means for the same investment in equipment monitoring for example, savings can be accrued in maintenance and repairs, capital expenditures and utility costs.

The redundancies don’t stop there. Many portfolios have found themselves paying for numerous software solutions that serve one narrow purpose when there are operations and maintenance platforms that offer a full-suite of solutions.

Common software that can be rolled into one app

- Rounds App
- Work Order Ticketing
- Tenant Submetering and Billing
- Equipment Inventory or Asset Tagging

Expected ROI

1–2 cents / sq ft

for full-service mobile app (redundant to CMMS)

5–6 cents / sq ft

in displaced software costs

Conclusion

The world is changing. The choice is no longer whether to adapt, it’s how to adapt.

But there are so many options in front on commercial real estate owners and operators. It’s understandably difficult to make a commitment to investing in technology at a portfolio scale.

If we add up the total costs from the solutions identified in this white paper, it comes to a grand total of 10 to 15 cents per square foot, with savings ranging from 30 to 45 cents per square foot.

Of course, some portfolios will decide to roll out just a CMMS for around one cent per square foot and two to eight cents per square foot in savings. Others will opt for just equipment monitoring for four to six cents per square foot and savings from 19 to 25 cents per square foot.

In any scenario, the business case is compelling.

Each portfolio has different needs and budgets. Enerktiv’s consultants would be happy to learn about your portfolio and develop a scope of work and estimated ROI for your assets.

[Schedule a Demo](#)

References

- 1 | [Deloitte 2021 Commercial Real Estate Outlook](#)
- 2 | [ibid](#)
- 3 | [Prescriptive Maintenance: The Next Generation Solution](#)
- 4 | [Why Aren't the Wrenches Turning on Preventative Maintenance](#)
- 5 | [The True Cost of Maintenance](#)
- 6 | [BOMA International's Office and Industrial Benchmarking Reports Released](#)
- 7 | [Determining the Economic Value of Preventive Maintenance](#)
- 8 | [Predictive Maintenance 4.0: Beyond the Hype](#)
- 9 | [ENERGY STAR Brochure](#)
- 10 | [Energy Consumption Characteristics of Commercial Building HVAC Systems](#)
- 11 | [Energy Savings from Maintenance](#)
- 12 | [National Insurance Crime Bureau](#)
- 13 | [ibid](#)