NFMT west

Stop Letting Deferred Maintenance Run the Show

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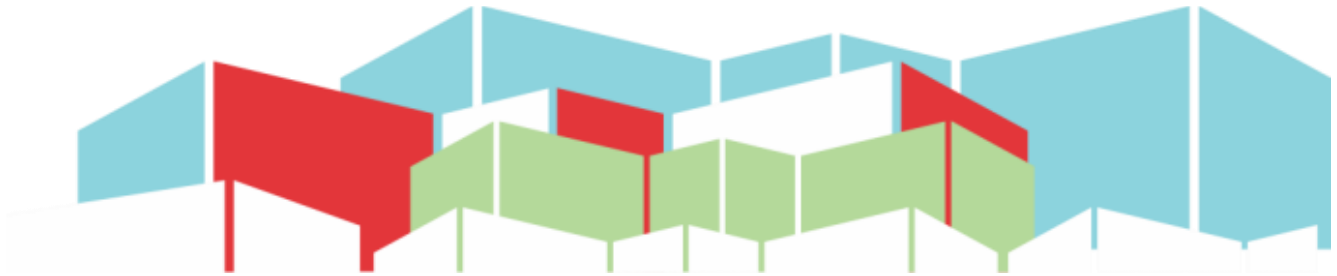

CASE STUDY:

- The Wake Country Public School System is the largest public school district in North Carolina, operating nearly 200 schools and serving over 160,000 students
- It's the largest public school district in North Carolina and 14th largest in the United States as of 2022
- Currently, 198 public schools are in the system, consisting of 119 elementary (K-5), 38 middle (6–8), 31 high (9–12), and 10 special/optional schools

CASE STUDY:

- The district has about $800 million in deferred maintenance
- Investments in maintenance had fallen off for years as the number of schools and maintenance issues grew faster than the number of maintenance workers, while the school board prioritized other concerns such as employees and higher employee pay
- The county estimates having to pay $363.4 million in interest over the 20-year life of the bond, on top of the $800 million principal bond amount
- Based on current rates, interest would be $14 million higher with a same-cost bond funded back in 2022
- The root cause is decades of underfunding maintenance rather than any single failure

CASE STUDY:

- Wake County's facilities spending (as a share of the budget) fell from 8.4% in 1995 to 6.0% in 2022, while labor and materials costs tied to maintenance surged. Newer schools were also designed to be more efficient with the presumption that the current HVAC systems will be working
- Staffing compounded it. By 2023, over half of the district's 15 HVAC staff positions were eliminated, against roughly 2,900 emergency HVAC work orders that year
- The district leaned heavily on contractors, who often pay their workers considerably more than Wake pays its own staff
- About half of Wake's 200 schools have dismissed early at least once since 2023 because of HVAC failures. The worst year was 2024–25: schools closed or dismissed early 76 times

CASE STUDY:

- Bob Luebke, an education analyst, said it's clear the district has major HVAC needs but lamented the district had used funding opportunities available in other areas in the past
- Luebke contends the district would be in less of a hole when it comes to HVAC if it had spent some of its temporary federal pandemic stimulus dollars on HVAC repairs. Statewide, data shows districts spent 5.9% of their funds on HVAC contracts. Wake spent zero dollars on HVAC contracts
- "If Wake had spent 5.9% of its $434.2 million in stimulus dollars on HVAC contracts, it would have spent $25.6 million on HVAC and solved most of the issues!"
- "They are at the end of their useful life, and they need replacement," Luebke said. "... Students need to be safe, and they need to be comfortable, and they need to be able to focus on learning."

Deferred Maintenance: Impact, Causes, and Management Strategies

Wake County isn't alone…

- Replacing and upgrading the nation's water infrastructure is estimated to cost between $4.4 trillion to $5.8 trillion
- Replacing and expanding water pipes alone could cost $1 trillion
- Less than 17 percent of public utility companies have confidence in their infrastructure
- Up to $655 billion over the next two decades will be required to upgrade distribution and transmission infrastructures
- ASCE gave the U.S. infrastructure a D+, and the group estimates the nation needs to spend $4.8 trillion by 2027 to improve its roads and bridges. Highway improvements have a repair backlog of $836 billion

Deferred Maintenance: Impact, Causes, and Management Strategies

Deferred maintenance isn't free — it's a loan against future capital with steep interest. A few key dynamics:

- **The 1:5 rule of thumb**: Industry data (facilities management, DOD, GAO studies) commonly cites that every $1 deferred in maintenance costs $4–$5 in eventual repair/replacement.
- ***Reactive failures cascade*** *— a $200 bearing that could've been caught in a PM inspection becomes a $15,000 motor replacement plus unplanned downtime*
- **Safety and compliance exposure**: LOTO-related equipment and life-safety systems (fire suppression, ammonia refrigeration) carry outsized risk-adjusted cost when deferred — a citation or incident dwarfs the deferred repair cost

Deferred Maintenance: Impact, Causes, and Management Strategies

- Compelling research shows that delaying maintenance can increase future costs and capital expenditures by as much as 600%!!!!
- Deferring repairs are often put into a maintenance backlog that creates a vicious cycle
- As necessary actions are postponed, system failures & accelerated deterioration start increasing at a greater volume and frequency
- This puts maintenance teams in a mode of reactivity with less focus on preventive work

Why Maintenance Gets Deferred (Root Causes)

- **Budget cycle mismatch** — capital/repair budgets set annually, but equipment degradation is continuous; a bad Q3 forces Q4 PM cuts
- **No credible cost-of-failure data** — without failure cost tracking, deferred maintenance looks "free" until it isn't (nothing shows up as a cost until something breaks)
- **Competing capital priorities** — new product lines, capacity expansion, and compliance projects routinely outrank "keep what we have running"
- **Lack of asset criticality ranking** — without a criticality framework, everything competes for the same dollar with no way to defend priority

How to Better Plan For It

- **Build a criticality matrix** (safety/quality/production impact × failure probability) so deferred items get ranked, not just parked
- **Track backlog as a KPI**, not a to-do list — total PM backlog hours/$ trending over time, reviewed monthly with facility leadership
- **Separate "deferred" from "declined"** — a deferred item should have a documented risk acceptance with an owner's name on it, re-reviewed on a cadence (quarterly is typical)
- **Life-cycle cost modeling** on major assets — replace "fix when broken" thinking with total cost of ownership, so deferral decisions are made against real numbers instead of gut feel
- **Reliability-Centered Maintenance (RCM) triage** — not everything needs the same PM rigor; RCM helps you legitimately defer low-consequence tasks while protecting high-consequence ones

Budgeting & Prioritization Approaches

- **Risk-based capital allocation**: rank the deferred backlog by (probability × consequence), fund top of list first regardless of "squeaky wheel"
- **Blended run-rate + reserve model**: separate a stable annual PM/repair run-rate budget from a maintenance reserve fund that isn't raided for other capital needs
- **Zero-based backlog review**: annually re-justify every open deferred item rather than letting it roll over silently
- **Failure cost tracking**: even rough estimates build the business case that gets budget released next cycle.
- **Forecasting:** Look beyond short-term, think strategically at medium and long-term

Funding & Strategies

- **Reliability ROI business case**: tie deferred-maintenance funding requests to improvement, insurance premium impact, or FDA/SQF audit risk reduction — framed in dollars, not "it needs it"
- **Energy/utility incentive programs**: some deferred mechanical/electrical work qualifies for utility efficiency rebates, which can offset project cost
- **Phased capital requests**: break large deferred items into phased funding asks tied to specific risk milestones, easier to get approved incrementally than one large ask
- **Insurance/risk engineering partnerships**: some carriers (esp. property/casualty for facilities) will co-fund or advise on deferred maintenance tied to fire, ammonia, or major mechanical risk
- **Grant/incentive programs**: check state manufacturing extension partnerships (MEP) or energy efficiency grants — worth a quick search if you want current specific programs

Q&A

THANK YOU!

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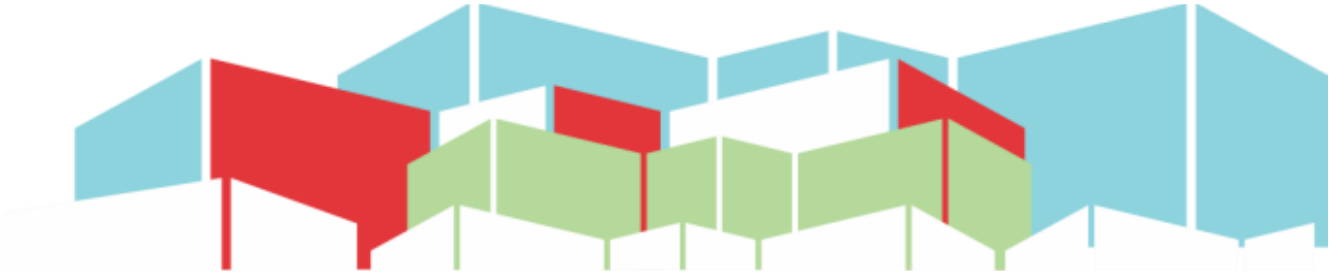

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