impactFUL BRIEFS

Data-Driven HVAC Budgeting Guide

Forecasting, CapEx vs. OpEx Decision-Making, and Building the Internal Case for Performance-Based HVAC Investment

How to Use This Guide
This guide is designed for multi-site facility managers who are responsible for HVAC budgets and want to move beyond invoice history and calendar assumptions toward a planning process grounded in actual equipment performance. It combines frameworks and decision tools with fillable planning sections you can complete for your own portfolio. Work through it in order or jump to the section most relevant to your current planning cycle.

PART 1: THE THREE BUDGET INPUTS HOLDING YOU BACK - AND WHAT TO USE INSTEAD

Most HVAC budgets are built on three imperfect inputs. Understanding their limitations is the starting point for replacing them with better ones.

Traditional Input	What It Tells You	What It Misses	Better Alternative
Historical invoices	What was spent last year	Whether spend was preventable or not	Performance trend data showing which conditions led to which costs
Vendor recommendations	What the vendor observed at the last visit	What happened between visits	Continuous monitoring data showing real-time equipment condition
Calendar-based age assumptions	How old the equipment is	How the equipment has actually performed	Operating history showing actual wear, efficiency, and fault patterns

Planning Note: Review your last three years of HVAC invoices and identify which costs were emergency or reactive. That number is your baseline for preventable spend - the amount that performance monitoring could reduce.
My estimated preventable spend (last 12 months): $_____

PART 2: WHAT PERFORMANCE DATA MAKES VISIBLE

When HVAC equipment is continuously monitored, three specific budget problems become solvable:

Problem 1: Reactive Spend
Emergency service calls are almost never truly sudden. They are the endpoint of a developing condition - a compressor running progressively hotter, a motor drawing increasing current, a refrigerant charge drifting lower. Monitoring captures these trends before they produce a failure.
What this means for your budget: Every emergency call converted to a planned repair saves the emergency rate premium plus the cost of operational disruption. Track this as:
Emergency service cost (average per event): $_____ Planned service cost (average per equivalent event): $_____ Premium per converted call: $_____ Estimated emergency calls per year across portfolio: _____ Estimated annual savings if 50% converted to planned: $_____

Problem 2: Energy Variances by Location
A unit consuming 15 percent more electricity than it should does not announce itself without monitoring. The cost accumulates in utility bills that are rarely analyzed at the equipment level.
What this means for your budget: Performance monitoring establishes an efficiency baseline per unit and flags deviations. Units operating above baseline can be identified, serviced, and returned to design efficiency - with the energy cost reduction quantified per location.
Estimated HVAC energy spend across portfolio (annual): $_____ Estimated percentage consumed above efficiency baseline: _____% Estimated recoverable energy waste: $_____

Problem 3: Equipment Lifecycle Visibility
Without operating data, the distinction between aging equipment and genuinely degrading equipment is invisible. Both look the same on a calendar. They look very different in performance data.
What this means for your budget: Equipment that is performing well can have CapEx replacement deferred. Equipment that is deteriorating can be replaced on a planned schedule rather than in an emergency. The difference between planned and emergency replacement is typically 20–40 percent in total cost.

impactFUL BRIEFS

PART 3: CAPEX VS. OPEX - THE FRAMEWORK AND THE DECISION TOOL

Quick Orientation

	CapEx	OpEx
What it covers	Equipment replacement, major upgrades, system improvements	Routine maintenance, repairs, service agreements, energy
How it is accounted for	Capitalized on balance sheet, depreciated over useful life	Expensed in the year incurred
Budget pool	Capital budget - typically requires separate approval	Operating budget - managed through annual FM budget
HVAC examples	Replacing a failed rooftop unit, upgrading to a higher-efficiency system, adding monitoring infrastructure	Quarterly PM service, filter changes, refrigerant recharge, emergency repairs

The Strategic Relationship

Well-managed OpEx extends equipment life and defers CapEx. A unit that would have needed replacement in year 12 due to accumulated neglect can often operate to year 16 or 17 with consistent, data-informed maintenance. That deferral is a direct capital budget benefit.

At the same time, performance data identifies when continuing to invest OpEx in a degrading unit is no longer rational - when the total cost of maintaining the existing unit exceeds the total cost of owning a replacement.

CapEx vs. OpEx Decision Tool

Use this to evaluate any piece of equipment approaching a repair or replace decision:

Question	Answer	Budget Implication
Has this unit required emergency service more than twice in the past 12 months?	Yes / No	Yes = escalating OpEx risk
Is energy consumption more than 15% above the efficiency baseline?	Yes / No	Yes = ongoing OpEx waste
Has the unit shown fault conditions in monitoring data in the past 6 months?	Yes / No	Yes = reliability risk
Is the unit within 3 years of its expected end of useful life?	Yes / No	Yes = CapEx planning window
Does the cost of the next repair exceed 30% of replacement cost?	Yes / No	Yes = replacement likely more cost-effective
Has maintenance cost increased more than 25% year over year?	Yes / No	Yes = deteriorating OpEx trajectory

Scoring:

- 0–1 Yes answers: Continue planned maintenance OpEx. Monitor and reassess annually.
- 2–3 Yes answers: Flag for priority monitoring. Begin developing replacement cost estimate for CapEx planning.
- 4–6 Yes answers: Strong case for CapEx replacement. Proceed to replacement justification worksheet below.

PART 4: REPLACEMENT JUSTIFICATION WORKSHEET

Use this to build the evidence-based case for a capital replacement request.

Unit Information

Field	Your Data
Unit ID / Location	
Equipment Type	
Year Installed	
Refrigerant Type	
Current Replacement Cost Estimate	

Performance Evidence

Metric	Last 12 Months	Prior 12 Months	Trend
Total maintenance and repair spend	$	$	↑ / ↓ / Stable
Number of emergency service calls			↑ / ↓ / Stable
Energy consumption vs. baseline	% above / below	% above / below	↑ / ↓ / Stable
Number of fault events in monitoring data			↑ / ↓ / Stable

impactFUL BRIEFS

Replacement Payback Calculation

	Amount
Current annual maintenance and repair cost	$
Current annual energy cost above baseline	$
Total annual cost of continued operation	$
Estimated annual cost of new equipment (amortized over useful life)	$
Estimated annual energy savings from new equipment	$
Net annual benefit of replacement	$
Replacement cost	$
Estimated payback period	Years

Summary Statement for Leadership: *"Unit [ID] at [Location] has generated $_____ in maintenance costs and $_____ in excess energy spend over the past 12 months. Based on performance trends, these costs are projected to increase. Replacement at a capital cost of $_____ delivers a payback in _____ years and eliminates an estimated $_____ in annual reactive spend."*

PART 5: BUILDING YOUR PORTFOLIO BUDGET FROM PERFORMANCE DATA

Step 1 - Equipment Inventory and Condition Tier

Assign each piece of equipment to a condition tier based on available performance data:

Condition Tier	Definition	Budget Implication
Tier 1 - Performing	Operating within normal parameters, no fault history, energy at or below baseline	Standard planned maintenance OpEx only
Tier 2 - Monitoring	Minor deviations from baseline, one service event in past 12 months, age within normal range	Slightly elevated OpEx, begin developing CapEx timeline
Tier 3 - At Risk	Multiple service events, energy above baseline, fault history in monitoring data	Elevated OpEx, CapEx replacement likely within 1–3 years
Tier 4 - Critical	Frequent failures, significant energy waste, multiple fault events, near or past end of useful life	Prioritize for immediate CapEx replacement

Portfolio Condition Summary:

Condition Tier	Number of Units	Estimated OpEx Budget	Estimated CapEx Required
Tier 1 - Performing		$	$0
Tier 2 - Monitoring		$	$ (future year)
Tier 3 - At Risk		$	$ (1–3 year window)
Tier 4 - Critical		$	$ (current year)
Portfolio Total		**$**	**$**

Step 2 - Build the Rolling CapEx Forecast

Year	Units Scheduled for Replacement	Estimated Capital Cost	Data Basis for Timing
Current Year		$	
Year 2		$	
Year 3		$	
Year 4		$	
Year 5		$	
5-Year Total		**$**	

Step 3 - Quantify Monitoring ROI for the Budget Submission

Budget Benefit	Estimated Annual Value
Reduction in emergency service premiums (planned vs. reactive)	$
Reduction in energy waste from above-baseline units	$
CapEx deferred through extended equipment life	$
Avoided unnecessary maintenance visits (condition-based vs. calendar-based)	$
Total Estimated Annual Return on Monitoring Investment	**$**

impactFUL BRIEFS

PART 6: THE BUDGET CONVERSATION FRAMEWORK

Use this structure when presenting HVAC budget requests to finance and operations leadership:

1. Portfolio Condition Summary Present the condition tier distribution across your portfolio - how many units are performing, monitoring, at risk, and critical. This establishes the evidence base before any numbers are presented.

2. Reactive Spend Analysis Show the split between planned and reactive spend in the prior year. Identify the percentage that was reactive and quantify the premium paid. Present the monitoring-enabled reduction as a budget line item with a specific dollar target.

3. Energy Variance Report Show energy spend by location against efficiency baselines. Identify the locations consuming above baseline and the estimated recoverable waste. Connect maintenance actions to efficiency recovery with specific cost projections.

4. CapEx Replacement Justification Present each capital replacement request using the worksheet from Part 4 - unit-level performance evidence, trend analysis, and payback calculation. Each request should stand on its own evidence rather than competing on general age-based grounds.

5. Monitoring Investment ROI Close with the aggregate return on monitoring investment from Step 3 above - the total annual budget benefit that data-driven management delivers relative to the cost of the monitoring program.