VETS
FACILITY SERVICES

# HVAC SYSTEM OWNING AND OPERATING COSTS



Owning and operating costs for HVAC systems are a vital part of any facility's annual budget. As the upfront expense of purchasing and installing HVAC equipment wanes over time—energy consumption, repairs and part replacements, and lost productivity influence your annual operating budgets.

To help understand which components of your HVAC system have the largest potential overhead costs, a list of three areas to be aware of have been identified in this article.

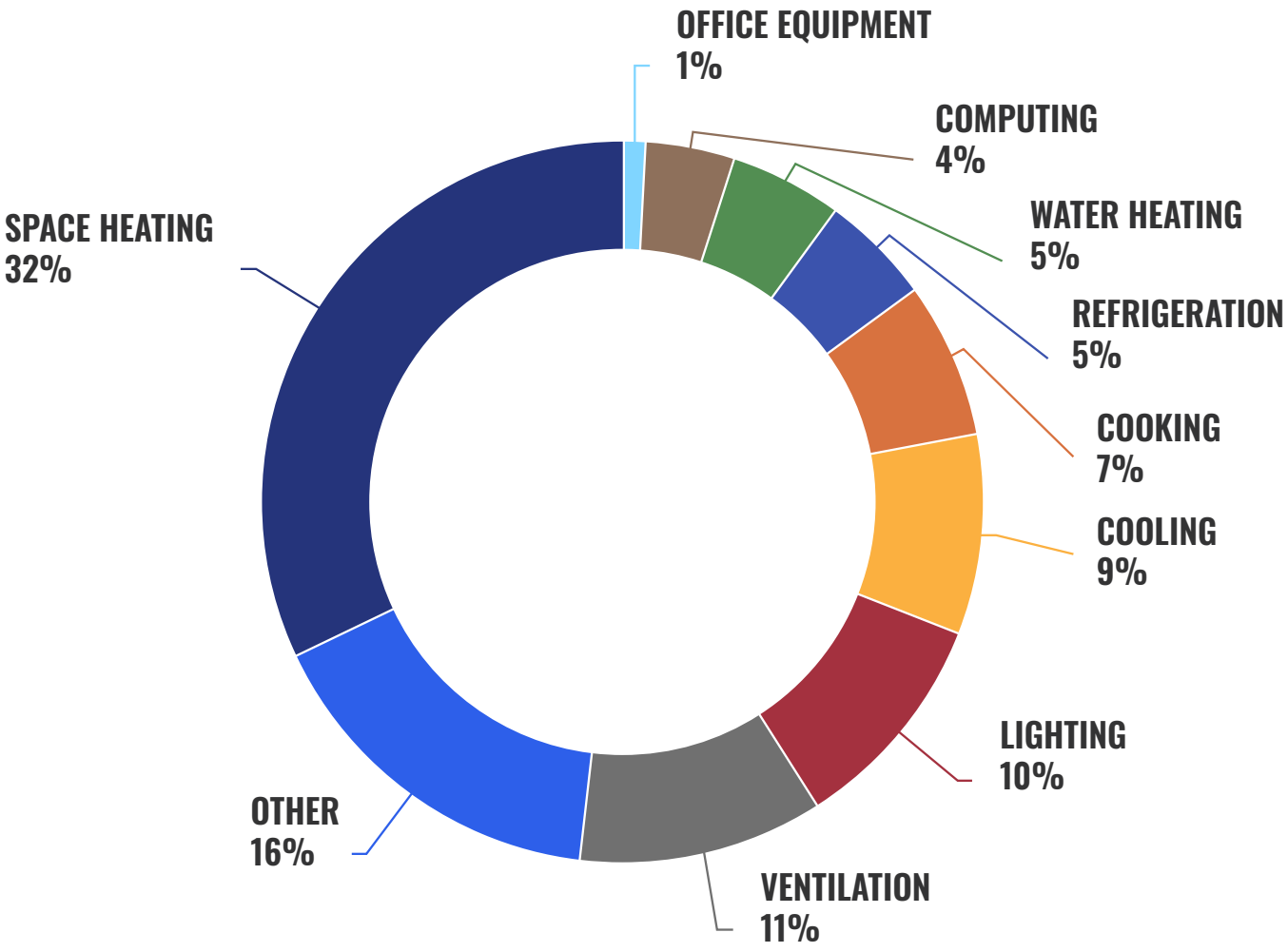
## ENERGY

The amount of energy consumed by your HVAC system can vastly influence the owning and operating costs of commercial buildings. Knowing which equipment consumes the most energy, and where poorly maintained equipment affects energy costs, is critical in helping you make decisions pertaining to your annual budget.

***"ELECTRICITY AND NATURAL GAS ARE THE PRIMARY ENERGY SOURCES, WITH ELECTRICITY ACCOUNTING FOR ABOUT 60% AND NATURAL GAS FOR 34% OF THE TOTAL ENERGY USE IN COMMERCIAL BUILDINGS."***

Source: US Energy Information Administration

The volume of energy consumed in a commercial building is broken down into several components with 60% of the total energy used by HVAC-related systems. Heating a single large space accounts for 32% of energy consumption with ventilation accounting for a further 11% and cooling systems following with 9% total usage.



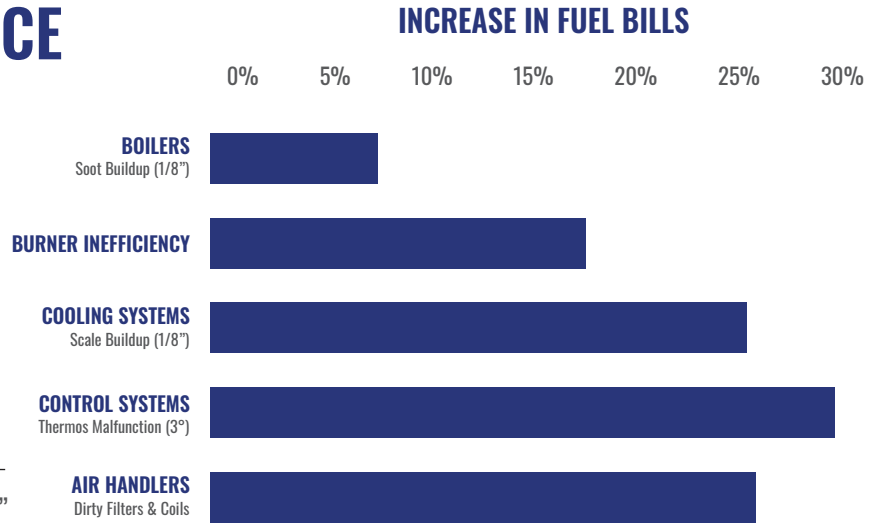

Source: https://www.eia.gov/energyexplained/use-of-energy/commercial-buildings.php

While it's often true that high-efficient equipment lowers operating costs, there are actions you can take to reduce your existing equipment's energy spend such as:

- Cleaning soot buildup in boilers
- Cleaning furnace burners
- Changing air filters regularly
- Upgrading to programmable thermostats

# PROACTIVE MAINTENANCE = ENERGY SAVINGS

Inadequate proactive maintenance accelerates the aging process and permits energy-wasting conditions to occur.




Source: ASHRAE SYSTEMS, Ch. 42. "Mechanical Maintenance"

# REPAIRS AND PART REPLACEMENTS

The frequency of major repairs depends on the age, and stage, of your HVAC system and how well it has been maintained. Costs rise exponentially if the repairs are deferred resulting in potential premature equipment replacement. Early detection of system issues is often the difference between inexpensive minor fixes and larger costly repairs.

The most common piece of HVAC equipment is the rooftop heat/cool unit. A small issue like a worn-out contactor can cause a compressor to fail on an air conditioning or refrigeration unit. The contactor is an electrical switch located inside of the unit and used to turn the compressor on and off as required.



***NEW CONTACTOR***

***VS.***



***PITTED, WORN-OUT CONTACTOR***

If the symptoms of contactor wear are detected during a scheduled maintenance call, the component can be replaced on the spot with minimal cost or downtime implications. Whereas, if the part's wear-and-tear goes undetected and the unit experiences compressor failure, costly repairs are likely.

Contactor Replacement Cost Comparison Table*

*example only

| Proactive Maintenance Replacement | |
|---|---|
| Labour | $120.00 |
| Parts | $95.00 |
| **Total** | **$215.00** |

Total Equipment Downtime - None

| Reactive Replacement | |
|---|---|
| Labour | $960.00 |
| Parts | $3,500.00 |
| **Total** | **$4,460.00** |

Total Equipment Downtime - 1 to 2 Weeks

# LOST PRODUCTIVITY OR OCCUPANCY

Without a healthy and comfortable environment, occupants can experience extreme discomfort in warmer or cooler seasons. For employees, this can lead to a lack of focus, more frequent breaks and reduced productivity. For occupants or tenants, this disruption has the potential to impact an owner's annual budget. According to a Building Owners and Managers Association (BOMA) study when a tenant experiences more than 3 interruptions of heating and air conditioning services during a 12-month period, there is a 56% probability they will relocate to a different property.

Example:

1. 5,000 sq. ft. tenant lease
2. 5,000 sq. ft. x $15/sq. ft. = $75,000 income
3. Tenant relocates due to comfort complaints and space is vacant for 3 months

Calulations:
3-months' lost revenue = $18,750
New lease concession (1-month rent) = $6,250
Tenant improvement costs ($10/ sq. ft.) = $50,000
Total cost to owner = $75,000

The lack of HVAC maintenance resulted in the net loss of one year's rental income.

Hopefully, these few examples have given you a clear and concise picture of the impact proactive HVAC maintenance can have on your annual budget over time, and provided guidance on how to allocate funds pertaining to your HVAC system.

If you're interested in learning more, please reach out to Tyler McKinnon at **tmckinnon@vetsgroup.com**