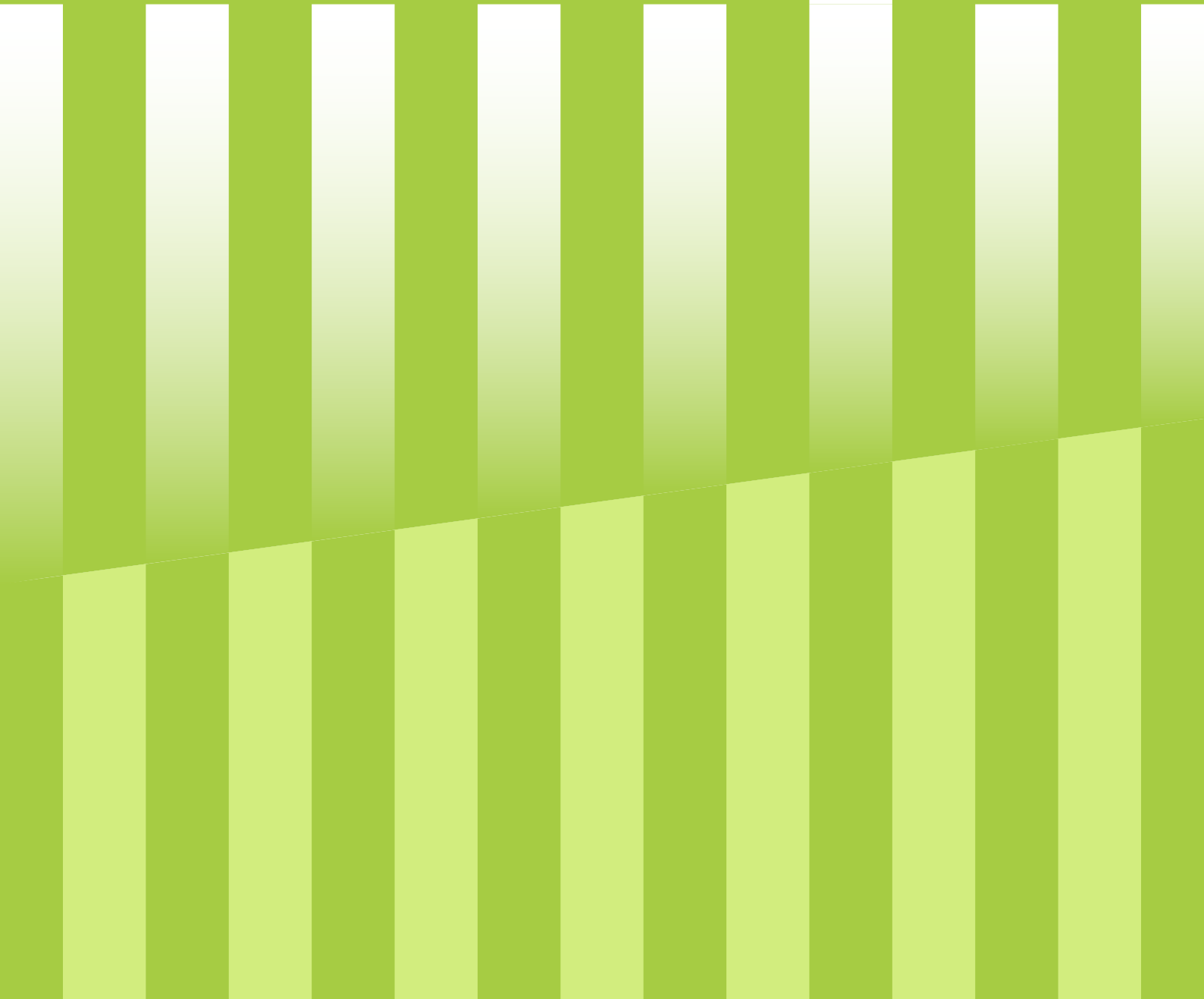


Ultimate Guide to After-Hours HVAC



Contents

INTRODUCTION

Flexible Work & After-Hours HVAC

WHAT IS AFTER HOURS HVAC?

Definition
AHAC Charges
Common Terms
After-Hours Billing
Lease Stipulations

CALCULATING AN AHAC RATE

What to Include in an AHAC Rate
Fixed Energy Costs
Adding Depreciation

AHAC IN YOUR LEASE

Define "AHAC"
List Normal Hours of Operation
Explain the Fixed Rate Calculation
Show How to Calculate AHAC
Including Depreciation
Excluded Costs
AHAC vs Annual Operating Expenses

AHAC AND NABERS

Rated Hours
Tenant Requests
Overlapping Hours
Zones and Functional Spaces

AFTER-HOURS AUTOMATION

Common Benefits





INTRODUCTION

Flexible Work & After-Hours HVAC

Gone are the days of the rigid 9-to-5 work schedule. The rise of flexibility in work arrangements along with technology advances has empowered employees to redefine where and when work happens. Tenants want the choice to work before and after 9 a.m to 5 p.m. As a result, the scheduling of HVAC services outside normal operating hours is growing in popularity. To meet the demand, owners are extending delivery times for services like HVAC.

While after-hours utilities is a win for workers, it usually means an increase in overall energy consumption—and this at a time when owners are looking to lower their portfolio’s carbon footprint to comply with carbon emission mandates. Put simply: workers are demanding more energy usage. Governments are demanding less. And property owners are stuck in the middle. The convergence of these two demands is squeezing owners and managers to find solutions.

One workable solution is after-hours HVAC automation. Automating your program delivers worker flexibility and energy conservation. By putting the power of scheduling in the hands of tenants and workers, HVAC becomes an “on-demand” utility that tenants can schedule and manage themselves as they need it.

In this Guide, we’ll cover everything you need to know about building, managing, and automating an after-hours HVAC program.

After Hours HVAC Basics

1

After-Hours HVAC is typically defined as:

The delivery and maintenance of a facility's heating and AC services, outside regular operating hours, for the benefit of a tenant. Tenants often pay an hourly rate (usually specified in a lease) for any costs associated with after-hours HVAC operation. After-hour times normally include evenings, weekends and holidays.



AFTER-HOUR CHARGES

Usually the first question a property owner asks is **“How much do I charge?”** Most tenants and/or their lease advisors insist that AHAC charges represent a reasonable estimate of the “actual cost” for providing after-hours service.

However, calculating a “reasonable” estimate is often difficult because providing AHAC service requires many resources beyond electricity.

To charge for after-hours HVAC, managers often determine a **fixed energy rate** then add a small percentage to cover equipment depreciation and admin costs. Some avoid the breakdown of fees altogether and simply include the estimated cost of after-hours to tenants' rent.



COMMON TERMS

After-hours HVAC goes by various names depending on the market. Common terms include:

- Overtime HVAC
- After-hours air conditioning
- After-hours air con
- After-hours AC
- AHAC

AFTER-HOURS BILLING

Billing tenants for AHAC takes several forms. Most property managers start the billing cycle the day the lease is executed. AHAC hours are charged at the agreed rate and billed to the tenant if and when they make a request.

Other FMs may allot a number of free overtime AC hours for the term of the lease (e.g., 300 hrs for 5 years). In that instance, an AHAC charge only begins if the tenant exceeds those cumulative free hours.

Tenants can be billed for AHAC on a monthly, quarterly or yearly basis, and AHAC charges are always billed separately from normal operating hour utility expenses to avoid double charging tenants.

LEASE STIPULATIONS

Property owners typically include AHAC agreements in their leases. The core purpose of most clauses is to establish the after-hours times and rates, but other provisions are often included.

To assure quality service, the majority of leases stipulate tenants must give advanced notice before requesting service (e.g., 48 hours). The notice ensures engineers and staff have time to carry out requests.

Another stipulation might further refine “AHAC times” by listing specific holidays or “dates of observation” when AHAC is available.

Other lease provisions exist to protect the landlord against OPEX losses. For example, company’s often reserve the right to conduct an annual review of the AHAC rate and make adjustments based on current market prices for utilities. The stipulation protects the company against the annual volatility of energy prices.





Calculating an AHAC rate

After-hours HVAC charges are a sticky OPEX budget item. Normal core hour rates are predictable. Power providers determine your property's kWh costs for you. But with after-hours AC, managers must calculate the hourly rate themselves. And it's work that needs to be done right if you want to recoup your full utility outlay.

WHAT TO INCLUDE IN AN AHAC RATE

Most AHAC rates need to include more than electricity for chillers and boilers. For sure, there's the fixed energy cost of your HVAC system to consider, but what about other resources and services you provide? Lock in these costs early. It will give your calculation process more focus and direction.

When calculating your AHAC rate, start with the most obvious expenses and work your way to more granular items. Go as far as practicable for your

situation. Some guess work is inevitable, but at least identify each hard cost. You can always discard extraneous ones later.

If you're managing an office space, your tenants may need access to lift services, parking and hallway lighting. If you're a university, you may need to add security and cleaning services to the charge.

Managers who manually operate their AHAC programs will need to include admin fees for managing requests, invoicing, programming the BMS, and handling cancellations.

FIXED ENERGY COSTS: STRIKE A BALANCE

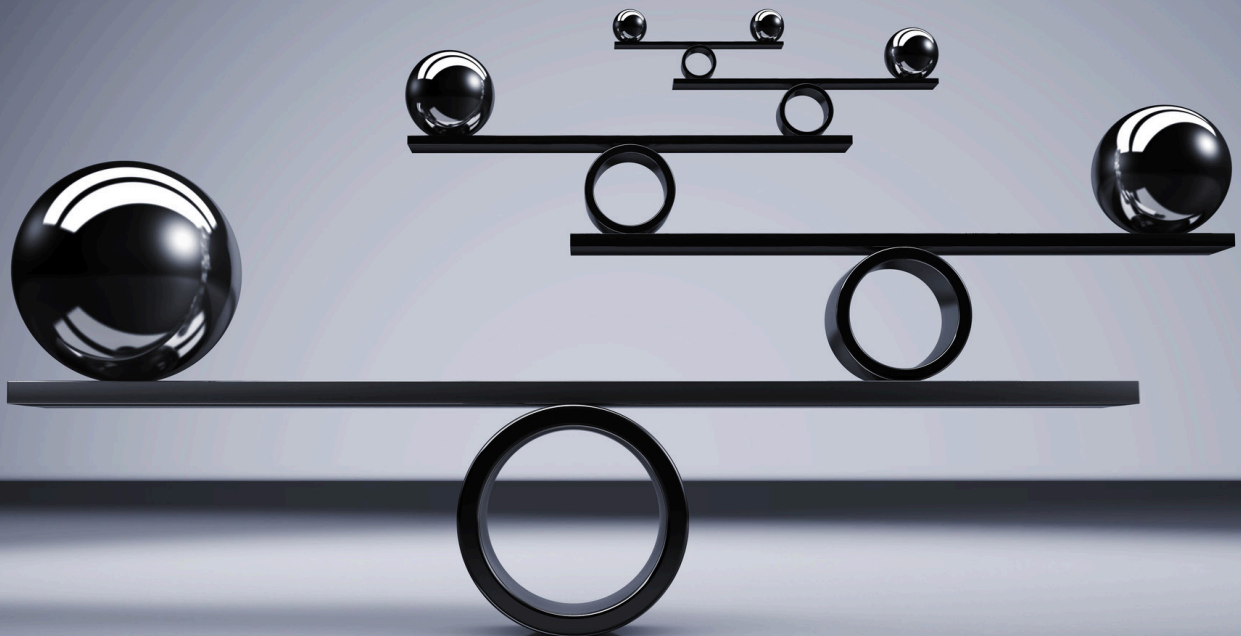
To recoup as much of your energy expenses as possible, you'll need a close estimate of the actual energy used by your plant. But counting every kWh can be complex, costly and time consuming. In contrast, energy estimates that wildly miss the mark can cost you in lost profits and tenants.

The simplest (least accurate) calculation method would be to divide your annual energy bill by the number of standard operating hours per year. It's a simple process, but the resulting estimate lumps every kWh into the same basket. It tells you how much it costs to operate your property, not your plant.

The lack of kWh discrimination could result in under or over-charging tenants and making your property less profitable.

On the other hand, you could attempt to record your plant's actual kWh usage in real time. Smart meters and EMS equipment give real time feedback, but they can be expensive and complex to integrate.

When calculating your fixed energy costs, strive for an approach that balances accuracy with simplicity and affordability.



ADDING DEPRECIATION

Including accelerated depreciation will likely depend on the complexity of your HVAC system and budget. After-hours AC requests do shorten the lifespan of your equipment, so it's smart to consider including it in your AHAC rate.

Keep in mind there are few cheap and easy methods for figuring depreciation, but it may be worth the investment for some owners.

One way to manually calculate depreciation is to research ASHRAE reported estimates for each piece of equipment, but this can be time consuming for complex HVAC systems. Some AMS software use built-in ASHRAE reporting to predict equipment life cycles. These programs can be helpful guides.

Hiring third-party experts like mechanical engineers to calculate your hour rate is another option, but expertise comes at a price too.

Whatever method you choose, justify your decision to tenants by pointing out that after-hours operation shortens the life-span of your equipment. You'll need those funds for PPM and to ensure a comfortable building environment for tenants.



3

AHAC in Your Lease

After-hours HVAC is a complex topic, and each property requires a bespoke solution. However, there are a few basic terms and ideas that appear in most agreements regardless of your circumstance or location. While you should always consult a legal professional when drafting leases, the following tips and topics will help get the ball rolling.



DEFINE "AHAC"

Ensure you have a clear and unambiguous definition of after-hours HVAC to start with. Use a term that's common for your area. With a little research, you can locate the preferred name for your market (See pg 4). But regardless of the moniker used, be consistent to avoid confusing your tenants.

Next, your definition needs to set parameters for when AHAC applies. In most situations, it refers to charges incurred by any tenant who operates the air conditioning system outside of normal operating hours. Therefore, your definition must necessarily include an explanation of "normal" operating hours.

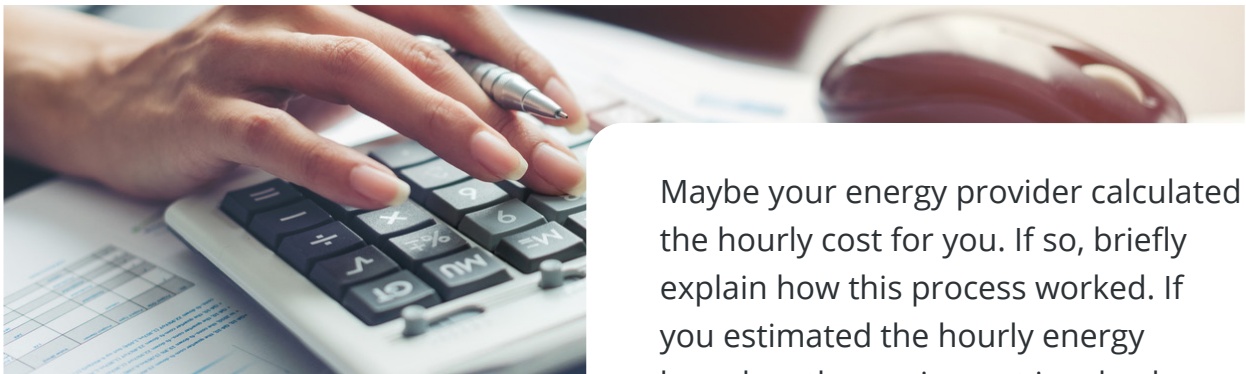
LIST NORMAL HOURS OF OPERATION

Operating hours for a property are usually stated within the lease, but it's good practice to remind tenants in all communications. Using a simple table that lists times and days for each floor, tenant and/or zone can be an effective reminder.

Level 2	8:00 am — 6:00 pm	Mon-Fri	8:00 am — 1:00 pm	Saturday
Level 1	8:00 am — 6:00 pm	Mon-Fri	8:00 am — 1:00 pm	Saturday
Ground	9:00 am — 5:00 pm	Mon-Fri	9:00 am — 12:00 pm	Saturday

By definition, any HVAC usage outside of normal operating hours is considered AHAC and will be charged as such to the requesting tenant. In contrast, you could list a table showing only times that fall inside the AHAC time slots, if this makes it easier to understand.

Remember to mention any specific days outside the scope of operating hours like holidays. And if you don't plan to make AHAC available to all parts of your property, then list those excluded areas in your lease and/or communications with tenants.



EXPLAIN FIXED RATE CALCULATION

Explain how you calculated the fixed energy rate that factored into your AHAC fee. If it was based on an average energy cost across the entire property for a specific time, then show how you prorated the amount.

Maybe your energy provider calculated the hourly cost for you. If so, briefly explain how this process worked. If you estimated the hourly energy based on the equipment involved, then list these HVAC assets for the tenant. Such assets might include chillers, AHUs, VAVs and FCUs.

Your tenants will appreciate that you've done your due diligence in calculating the actual energy expenses for which you're charging them. Such reassurance is beneficial when billing issues surface.



SHOW TENANTS HOW TO CALCULATE AHAC CHARGES

Demonstrate the actual formula for calculating the AHAC monthly charge. Examples clear up the process for your tenants. At minimum, your AHAC charge will include the following elements:

$$\text{Fixed Rate} \times \text{Number of Operating Hours} = \text{AHAC Charges}$$

At this point in the lease, record the amount of the AHAC hourly charge (e.g., \$25 per hour). Examples here are helpful too:

Example: Tenant A used 10 hours of after-hours HVAC for the month at a rate of \$25/hr. Their total charge would be \$250.

Fixed Rate:	\$25
Hours Used:	<u>x \$10</u>
	\$250

INCLUDING DEPRECIATION

If you include accelerated depreciation in your fixed energy rate or AHAC charges, add it to those sections as a line item or as part of the AHAC formula.

There are many ways to recoup depreciation losses. Some property owners make depreciation a separate charge, adding the fees to a general “building fund” that goes to maintain the property as a whole.

EXCLUDED COSTS

You may also want to list any excluded HVAC equipment or service costs. These can include anything within your fixed energy rate calculation that you've chosen not to include even though it's an actual operating expense.

For example, your chiller uses water for heat rejection, but it may be impractical or impossible to get an accurate measurement. Therefore, you may end up omitting water usage from the fixed rate calculation. Other omitted costs often include electricity for lighting hallways, car parks and powering elevators.

An excluded equipment and services list may seem like overkill, but it does show tenants you've chosen to absorb some of the costs. This can help quell future complaints about AHAC increases.



AHAC VS ANNUAL OPERATING EXPENSES

Keep after-hours HVAC charges separate from your annual operating expenses. There's the potential that AHAC kWhs are accidentally mixed with your normal end-of-year utilities bill to tenants. If this is the case, you will end up charging tenants twice for the same energy usage.

Savvy tenants will anticipate this possibility of energy "double-dipping" and want reassurance from you. Prepare for these concerns by explaining that you've taken measures to ensure accuracy and fairness in your billing. It's the most effective way to avoid confusion down the road.

4

AHAC and NABERS

Counting every kWh your property uses is important for your NABERS Energy Rating assessment. The more detailed your records, the more accurate your rating will be. Documenting AHAC hours can be tricky given they're usually tracked separately from normal operating hours.



The following information comes from the NABERS Energy and Water for Offices Rules v.4.1. These sections cover approved documentation relating to AHAC. The Rules are meant for NABERS assessors, but can be helpful in preparing for an assessment.

RATED HOURS



NABERS assessors have to calculate the total number of hours per week your building is occupied—your rated hours. Assessors use your rated hours along with your annual kWh usage and other factors to determine your efficiency rating.

To calculate your rated hours, assessors will look at your core hours. These are your normal operating hours per week (e.g., 8 am to 6 p.m). Core hours are usually listed within the owner/tenant agreement (OTA), and the assessor will likely use your OTA to help determine these.

Your HVAC system uses energy to produce the AHAC service, so those hours need to be counted too. Any missing AHAC hours skew your total rated hour count, lowering your NABERS rating.

The negative impact of omitting AHAC hours is why it's critical to keep accurate logs of tenant requests. For NABERS, not just any records will do either. Data must be deemed "acceptable" or else won't be included. Below are a few types of data listed in the NABERS Rules you should know.

TENANT REQUESTS

Section 5.3.3.1 of the NABERS Rules addresses AHAC requests and states that “acceptable data” includes:

- a) Logs of AHAC requests by tenants, showing the date and time of each request and the functional space to which it applied; and
- b) Evidence of other AHAC requests, such as correspondence between the tenant and the owner or building manager or information written into the OTA which has been verified to be correct and up-to-date. This evidence must include the date, time and space to which AHAC has been agreed to be applied.



An example of acceptable documentation might be an automated entry from an after-hours HVAC app that records date, time, floor and tenant. Unacceptable documentation might be a tenant email listing only the requested date and time. The most important part of accurate documentation is the tenant’s request, so keep this in mind when setting up your request process.

OVERLAPPING HOURS

To be considered rated hours, AHAC hours also can’t overlap with your core hours. So you’ll need acceptable documentation showing their separation. Section 8.3.2 of the Rules explains that to include AHAC hours, you must provide:

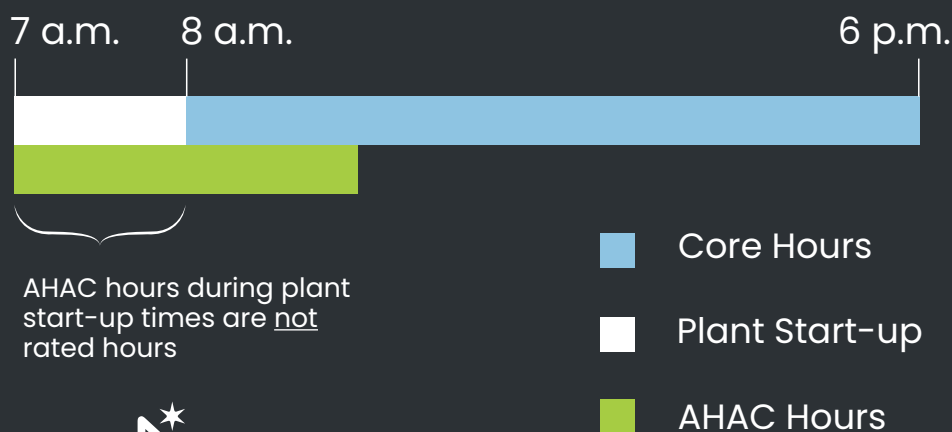
- c) Evidence that no AHAC has been counted during the Core Hours and during the plant start-up period or the hour before the start of Core Hours if the plant start-up period is unknown;



NABERS focuses heavily on counting only “comfort condition” hours— times when internal temps are appropriate for occupancy. Assessors assume that comfort conditions are not met during the start-up time for your plant. For that reason, you can’t count any AHAC hours that occur during start-up times for your system. If you can’t provide evidence of the actual run up times for temps, assessors will assume one hour.

AFTER-HOURS vs START-UP TIMES

Example: Your OTA lists your core hours from “8 a.m. to 6 p.m.” Your normal plant start-up time begins at 7 a.m. to reach comfort conditions. Tenant A requests AHAC from 7 a.m. to 8 a.m. on Wednesday, but your start-up time for Wednesday stays at 7 a.m. (i.e., AHAC and start-up begin at the same time). Since your building isn’t at “comfort conditions” by 7 a.m. on Wednesday, you can’t count that AHAC hour towards your rated hours.



ZONES AND FUNCTIONAL SPACES

To calculate AHAC hours, NABERS assessors also need to divide your net lettable area (NLA) into functional spaces—specific areas of your building. Functional spaces can be based on tenancy distinctions (i.e., leases) or physical ones (e.g. HVAC zones), but variations often happen.

For example, multiple tenants could occupy the same functional space by leasing the same floor. In contrast, a single tenant might occupy separate functional spaces.

The goal of defining functional spaces is to group areas with the same periods of occupancy so assessors can calculate the effects of vacancies and different operational hours on your building's efficiency.

AHAC requests need to reference their correct functional spaces. This is especially important when multiple tenants share the same spaces. Accurate records and detailed building schematics are essential, and assessors will use them to calculate your rated hours. To this end, Section 8.3.2 of the Rules requires documentation in the form of:

- d) Drawings and measurements showing AHAC zones for requests serving different zones within a single functional space.



If the NABERS assessor can't locate detailed areas for different AHAC zones, they will use the smallest area available or else average hours together. Either way, the accuracy of your rated hours will be negatively impacted if there's guesswork involved.

The rules around multiple tenants sharing functional spaces and zones can get quite complex. So, read section 5.3.3 of the NABERS Rules to see what situation fits your properties the most.

5

After-Hours Automation

AHAC programmes are perfect candidates for automation, and most benefit from SaaS and cloud-based platforms that automate common tasks like scheduling and billing. Here are a few common benefits to automating your after-hours HVAC program.

TIME SAVINGS

Automation means less time your staff need to spend managing after-hours bookings and invoicing tenants each month. Tenant statements are automatically logged and reported every month. You will save time by omitting manual spreadsheet entries and invoice creation.

ACCURATE BILLING

Automated scheduling and billing results in fewer errors in recording and changing after-hours bookings. Fewer errors means fewer revenue losses from miscalculated energy charges. Accuracy also results in fewer billing disputes and arguments with tenants over after-hours charges.

HAPPIER TENANTS

After-hours automation supports flexible work schedules. Satisfaction rates increase when tenants are given more control and flexibility around when and where they they can work.

LESS ENERGY WASTE

Automation and mobile booking guards against wasted energy from bookings going un-canceled by tenants and staff. Plus, accurate recording of your plant's after-hours HVAC run times ensures you get credit for every kWh saved for your building rating system.

7NOX is a cloud-based app that automates after-hours heating and air requests for tenants and managers. For more information and to schedule a free demo visit 7nox.com/demo

Call: +64 09 972 9163
Email: info@opsyssolutions.com

