

# What your building already knows

Using energy data to manage cost and find opportunities in commercial buildings

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# Agenda

- ^ Where your energy data comes from
- ^ Controls trends versus the meter
- ^ Energy, demand and district energy
- ^ Five findings from real buildings
- ^ How to check your own building
- ^ Q&A



# A monthly bill answers “how much.” It cannot answer “why”

Trailing twelve months\*

**\$253,534**

Electricity spend

**802,192 kWh**

Electricity use

**\$1.90**

Electricity \$/sf

**\$0.316**

\$/kWh

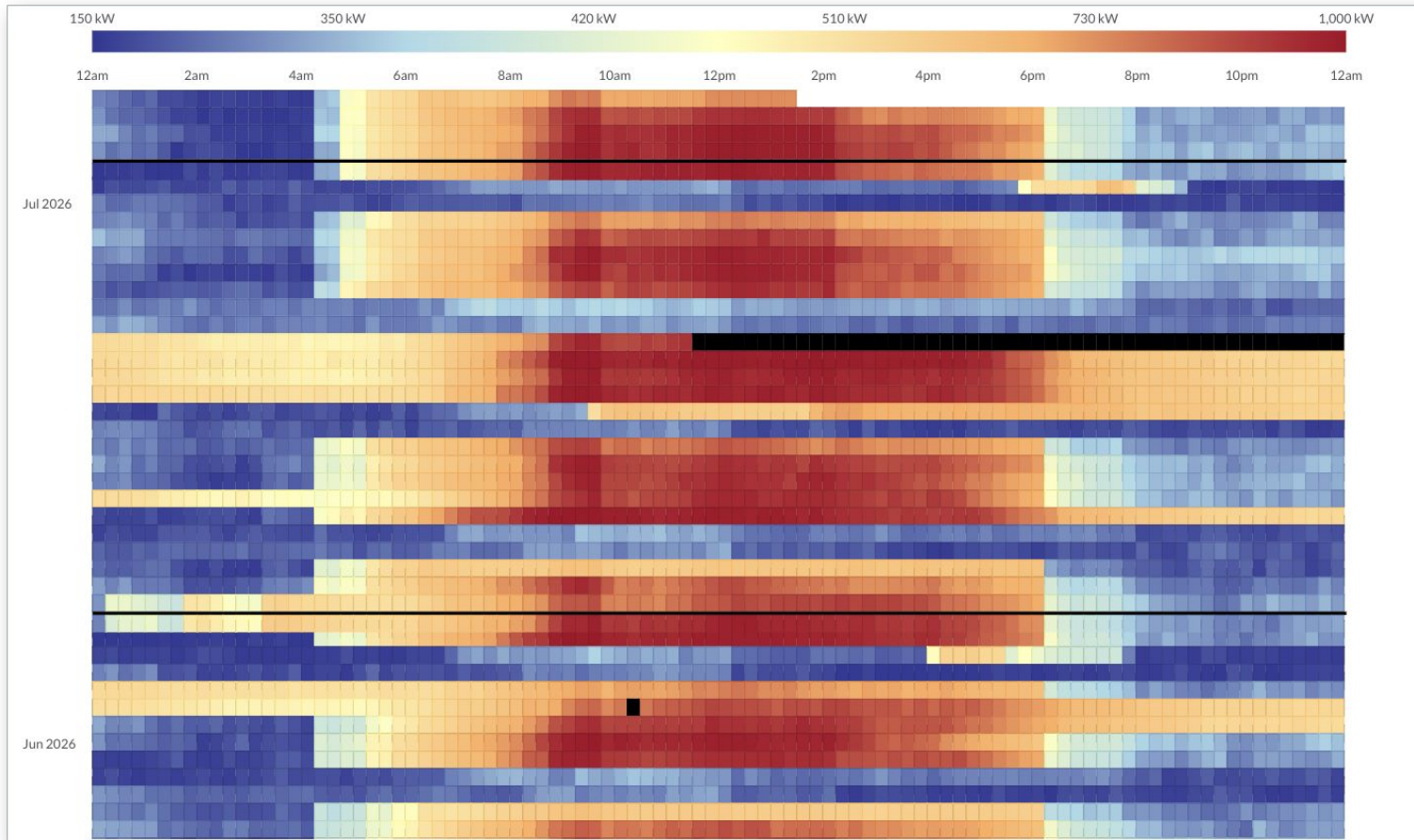
\* Figures represent most recent 365 days of billing data, including partial bills where necessary to derive a year's worth of data.

| Period           | Cost          |             |            |           |         | Variance by source |             |         |        |       |
|------------------|---------------|-------------|------------|-----------|---------|--------------------|-------------|---------|--------|-------|
|                  | Total         | T&D         | Generation | Total kWh | Peak kW | Total              | Operational | Weather | Demand | Rate  |
| 8/3/26 - 9/1/26  | > \$20,412.40 | \$20,412.40 |            | 84,498    | 253     |                    | --          | --      | --     |       |
| 7/3/26 - 8/2/26  | \$23,874.03   | \$17,612.91 | \$6,261.12 | 71,736    | 226     | -3.5%              | -1.9%       | +5.0%   | +4.4%  | -6.1% |
| 6/4/26 - 7/2/26  | \$21,142.37   | \$15,945.46 | \$5,196.91 | 64,406    | 209     | -12.7%             | -4.6%       | +2.0%   | -0.9%  | -4.9% |
| 5/5/26 - 6/3/26  | \$18,341.13   | \$14,511.06 | \$3,830.07 | 65,262    | 182     | -19.9%             | -6.8%       | -0.1%   | -5.8%  | -3.3% |
| 4/6/26 - 5/4/26  | \$16,958.14   | \$13,516.45 | \$3,441.69 | 61,189    | 172     | -20.2%             | -16.4%      | +3.8%   | -4.1%  | -3.7% |
| 3/6/26 - 4/5/26  | \$19,012.21   | \$15,227.40 | \$3,784.81 | 67,646    | 205     | -5.7%              | -7.6%       | +8.3%   | -1.3%  | -9.3% |
| 2/4/26 - 3/5/26  | \$17,949.58   | \$13,923.24 | \$4,026.34 | 62,964    | 171     | -13.0%             | -7.7%       | +2.3%   | -2.9%  | -4.4% |
| 1/5/26 - 2/3/26  | \$21,607.78   | \$14,070.50 | \$7,537.28 | 62,627    | 177     | +0.1%              | -5.3%       | -0.6%   | -0.5%  | +7.2% |
| 12/4/25 - 1/4/26 | \$19,795.59   | \$11,944.15 | \$7,851.44 | 62,152    | 191     | -1.7%              | -5.8%       | -2.0%   | +3.0%  | -2.3% |
| 2026 total       | \$179,093.23  |             |            | 602,479   |         | -11.3%             | -6.9%       | +2.3%   | -1.0%  | -3.4% |

## Variance analysis gets you closer than a bill

- Four causes, separated: operational, weather, demand and rate. Each month is split into how much of the change you caused and how much happened to you.
- Read the July row: the bill fell 3.5%. Underneath it, operations were down 1.9% and rate down 6.1%, while weather added 5.0% and demand added 4.4%.
- That is still monthly. It tells you demand cost you money. It does not tell you it was 11:45 on a Thursday.

# One year of one meter: every day is a row, every 15 minutes is a block



## This is where every number in this deck comes from

- ^ **Your utility meter already records it.** 35,040 readings a year. No hardware, no BMS point, no project.
- ^ **How to read the picture:** time of day runs left to right, midnight to midnight. Days stack downward. Blue is low load, red is high.
- ^ **The schedule is visible** without asking anyone. The building starts around 5 a.m., shuts down around 7 p.m., and the pale rows are weekends.
- ^ **So are the exceptions.** The warm overnight bands are nights something kept running.
- ^ **Nobody had to tell us any of that.** It is all in the meter, and it is already yours.

# Controls tell you what should be happening. The meter tells you what did

## CONTROLS TRENDS

### What should be

- ^ **Setpoints, schedules and commands.** The intent your team programmed.
- ^ **Sensor readings inside the system.** Only where a sensor exists and is calibrated.
- ^ **Silent on anything unmetered.** Plug load, tenant equipment, a portable heater, a failed contactor stuck closed.
- ^ **Rarely kept for long.** Most trends roll off in weeks, so last summer is gone.
- ^ **Not what you are billed on.** No utility has ever read your BMS.

## INTERVAL ENERGY DATA

### What is

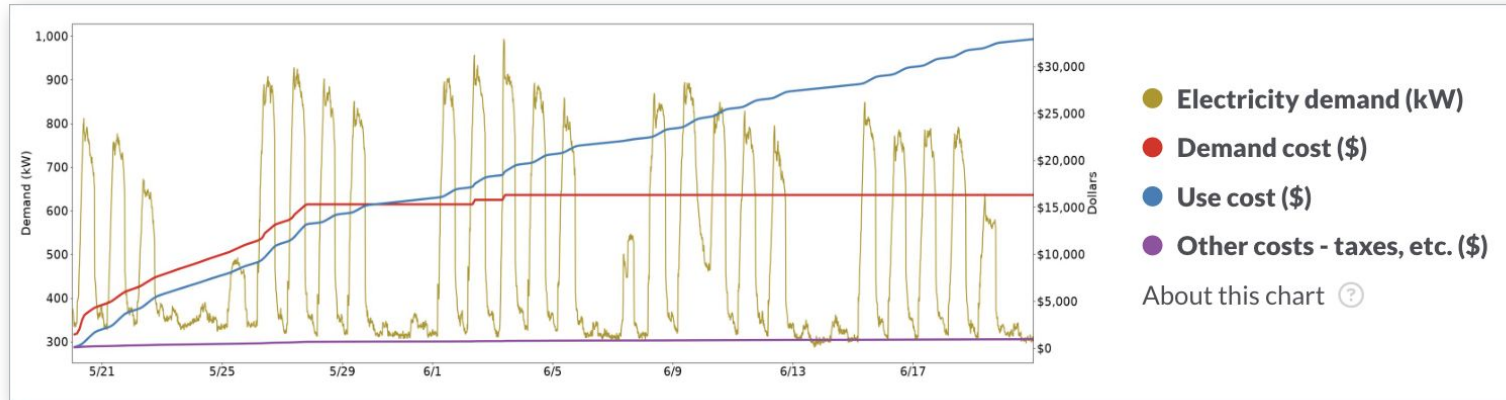
- ^ **Actual power drawn, every 15 minutes.** The whole building, including everything the BMS cannot see.
- ^ **The billed number.** Same meter, same intervals your invoice is built from.
- ^ **Years of history, always.** You can compare this June to last June without planning ahead.
- ^ **Silent on cause.** It shows you 78 kW that should not be there. It cannot tell you it was an exhaust fan.
- ^ **One meter, whole building.** Cheap to get. Nothing to install.

### Why you want both

- ^ **A trend proves the command went out.** It does not prove the valve closed, the damper seated, or the belt was on.
- ^ **The meter is the referee.** It is the same measurement the utility bills you from, so an argument with it is an argument with your invoice.
- ^ **Neither one is enough alone.** The meter tells you something is wrong at 2 a.m. The trends tell you which piece of equipment did it.
- ^ **The order that works:** the meter finds it, the trends explain it, the meter confirms the fix held.

**The trap:** a building can have perfect trends and still waste money, because the trend shows the command and the meter shows the consequence.

# You buy two things: how much, and how fast



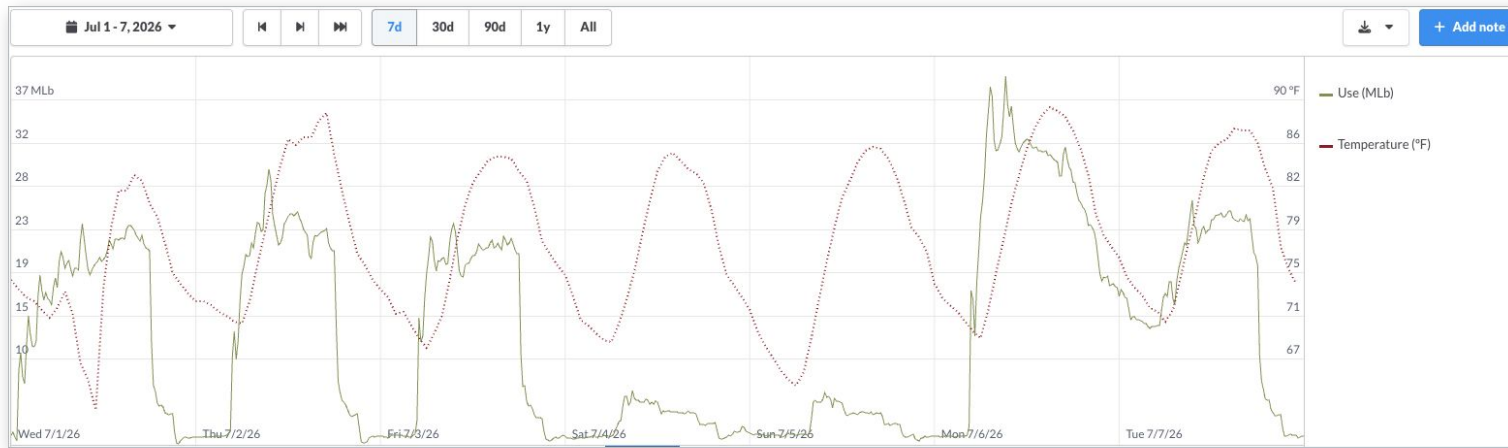
## The same idea in one sentence

Energy is how many cars used the road all month. Demand is the busiest fifteen minutes, and that is what decides how many lanes have to be built.

## Demand, in plain language

- ▲ **Energy is the total.** Every kWh you used this month, added up. The blue line, which only climbs.
- ▲ **Demand is your worst 15 minutes.** The highest average draw in any quarter-hour. The red line.
- ▲ **Why they charge for it:** the utility has to build wires and transformers big enough for your worst 15 minutes, whether or not you ever need that much again. You pay for the size of the pipe.
- ▲ **Once it is set, it is set.** The red line steps up only on a new record. Here it goes flat in early June, and nothing in the last 17 days changed it.
- ▲ **What it cost:** demand was \$14,468 of this \$57,879 bill, a quarter of the total. Summer on-peak demand bills at \$15.79 per kW.
- ▲ **The gap is small.** The peak hit 993 kW at 9:00 a.m. on June 3. The third-busiest day topped out at 927 kW. Those 66 kW added about \$960.

# District steam and chilled water are billed the same way, with a third charge on top



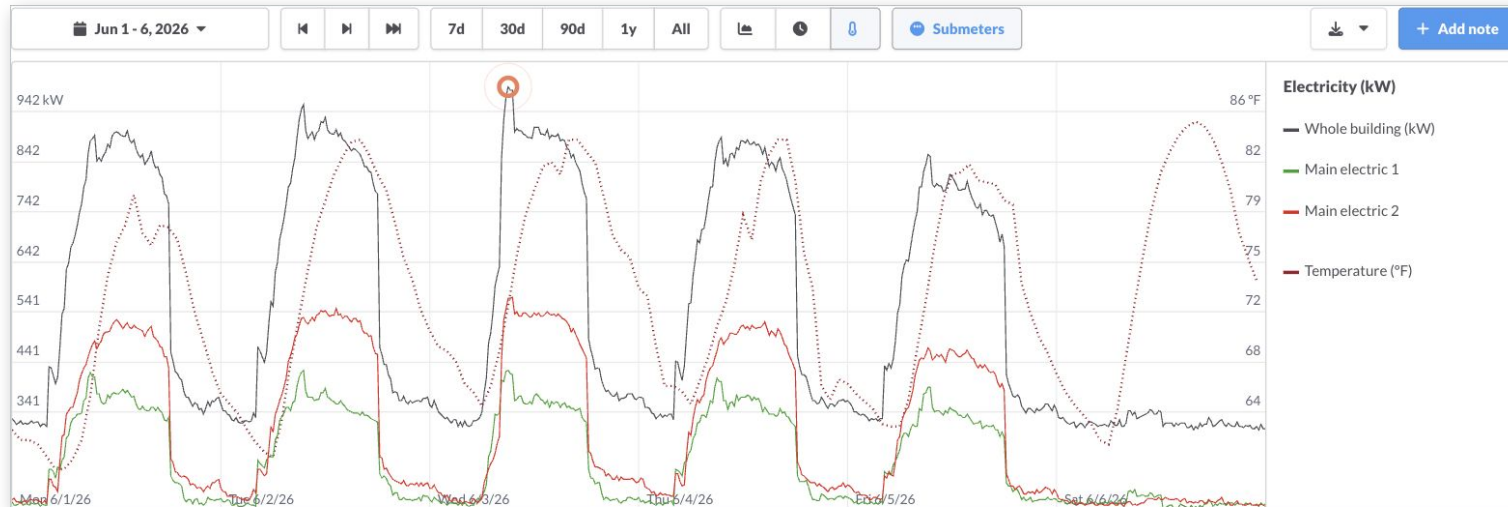
## If you are on district energy, the electric curve alone will fool you

- ▲ Your cooling is not in your kW. It is on a separate meter and bill.
- ▲ So read both curves. Cordia meters steam and chilled water at 15 minutes.
- ▲ Then ask the same questions: when does it run, and what set the peak.

## One July bill, one downtown tower

- ▲ **Steam:** \$10,912 demand, \$0 consumption, \$0 operating, plus \$985 of taxes. The building burned no steam in July and still paid \$11,897.
- ▲ **Chilled water:** \$24,385 demand, \$24,400 consumption, \$58,263 operating, plus \$9,661 of taxes. Total \$116,709.
- ▲ **The operating charge** was the single largest line on the bill, larger than demand and consumption together.
- ▲ **About 9% rides on top** as stacked city, county, state, transit and housing taxes.
- ▲ **Same shape as electric.** A demand charge set by one short interval, plus a volumetric charge. Everything on the previous slide applies here.

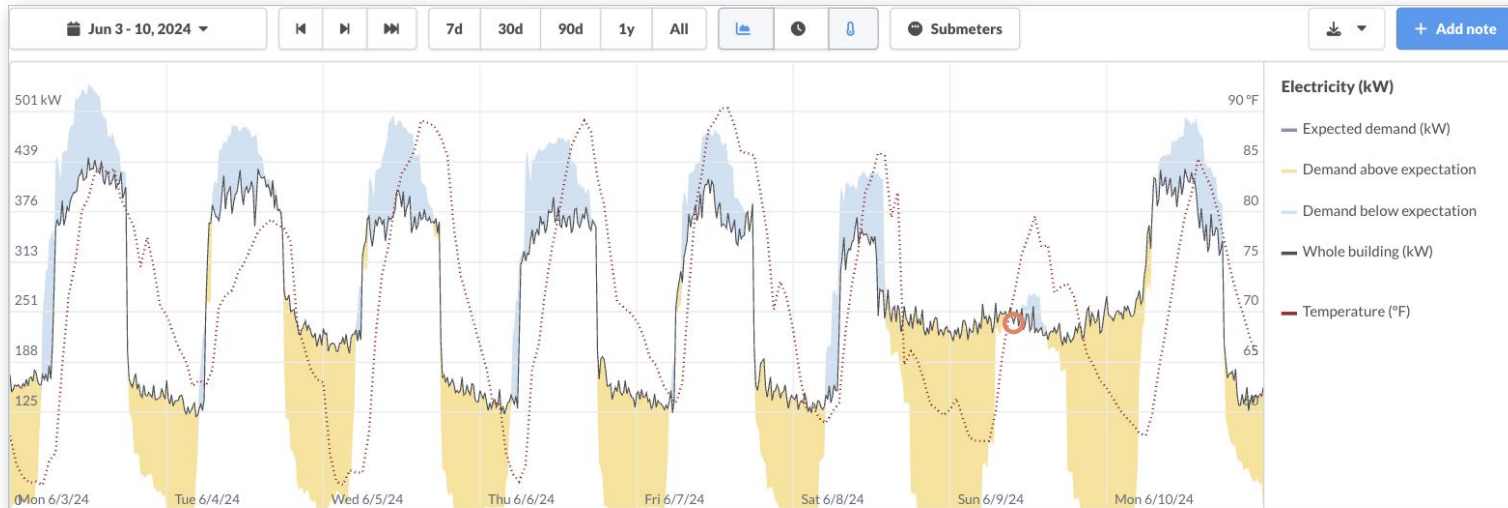
# Finding 1: morning startup set this tower's billed peak in 13 of 17 months



The peak is a 15-minute event, and it is not the afternoon

- ▲ **9:00 to 9:30 a.m.** held the monthly peak in 13 of 17 months of interval data, March 2025 through July 2026. The other four were deep-winter noon peaks.
- ▲ **61% of weekday peaks** (214 of 351 days) landed in the 9 a.m. hour.
- ▲ **In summer that spike sits 40 to 66 kW** above anything the rest of the day produces, so the lever is the startup sequence, not the cooling load.
- ▲ **The dotted line is temperature.** The building peaks hours before the day gets hot.

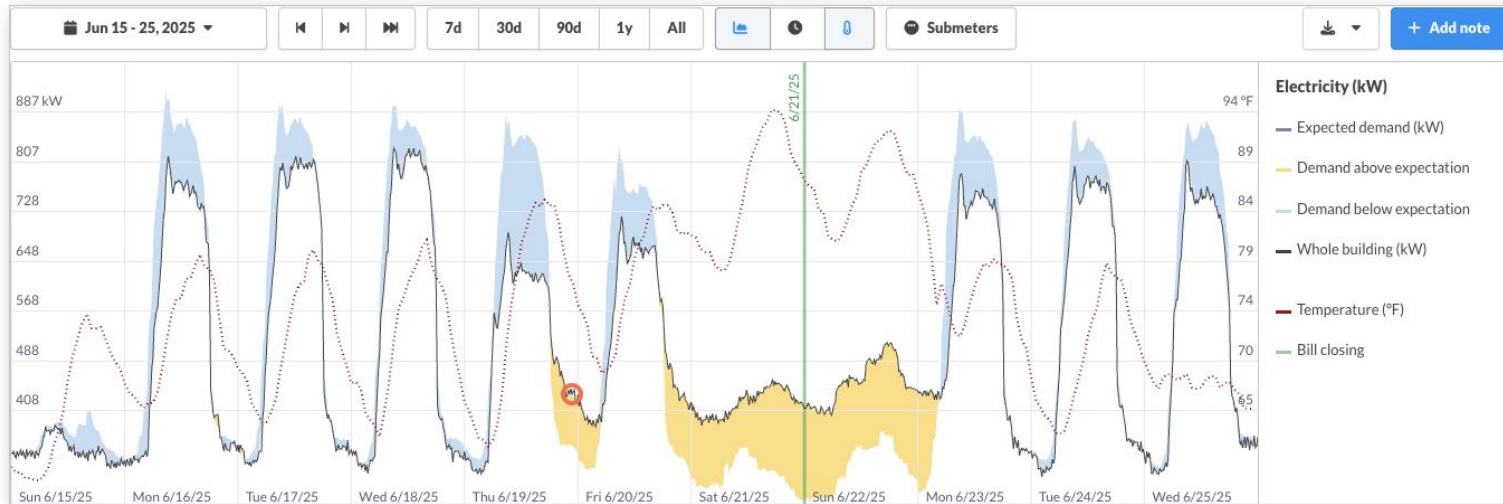
## Finding 2: off-hours runtime is the most common finding, and the cheapest fix



**Yellow is load above what the building should be using**

- ▲ **This 242,000 sf suburban office** ran well above its expected profile every night and straight through the weekend.
- ▲ **The analytics flagged it** as higher-than-expected weekend use, with the exact hours attached.
- ▲ **The fix was a schedule change**, not equipment.
- ▲ **Worth asking about your own building:** does it actually shut down at the hour you believe it does? Most people have never checked.

## Finding 3: speed is the point. This run was flagged the night it started



▼ Notes 1

June 19, 2025 10:45 pm

⚡ Whole building (kW)

**High use after shutdown**

Starting the night of Jun 19, the building repeatedly showed higher than usual overnight use. The total excess was approximately 2200 kWh per night.

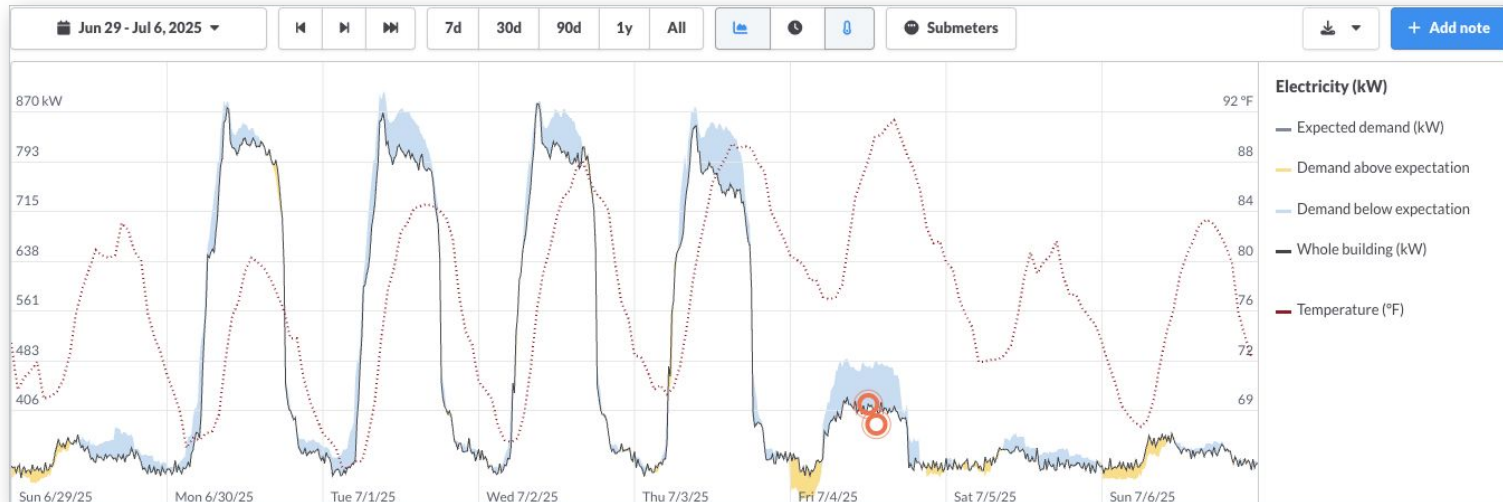
+ Add note

+ Add comment

### Caught in a day, corrected in four

- ▲ Overnight baseline for the first 18 days of June 2025 was 332 kW.
- ▲ Starting the night of June 19 the building ran about 78 kW higher around the clock. The alert went out that night.
- ▲ **Measured excess:** roughly 4,900 kWh over four days, about \$650 at this building's 13.3 cent blended rate.
- ▲ **Left running for a month** the same 78 kW would have added about 56,000 kWh, or roughly \$7,500. Estimated, not billed.
- ▲ By June 24 the overnight load was back to baseline.

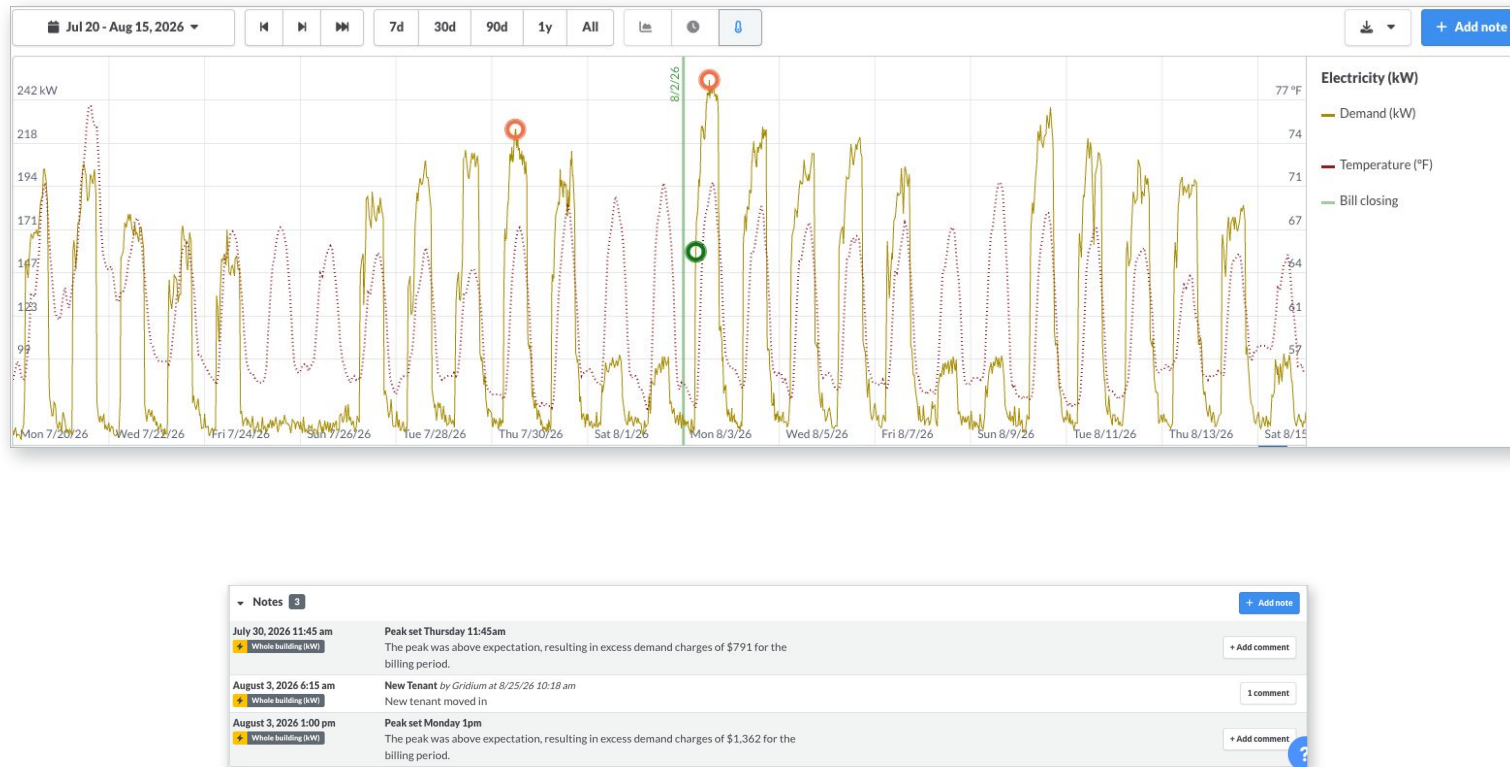
## Finding 4: this building ran a 91°F Fourth of July like a Sunday



### Holiday scheduling is the cheapest savings in the building

- ▲ July 4, 2025 used 8,751 kWh against 12,427 kWh on comparable Fridays that month, 30% lower.
- ▲ It was the hottest day of that week at 91°F, and it still landed within 350 kWh of a normal weekend day.
- ▲ That is a programmed holiday calendar. Most buildings we open have none.
- ▲ The counter-example is in the same data: on other holidays this building used less than a weekday but far more than a weekend, which is the tell that the schedule never changed.

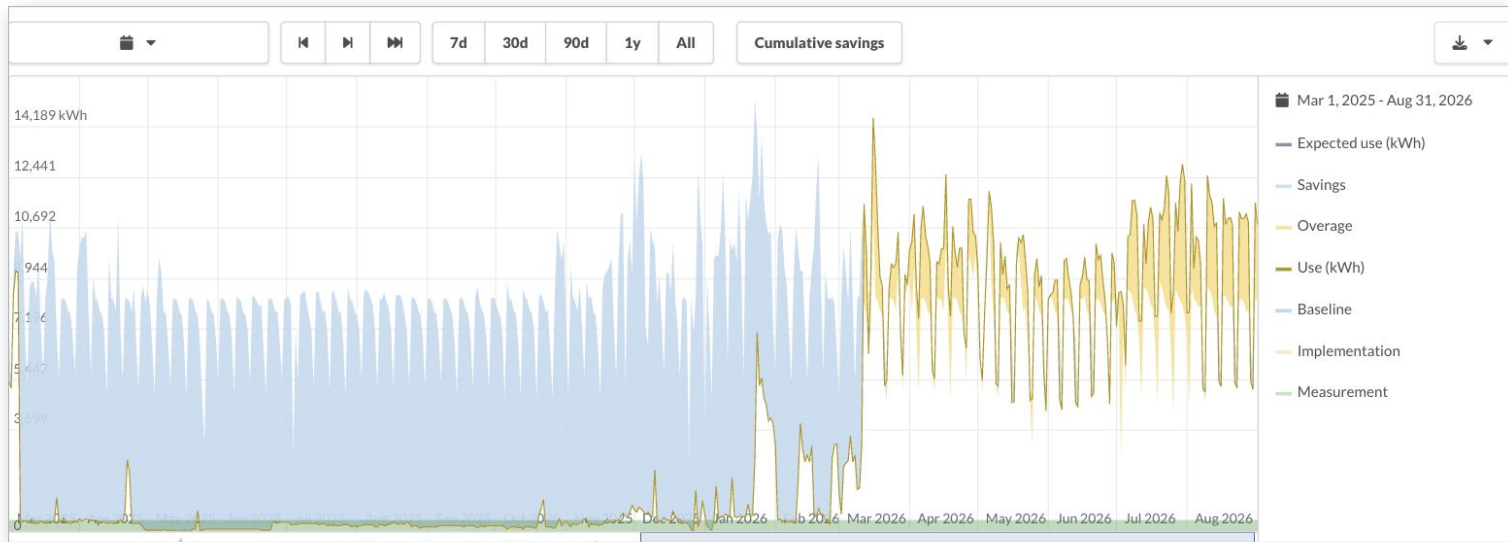
# Finding 5: a new tenant added 33 kW, and the data saw it before the lease file did



## What changed on the first weekend in August

- Weekend peak went from 68 kW to 101 kW, a 33 kW step that appears on the first weekend the tenant operated.
- Weekend days went from 1,433 kWh to 1,848 kWh, about 415 kWh a day, roughly \$130 at this building's rate.
- The monthly bill moved too: up 12,762 kWh and 27 kW against the prior period.
- Across a year of weekends that is roughly 43,000 kWh, about \$13,600. The tenant is sub-metered, so it is billable.
- For a property manager this is the difference between absorbing a tenant's load and charging for it.

# Savings decay. Without measurement you pay for the same fix twice



## The fix: stop running HVAC on Saturdays in a building that is closed Saturdays

- ▲ **The finding** was scheduled Saturday HVAC runtime in a 242,000 sf office with no Saturday occupancy.
- ▲ **The change**, made in August 2024, was to end that scheduled Saturday runtime. No equipment, no capital.
- ▲ **Blue is verified savings** against the pre-change baseline. Yellow is use back above it.
- ▲ **It held for about 18 months** and then flipped in March 2026.
- ▲ **The data does not say why.** A schedule overwritten, a setpoint moved, a new tenant request. It only says it stopped working, which is the part nobody notices without measurement.

# In Minneapolis your building's energy performance is already a public filing

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## Benchmark every year by June 1

- ▲ **Commercial and multifamily buildings of 50,000 sf or more** report annual energy and water use through ENERGY STAR Portfolio Manager. The city publishes a must-comply list each year.
- ▲ **Results are published** on the city's benchmarking dashboard, so your building is compared to its neighbors in public.
- ▲ **Miss the date and it is \$200**, and the city doubles the fine each time you miss again, up to four times. Unpaid fines go on the property tax bill.

## Score 75 or below and you owe an energy evaluation

- ▲ **An ENERGY STAR score of 75 or lower** triggers a required city energy evaluation. The evaluation is free and is good for five years.
- ▲ **You are exempt** with a score of 75 or higher, an evaluation in the last five years, a demonstrated 20% cut in energy use intensity from 2020 to 2025, or a current LEED Gold or Platinum, Minnesota B3 or ENERGY STAR certification.

## Benchmarking scores you. It does not tell you how to move the score

- ▲ **The filing is one number a year.** It cannot tell you which hour, which system, or which day cost you the score.
- ▲ **A score of 75 or below is a finding,** not a punishment. The evaluation is free and it points at operations first.
- ▲ **Interval data is how you move it** between filings, without waiting a year to see whether anything worked.

# How to find out whether there is opportunity in your building

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## If your building is not monitored today

- ▲ **Ask your utility for interval data.** It already exists for your meter. Ask for 15-minute data, or turn on data sharing in your utility account.
- ▲ **Plot twelve months of kWh and peak kW.** If the peak barely falls in spring and fall, your schedule and baseload are carrying the bill, not the weather.
- ▲ **Get the BMS schedule in writing** and compare it to lease hours. Then ask whether a holiday calendar exists at all.
- ▲ **Walk the building at 6 a.m. and 8 p.m.** once. What is running at those hours is the finding.
- ▲ **Look at your ENERGY STAR score.** You already file it. Below 75 and the city evaluation is owed, and it is free.

## If you already have interval monitoring

- ▲ **Track off-hours use weekly, not monthly,** and judge it against a number. Zero is not the target: emergency lighting, servers, IDF closets and plug load never switch off.
- ▲ **A rough yardstick:** the three buildings in this deck idle overnight between 0.45 and 0.72 watts per square foot. Call it half a watt. A 200,000 sf building sitting at 100 kW at 3 a.m. is normal. 150 kW is a finding.
- ▲ **Watch when the peak is set,** not just how high it was. If it lands in the same 15 minutes every month, that is a schedule you control.
- ▲ **Program the holiday calendar,** then check the following week that it actually held.
- ▲ **Put M&V on every operational change** with a named owner and a re-check date 90 days out.
- ▲ **Flag tenant load changes as they appear** and reconcile them against sub-meters and the lease.

# Thank you

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