

Engineer Webinar Series

BOMA OEB

***Smart Seasonal Reset Strategies for HVAC
& BAS***

November 19, 2025

Today's Speakers



Tom Arnold
CEO AND CO-FOUNDER



**Mark Jones, Chief
Engineer 601 City
Center**

Some Fodder for today's discussion

The Rush to Return to the Office Is Stalling

Microsoft, Paramount and other companies are stepping up calls to get back to the workplace. Many of their employees are still phoning it in.

By *Theo Francis* [Follow](#)

Sept. 21, 2025 9:00 pm ET

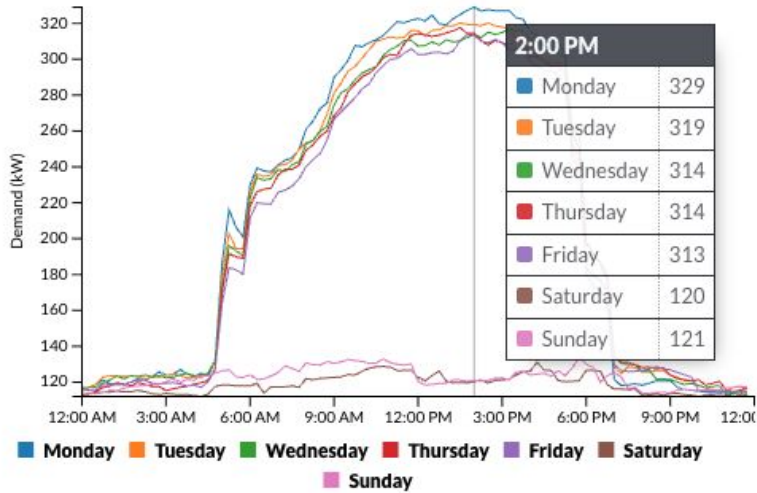
Taking Attendance

Change in required and actual days working in-office since 1Q 2024

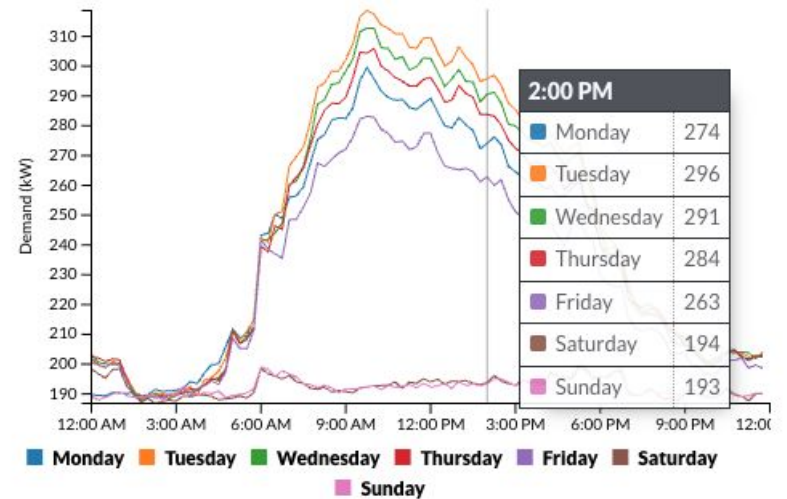


Tale of Two Buildings

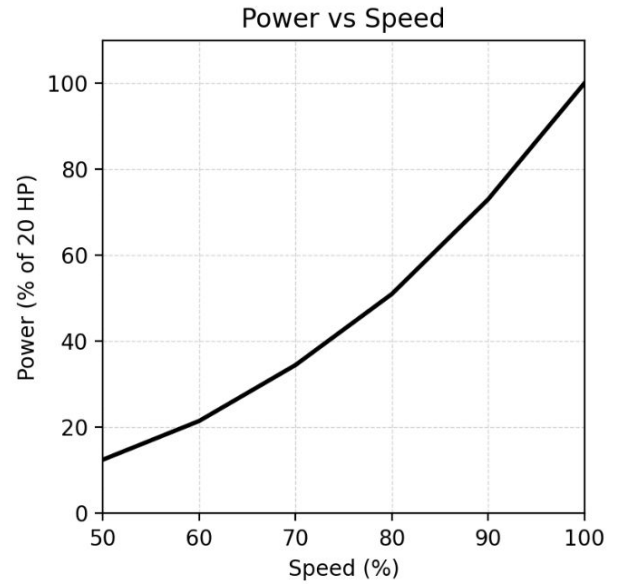
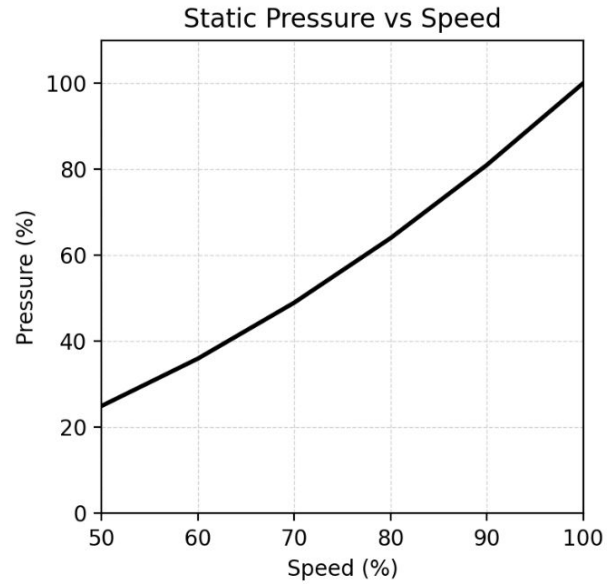
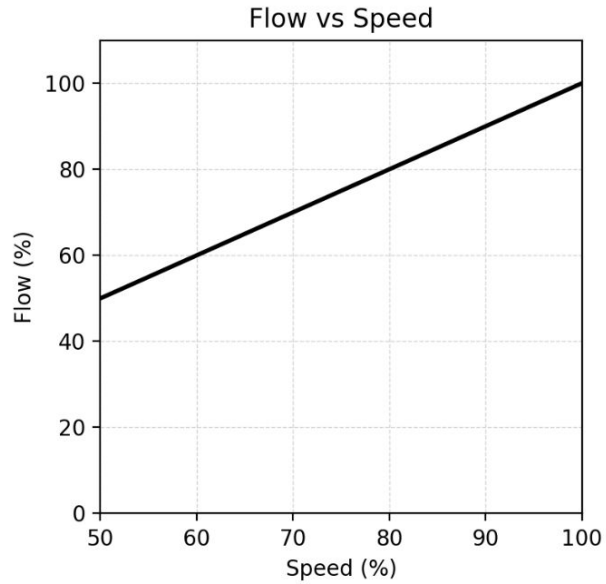
Day of week



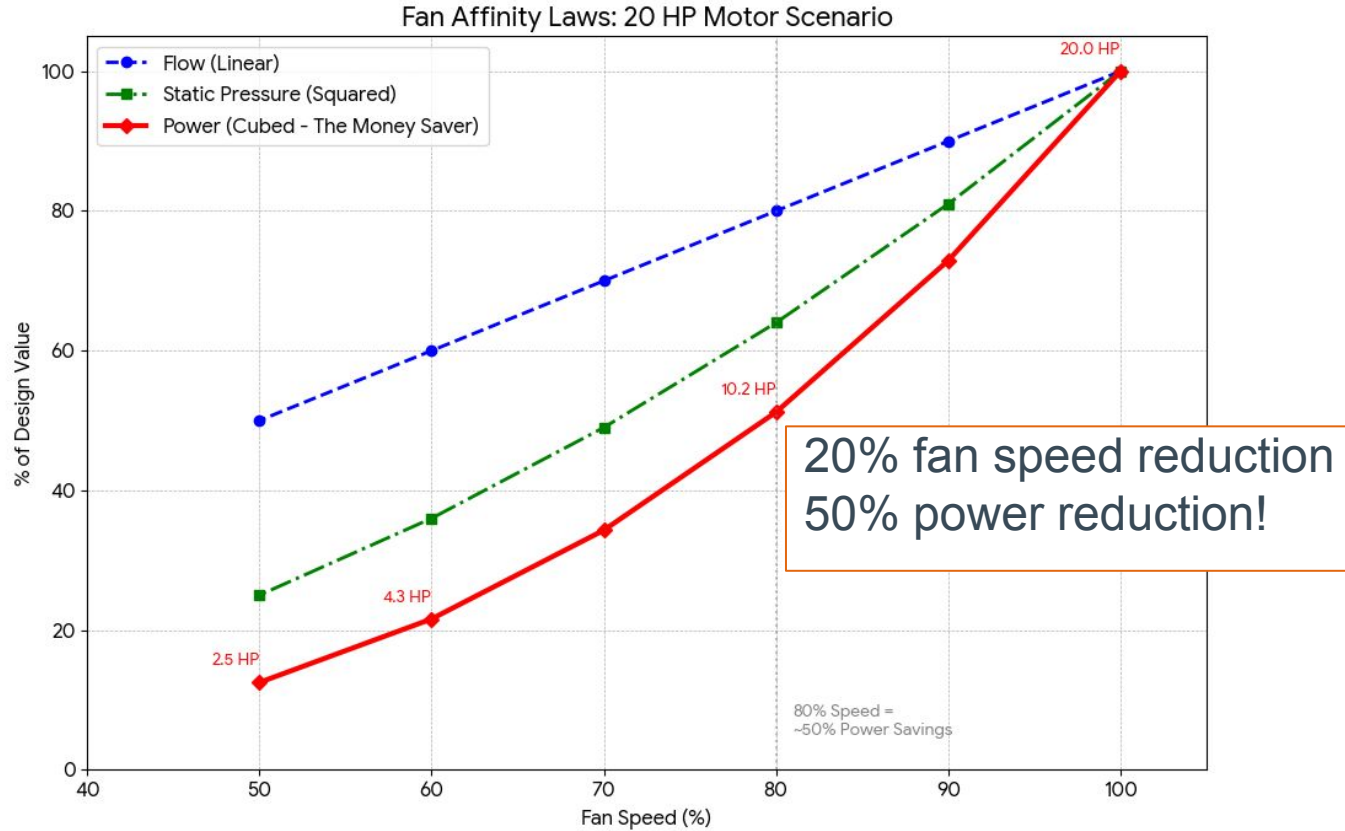
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Fan Laws: Cubic relationship between motor speed and power



Fan Laws: Cubic relationship between motor speed and power



Thinking about those design conditions

- ▲ Design conditions
 - When were these calculated?
 - What was the occupancy assumed?
 - What has changed in your building since then?
- ▲ Many times these are not well documented or they are layers upon layers in a large building

12th Floor VAV Chart

VAV #	Area Served	Flow Min.	Flow Max.	Flow Stpt.	Flow	Base Temp Stpt.	Slider Adj.	Adj. Temp Stpt.	Space Temp	Damper Position	History
12-1		224	750	224	228	71.5 F	2.5 F	73.9 F	72.3 F	N/A	
12-2		108	540	305	302	71.5 F	2.5 F	74.0 F	73.5 F	N/A	
12-3		50	500	50	2	71.5 F	2.5 F	74.0 F	73.4 F	N/A	
12-4		96	480	376	386	71.5 F	2.4 F	73.9 F	73.9 F	N/A	
12-5		148	700	148	162	71.5 F	2.5 F	74.0 F	72.5 F	N/A	
12-6		550	1580	550	635	71.5 F	2.5 F	74.0 F	70.9 F	N/A	
12-7		50	500	500	501	71.5 F	-1.0 F	70.5 F	72.5 F	N/A	
12-8		112	560	112	78	71.5 F	2.5 F	74.0 F	73.2 F	N/A	
12-9		112	560	112	127	71.5 F	2.4 F	73.9 F	72.7 F	N/A	
12-10		59	590	59	145	74.0 F			74.1 F	N/A	
12-11		43	430	99	0	74.0 F			73.9 F	N/A	
12-13		38	380	357	376	71.5 F	-2.5 F	69.0 F	68.7 F	N/A	
12-14		78	780	278	288	74.0 F			71.8 F	N/A	
12-15		50	300	50	52	73.0 F			72.0 F	N/A	
12-16		50	720	50	134	74.0 F			70.4 F	N/A	
12-17		380	500	380	374	74.0 F					
12-18											
12-19											

VAVs 16, 17, 18 ONLY used for Avg Space Control

VAV Mode Cool

Avg Stpt re due to de

Sup. Temp 62.5

Outside Air Temp: re due to de
Humidity: re due to de
Wetbulb: re due to de

no failure due to device stu

12 FloorPlan VAV Chart Select




100.0.0.0

Thinking about those design conditions

ASHRAE 62.1 Ventilation for Office Spaces

A Simplified Guide for Building Engineers

Understanding these rates helps ensure healthy indoor air quality and optimizes fan energy use.

Parameter	Value / Formula	Explanation
Default Occupant Density 	5 people / 1000 ft ²	Used for design calculations when actual numbers are unknown. (1 per 200 sq ft)
Outdoor Air Rate (Rp) 	5 CFM / person	Required fresh air for each person to dilute bio-effluents.
Outdoor Air Rate (Ra) 	0.06 CFM / ft ²	Required fresh for the building floor area dilute emissions from materials & furniture.

- ▲ How does your minimum VAV flow compare to the standard?
- ▲ Many engineers do this math and are shocked at over-ventilation, at full occupancy
- ▲ **If you are meeting setpoint, why exactly are you moving all that air?**
 - **Balancing act vs comfort and perception**
- ▲ LLM Prompt: “total the 12th floor VAV CFM mins. Assuming 11,293 sq ft floor space calculate and comment on ventilation rates compared to ASHRAE 62.1”

Two Paths

Sophisticated/ Contractor

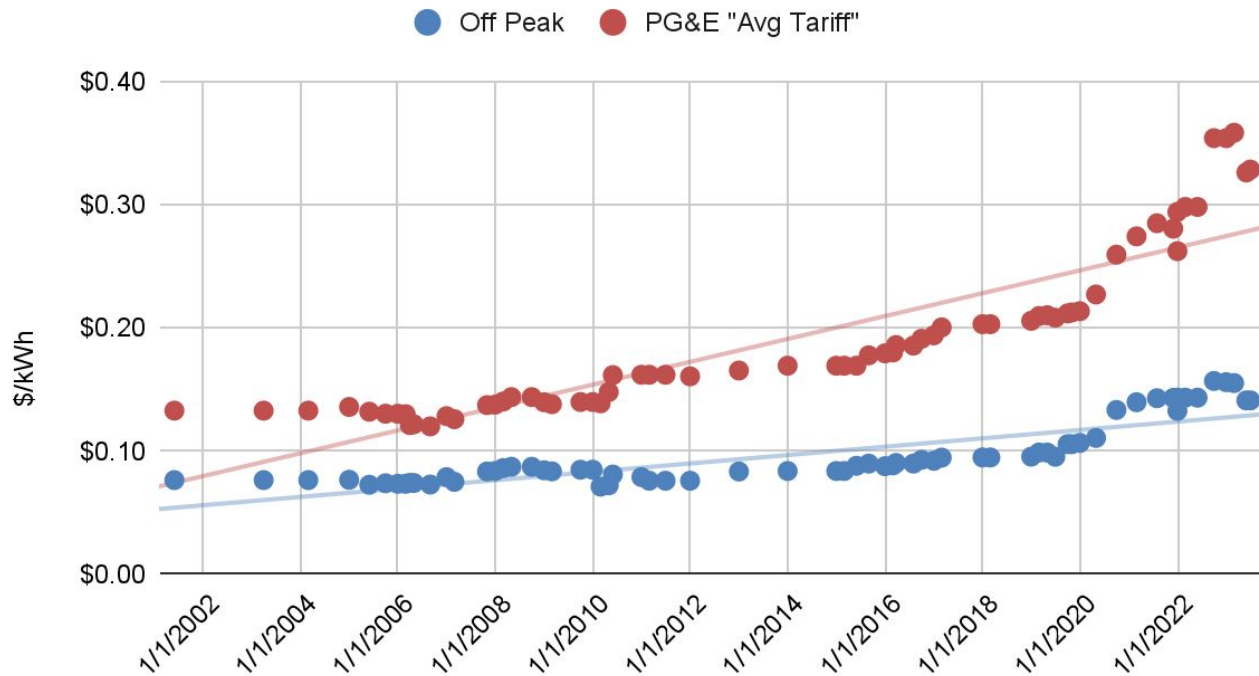
- ▲ Full DDC (or near full DDC)
- ▲ Implement G36 Programming
- ▲ Zone (VAVs) have requests, match energy needs of zones to high level systems at lowest cost
- ▲ Trim and Respond concept
- ▲ Controls programming
- ▲ 2-3 year payback, if you are already DDC
- ▲ Must tune, but once tuned, set and forget it.

Simple

- ▲ Will need some DDC zones to ensure setpoint and comfort
- ▲ Operator comfort with a single change, often static pressure
- ▲ Rough calculations on minimum ventilation rates to ensure safe margin
- ▲ “Yelp” method of building tuning
- ▲ Operator intuition for mild days, low occupancy days, problematic zones

Side note, these paybacks only get better and better!

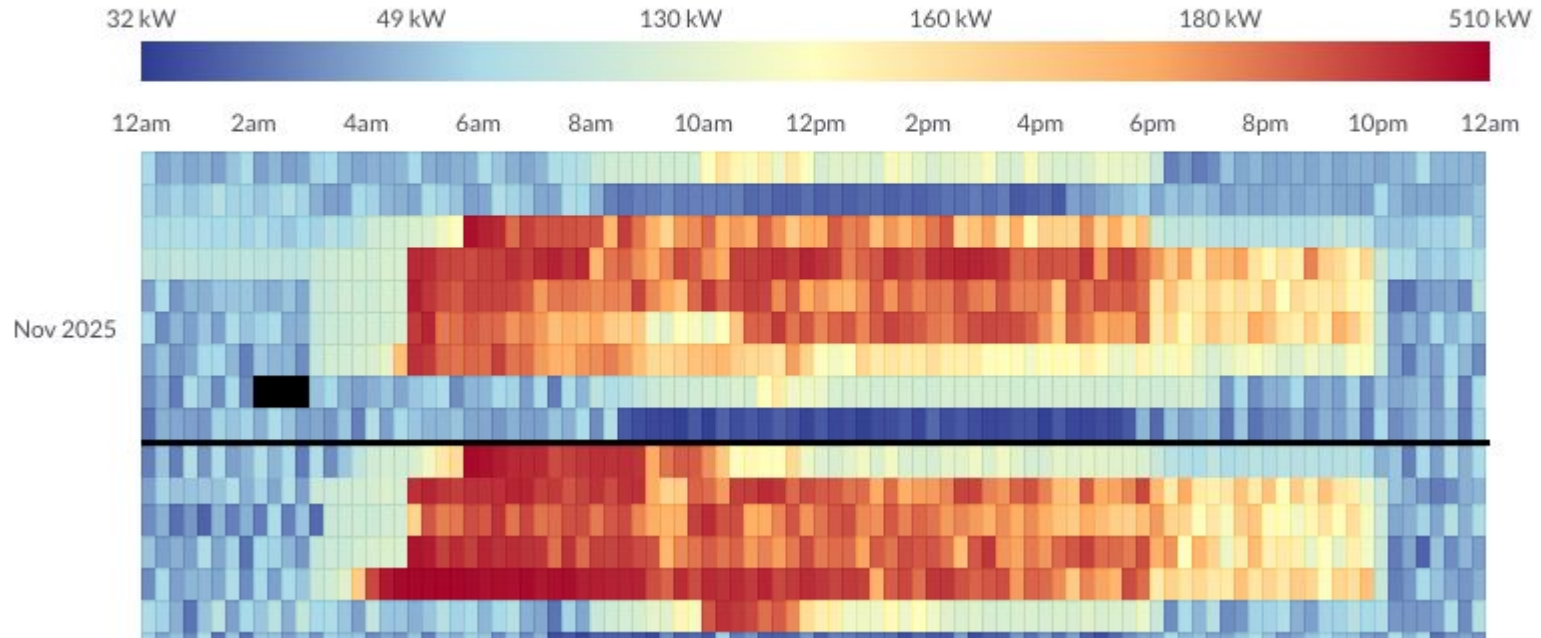
PG&E Off Peak and Average (B-19)



Not ready for duct static? work on Startup, Shutdown

Heatmaps are useful for detecting scheduling changes.

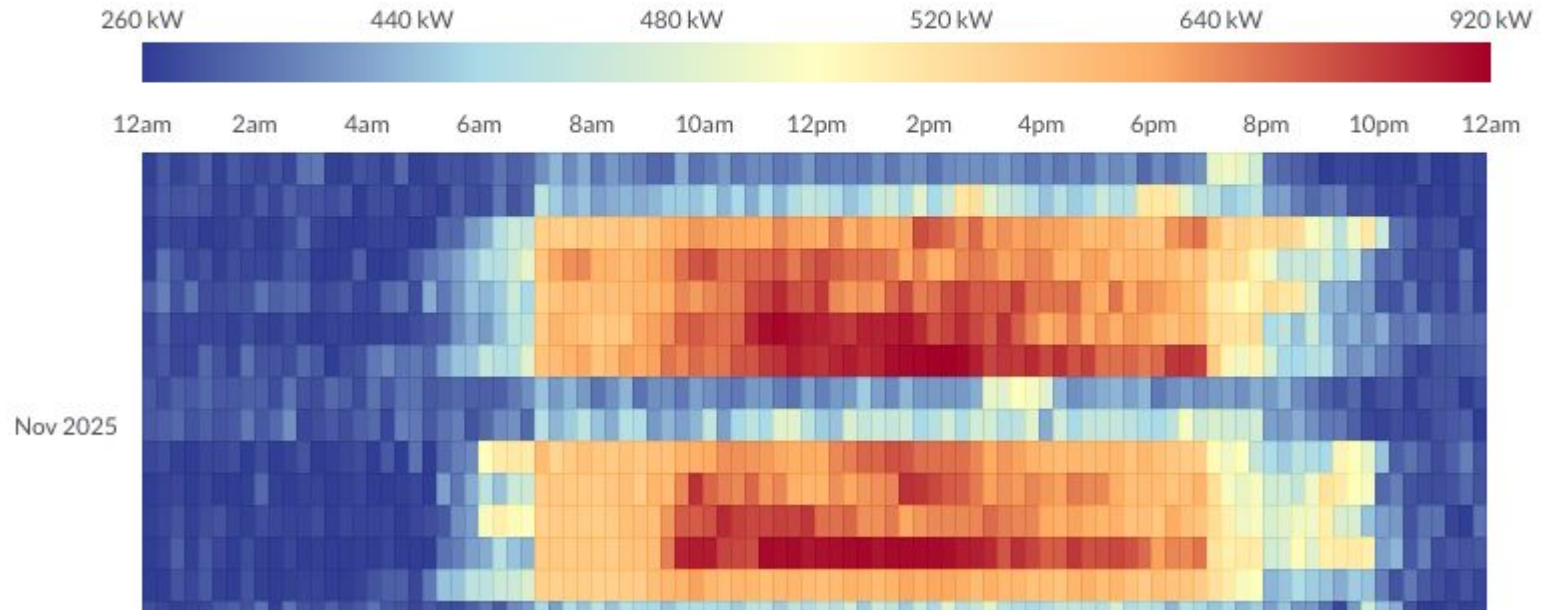
Each block represents 15 minutes. Hover or click for detail.



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Each block represents 15 minutes. Hover or click for detail.



Summing it up

- ▲ **Your building is programmed for pre-COVID occupancy, and five years later is it really coming back?**
- ▲ **Resets match energy services to energy demand. Do you know your major resets and how deep they go?**
- ▲ **Most hours, you are probably over-ventilating.**
- ▲ **Fan laws are your energy savings friend.**
- ▲ **Engineer intuition and skills are extremely useful.**
- ▲ **Run experiments in low risk times (Friday after lunch), fine tune and measure results**

Thank you!

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