



Example Retrocommissioning Measure: Modify VAV Box Flow Setpoints

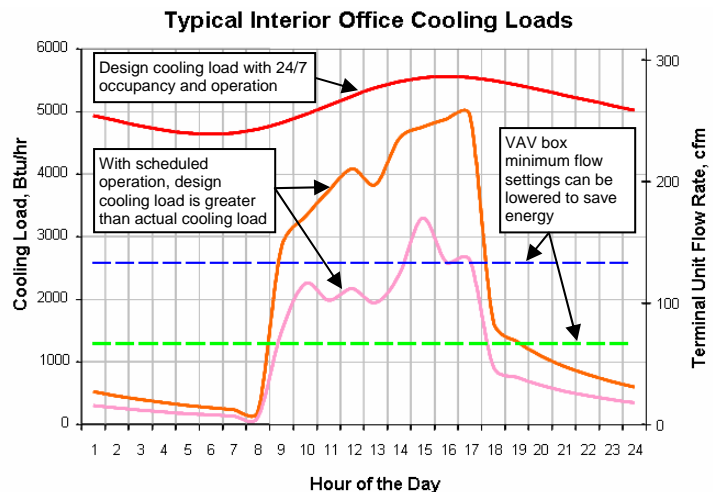
Facility

The campus consists of four buildings, totaling 805,000 square feet of offices and computer software development labs. The HVAC systems include 34 air-handling systems, hundreds of variable air volume (VAV) terminal units, two chiller plants, and two heating water boiler plants.

Investigation Finding

Investigation of building occupancy trends and design assumptions revealed an actual occupancy of 1,850 people, much less than the original design's assumed continual occupancy of 6,000. This large difference in occupancy impacted the HVAC system in two ways:

1. The actual cooling load was less than design, which caused the VAV boxes to operate at their minimum flow setting for much of the time. At minimum flow, these boxes were often reheating the air just to avoid overcooling the space, causing simultaneous heating and cooling and wasting energy.
2. The actual ventilation load was less than design, leading to over-ventilation of the spaces, even with the VAV boxes operating at their minimum airflow setting.



Implemented Measure

The flow settings for the VAV boxes were recalculated and adjusted based on actual observed conditions. On average, the minimum flow settings were reduced by 40%. This modification helped the facility reduce its fan energy (lower fan speeds) and heating and cooling energy (reduced simultaneous heating and cooling).

Results

Estimated annual electric savings	\$24,440	610,980 kWh
Implementation cost	\$20,650	
Simple payback	0.8 years	