

PEAK SHAVING AI

FOR MULTI-ROOM COMMERCIAL BUILDINGS



THE NEED:

In many commercial multi-room buildings, such as in senior living communities, hotels, hospitals, and office buildings, an inherent problem lies in energy efficiency. Buildings account for over 40% of CO2 emissions worldwide.

Specifically, heating and cooling in commercial buildings account for over 50% of energy consumption, with around 30% excessive usage that can and should be maintained.

HVAC systems alone account for 25% to 40% of over-usage rates.

While building management systems (BMS) have been developed as a response, these systems generally control common areas (i.e., hallways, lobbies, etc.), without providing temperature control in individual rooms.

This being the case, HVAC systems must remain active for extended amounts of time, using excessive amounts of energy. This issue is exacerbated in buildings with old infrastructure (Brown Fields make up over 90% of commercial buildings), where there are no sensors or centralized systems.

Managing and installing new technologies in these older buildings require expensive infrastructure changes, usually preventing updates from taking place.

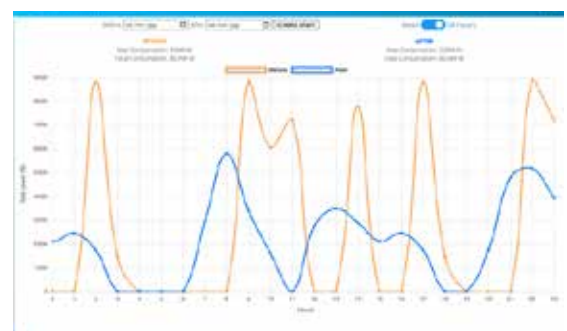
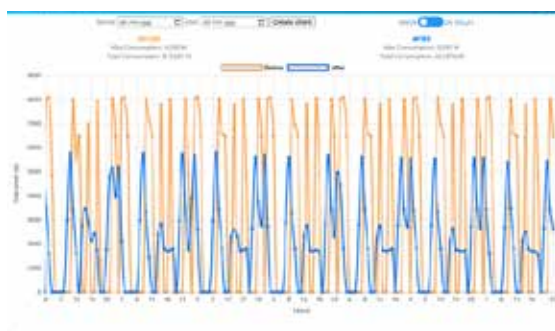


THE SOLUTION: PEAK SHAVING AI

As the economy and population grows, so will demand. We must meet growth without increasing degradation. Aggressive measures to reduce demand, together with construction of clean and renewable power plants, will greatly increase the probability that older, highly polluting power plants will be displaced. To help combat this, Airkind has developed the innovative peak shaving capabilities along with real-time AI demand response.

The platform displays a solution to the problem of simultaneous HVAC system usage by multiple end-users and its consequent peak demand. By applying pre-heating or pre-cooling to individual rooms, and by syncing simultaneous HVAC unit activity during peak hours, the software is able to “flatten” the electricity demand curve throughout the entire building, based on site-specific pricing models, usage patterns and weather variables.

In this manner, Airkind’s Climate Intelligence Platform enables significant reduction in utility costs while protecting the environment from excess energy use and decreases the building's carbon footprint.

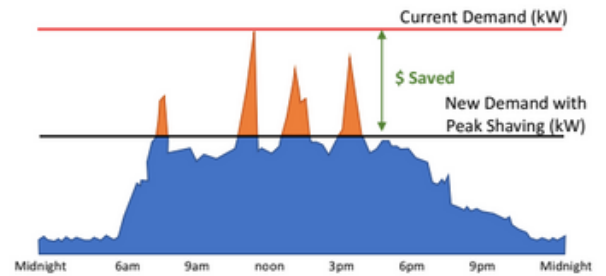


THE BENEFITS:

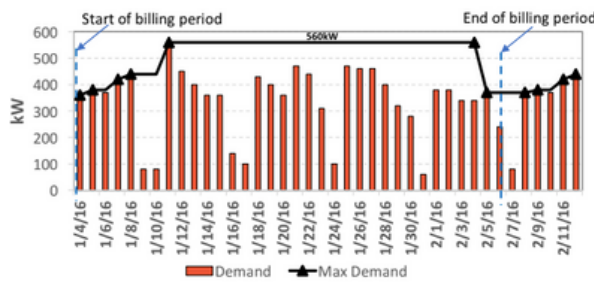
Reducing peak demand can be achieved by controlling or reducing electrical usage during periods of maximum demand. This allows end users to reduce demand penalties and the corresponding demand charges during peak periods. In addition, peak shaving also helps the utility provide maximum base load power without starting expensive to operate peaking generators. As such, utilities may also offer incentives to customers implementing peak shaving programs.

The table below shows sample on-peak, semi-peak, and off-peak periods for a typical utility.

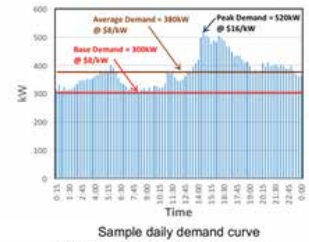
	Summer (Ex: May 1 to October 31)	Winter (Ex: November 1 to April 30)
On-Peak	11am – 6pm (Mon. to Fri.)	5pm – 8pm (Mon. to Fri.)
Partial-Peak	6am – 11am, 6pm – 10pm (Mon. to Fri.)	6am – 5pm, 8pm – 10pm (Mon. to Fri.)
Off-Peak	10pm – 6am (Mon. to Fri.) Weekends and holidays	10pm – 6am (Mon. to Fri.) Weekends and holidays



Airkind's Climate Intelligence platform is able to constantly learn and analyze room thermal profiles, behaviour routines, ambient conditions and electricity tariffs- all as an integral part of the innovative machine learning capabilities. Using all this data, the Climate intelligence system is able to optimize energy usage, reducing consumption during peak hours. Airkind's solution showcases benefits on both economical as well as environmental scales, helping digitize and automate commercial buildings worldwide.



From a user perspective, demand kW usage is dictated by the type and number of loads and equipment operated at a given point in time. Demand kW usage varies throughout the day and throughout the year.



Historically, efficiency benefits were largely focused on the economic value of overall energy savings, with far less attention paid to peak demand impacts on the bottom line, which makes efficiency more valuable than ever before. By introducing AI and smart learning to energy consumption, great changes can be made effortlessly, harnessing technology for the benefit of the environment.