

Energy Evolution in a Multi-Unit Residential Building: A Strategy for Efficiency



Overview

The property management team of this Multi-Unit Residential Building (MURB) was challenged to meet corporate energy targets while addressing tenant needs. Their corporate energy management and greenhouse gas (GHG) emission mitigation goals included:

- Achieving net zero GHG emissions by 2045
- Reducing GHG emissions by 50% by 2030
- Reducing gas costs by 45% by 2027 and 20% by end of 2025
- Identifying operational opportunities with the potential for 10% in overall energy savings by 2026
- Implementing 5 of the largest operational opportunities in Q1 2025

Meeting these goals without negatively impacting tenant experience would require disciplined work.

Utilizing the SEM (Strategic Energy Management) model, the MURB's Energy Champion Dora recognized that the key to improving both energy efficiency and tenant satisfaction was to equip operators with better tools and provide the training to go with those tools. By developing heat map visualizations of energy use, dashboards, and an app-based system, the MURB empowered building operators to spot energy waste in real-time and streamline tenant communication. The app also provided a system for tracking energy-saving actions and recording best practices.

Identifying the energy management challenge

The MURB's building operators were struggling to balance energy efficiency goals with tenant comfort due to limited data and reactive management. Tenant complaints were rarely addressed in a timely manner, and operators lacked the tools to identify energy inefficiencies proactively.

Complaints included:

- Spaces had not reached a setpoint of 21 °C by 8:00 am in the summers (a complaint received even on cooler summer days when outdoor temperatures were below 21 °C).
- Some hybrid work spaces were set back on Thursdays when tenants were scheduled to work from home, but occasional special Thursday meetings did occur in the office, and tenants would complain that spaces were too hot or cold.

Implementing heat maps, app-based tools, and communication systems

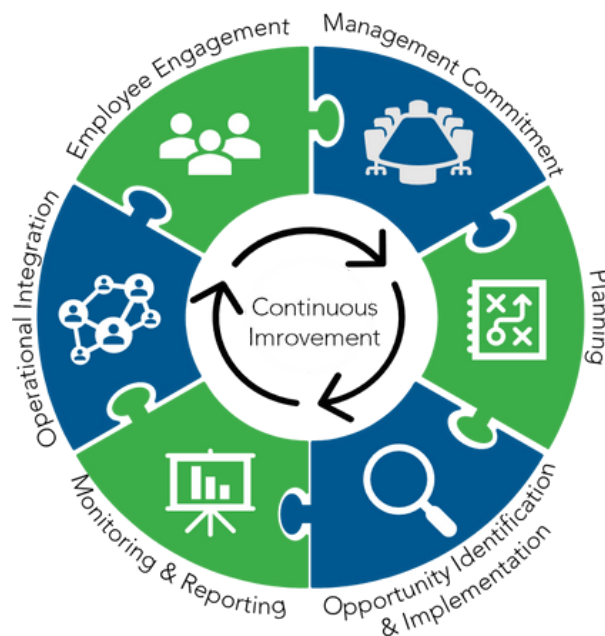


Figure 1: Strategic Energy Management Framework

Dora had a strong understanding of the SEM framework (see figure 1) and, focusing on the **Employee Engagement, Monitoring and Reporting, and Operational Integration** SEM elements, she saw an opportunity to improve operations by introducing technology that would help operators detect energy waste early and create a more efficient, communication-driven approach to managing tenant concerns.

The system allowed operators to identify and act on energy inefficiencies more quickly while enhancing tenant interactions. By leveraging Employee Engagement to include the tenants, Dora and her Energy Team were able to achieve buy-in from all stakeholders and ensure an ongoing cycle of continuous improvement.

Heat maps for identifying energy waste

Dora proposed using heat maps as data visualization tools to allow operators to spot areas of high energy consumption in real time. This enabled proactive energy-saving measures such as adjusting HVAC settings or lighting before tenant complaints arose. Operators could easily track energy trends and take immediate corrective action to reduce waste. One of the most visually obvious and most helpful elements of the heat maps was how they contrasted nights versus days and weekdays versus weekends. These contrasts led to improvements in scheduling and more thorough management of setbacks.

SEM framework utilization:

- The heat maps comprised the Operational Integration component of the SEM framework along with the Monitoring and Reporting component by integrating energy-saving information into the day-to-day activities of operators and highlighting correcting opportunities.

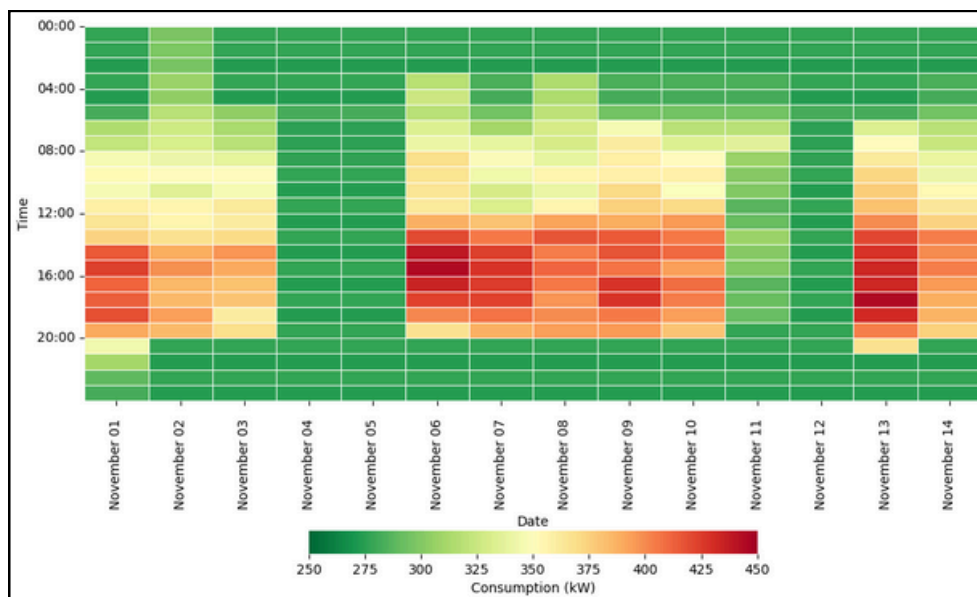


Figure 2: Heat Map

App-based communication and monitoring tools

A new system with app-based options enabled operators to monitor energy usage and communicate directly with tenants. Tenants could report comfort issues or ask about energy use, and operators could provide real-time responses and energy-saving suggestions. This streamlined interactions between building operators and tenants, thereby improving satisfaction and operational efficiency.

A future ambition is to establish a graphical system like the heat map to visualize projected energy use in buildings so that tenants and occupants can see in advance what building conditions they should expect and can communicate any required scheduling changes that may arise with special uses of spaces.

SEM framework utilization:

- App-based communication included the Employee Engagement component of the framework by providing a platform for all stakeholders to participate in energy use initiatives and even included tenants in the engagement component.



Recording corrective actions and best practices

The app also functioned as a library to track corrective actions and best practices. Operators could log energy-saving steps, which helped them learn from previous actions and refine their strategies. This created a knowledge base that facilitated continuous improvement in energy management and allowed operators to repeat successful actions across the building.

SEM framework utilization:

- Recording corrective actions and best practices included both the Employee Engagement and Monitoring and Reporting components of the framework. Operators were engaged in an ongoing continuous improvement process whereby they learned from past successes and developed new strategies.



Conclusion

By integrating heat maps, app-based tools, and a communication platform, Dora and the MURB's team successfully transformed their energy management practices. Operators became empowered to spot energy waste proactively, streamline tenant interactions, and continuously improve energy practices.

Savings from the pilot in the building were approximately 220 MWh in electricity and 250 GJ in gas. Multiplied across the MURB's 35-building portfolio, the savings will be substantial for the MURB from sustainability and financial perspectives. This case study highlights the importance of data-driven tools and effective communication in achieving energy efficiency and tenant satisfaction.