

## Kaiser Permanente: East Denver Medical Office



## DENVER City Energy Project

A program of the City & County of Denver

### History

Kaiser Permanente's East Medical Office building was built in 1977, at a time when energy efficiency was not well understood and often overlooked in the design and construction of buildings. The two story, 72,000 sf building had high energy consumption until 2008, when the building management team began a detailed measurement of its energy usage, and used this information to prioritize and implement energy efficiency reducing operational costs and helping Kaiser to meet their greenhouse gas reduction commitments.

### Benchmarking

The buildings energy usage was benchmarked using ENERGY STAR Portfolio Manager in (2008), allowing the building management team to compare its usage to similar buildings nationwide and to other buildings in Kaiser's portfolio. Portfolio Manager provides a measure of whole building energy efficiency that allows managers of multi building portfolios to compare buildings of different sizes and uses, allowing for prioritization of capital improvements to underperforming buildings. When it was first benchmarked, the East Medical Office had a score of 64 out of 100. This relatively low score confirmed that the building was inefficient when compared to similar buildings nationwide, and to other buildings in Kaiser's portfolio, indicating that the building was a good candidate for energy efficiency improvements. In 2013, the buildings received a score of 84, a 31% improvement.



### Capital Improvements Program

Kaiser Permanente runs a capital improvement program scheduled around the end of life of building systems. As many systems were aging out around the same time in East Medical Office, there was an opportunity to look at simultaneous investments to systems, as well as operational improvements.

### EE Improvements

Kaiser began the energy efficiency improvement process by installing a new Building Automation System (BAS). The BAS enabled building managers to track energy usage, intensity, and demand across building systems and through time to identify opportunities for improvement. The BAS system also enabled the automatic upload of data to Portfolio Manager directly through ECOVA building management software.

Next, a re-commissioning of building systems verified the correct operation of existing equipment. After the BAS was installed and re-commissioning was performed, a comprehensive baseline of the buildings energy usage was established, and further investments were made to:

- Replace parking lot bulbs with LED's
- Replace heating, ventilation and cooling systems with more efficient equipment
  - *Chiller*
  - *AHUs*
  - *Boilers*
  - *Motors*
- Implement comprehensive energy control strategies to address overall energy savings, peak energy demand reduction, and operational optimization through:
  - *Building HVAC scheduling*
  - *Controls optimization*
  - *Simultaneous heating and cooling*
  - *Lighting efficiency*
- Increase the efficiency of motors and motor driven systems..
- Use fault detection and diagnostics software (FDDS) to continuously monitor and troubleshoot HVAC systems. FDDS generally shows energy savings of 10 - 15%, and correctly identifies faults and recommends a primary response 95 percent of the time.

## **Building Management**

The installation of energy efficient equipment was important in improving energy performance. However, the expertise and commitment of the facilities management team was an essential part of the energy efficiency story at the East Medical Office building.

## **Payoff**

These projects were a smart business decision, because it improved the branding of the facility, patient flows, and infrastructure, resulting in improved efficiencies and reduced costs. These improvements have reduced the buildings energy usage by 429,261 kWh per year on average, resulting in annual savings of \$38,633 and 326 tons of CO<sub>2</sub>.

## **Future**

The building's managers will continue to track energy performance over time through Portfolio Manager and ECOVA software, and will use this information to continually optimize operations for energy efficiency in the building. On a portfolio wide basis, Kaiser will continue to use Portfolio Manager to compare building, and to prioritize energy efficiency investments such as retrocommissioning for the worst performing buildings.

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