

# Building Analytics Success Story



## Kaiser Permanente

Five years ago, Kaiser Permanente set a new vision for how they use energy at their facilities nationwide – to achieve carbon neutrality in 2020. The cornerstone of their plan is to reduce their facility energy use as much as possible by implementing data analytics. Then they install fuel cells and solar photovoltaics to get ever closer to achieving their carbon neutral goal.

In 2015, Kaiser Permanente implemented a 4-site pilot of fault detection and diagnostic (FDD) software to test their building optimization approach. The FDD analysis identified energy savings that would repay the cost of the pilot in less than six months. Since then, Kaiser Permanente expanded their FDD implementation to 69 buildings covering 7 million sq ft. Over 100,000 building automation system points across the sites are being monitored by their FDD software; including over 10,000 zones, 1,200 fans, 450 air handlers and 60 chillers.

### What is FDD?

Fault Detection and Diagnostic (FDD) software identifies buildings with suboptimal performance by analyzing building automation system (BAS) data. FDD is one type of energy management and information system (EMIS).

Prior to deploying FDD, Kaiser Permanente has monitored monthly energy bills through an energy information system (EIS) and benchmarked their facilities through ENERGY STAR Portfolio Manager. The team led a program to review energy use, perform ASHRAE Level 1 audits, and capture savings to reinvest and build momentum towards FDD. Their FDD software analyzes building automation system data to determine energy performance, maintenance, and comfort issues and automatically quantifies the cost of energy waste.



*Top-down support and corporate-level energy goals have been critical to the success of our FDD deployment.*

*- Gary Mullaney, Senior Energy Consultant*

### Quick Facts

**Location:** National Portfolio

**Building type:** Healthcare

**Floor area with EMIS:** 7 million sq ft

**Total buildings with EMIS:** 69 buildings

**Energy savings:** 12% average energy savings at seven locations

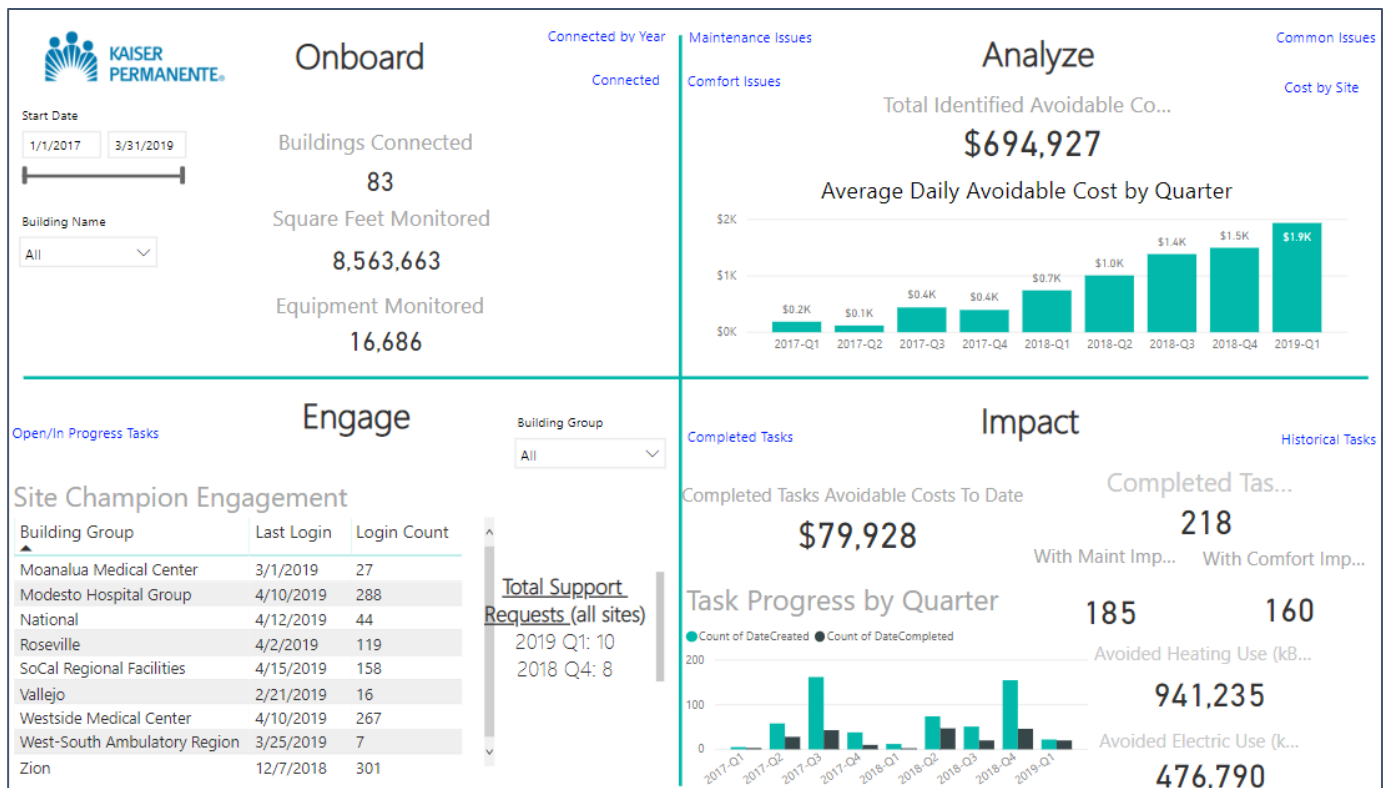
**FDD Tool:** KGS Clockworks

**MBCx Service Provider:** KGS Buildings

**EIS Tool:** ENGIE Insight (monthly data)

### Smart Energy Analytics Campaign: Energy Performance using FDD in a Portfolio

Kaiser Permanente was recognized by Lawrence Berkeley National Laboratory and the U.S. Dept. of Energy in May 2019 for their exemplary work to save energy through the use of EMIS.



Kaiser Permanente's impact report summarizes results (developed in Microsoft Power BI utilizing FDD data)

## Monitoring-Based Commissioning Process

With at least one champion per medical center campus, Kaiser Permanente uses a distributed team approach to implement monitoring-based commissioning. Although hospitals operate independently, the hospital-level champions meet monthly to coordinate FDD implementation. The champion is the lead for reviewing faults on a weekly basis through the following process:

- Starting with faults with highest estimated impact, the champion reviews the data and equipment to confirm the diagnosis, then creates a work order to fix the issue.
- In some cases, this process uncovers a false positive. The FDD vendor is contacted to discuss how the diagnostic can be fine-tuned. In this way, the team continuously improves the fault identification process.
- The champion tracks task status, resolution, and sums the avoided energy cost from the FDD program to provide visibility on results for the executive level.

*Our small national team is helping establish the rules and tools for energy management – we started with centralized monitoring of utilities, and now we are supporting a roll-out of FDD.*

*- Dave Lockhart, Support Services Administrator*

## FDD for New Investments

Since new buildings don't always meet their modeled energy performance, Kaiser Permanente now requires at least a year of FDD implementation in all new building construction projects and plant maintenance projects with significant building controls related work. They use the FDD software to ensure that their capital investments are being properly commissioned and integrated into existing facilities. In the long term, Kaiser Permanente plans to equip their entire portfolio (over 600 facilities spanning 50 million square feet) with FDD software.

**The Smart Energy Analytics Campaign is a public-private sector partnership program focused on commercially available Energy Management and Information Systems (EMIS) and monitoring-based commissioning practices.** The campaign couples technical assistance with qualitative and quantitative data collection to inform research, development, and field study priorities. Partnering participants are encouraged to share their progress and may receive national recognition for implementations that demonstrate exemplary practices.