

Automated Demand Response Case Study

Commercial Real Estate: Kilroy Realty

PROJECT SNAPSHOT	RESULTS
<p>Location: San Francisco Bay Area</p> <p>Industry: Commercial Office Space</p> <p>Description: Four high-rise office buildings with nearly 2 million square feet of office space.</p> <p>Project Timeline: May 2014 to February 2016</p> <p>PG&E Programs Used: PG&E Automated Demand Response Program (ADR), PG&E Aggregator Managed Portfolio (AMP), PG&E Peak Day Pricing (PDP) Program</p>	<p>Automated Demand Response Program Incentive: \$258,650 towards installation of LOBOS system by Yardi Energy to optimize HVAC system performance and reduce demand by 739 kW during demand response events.</p> <p>Overall Savings: Ongoing annual bill reduction from increased energy efficiency, decreased peak demand charges and PDP bill credits as well as additional annual revenue from AMP participation payments.</p>

Kilroy Realty has long been a leader in implementing sustainable energy management strategies across its property portfolio. The customer used this forward thinking mindset in 2013 when it partnered with Yardi Energy (a Yardi Systems Inc. company), the developer of the Load Based Optimization System (LOBOS) HVAC energy management platform. The partnership led to the installation of the LOBOS at four of Kilroy's facilities in PG&E territory. LOBOS gives Kilroy Realty increased control over its building HVAC functionality and allows them to participate in ADR without negatively impacting tenant comfort.



Together, Building
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Project Background

As properties seek to lessen their environmental footprints, sustainable energy management in commercial buildings has become essential for property teams. Kilroy Realty's firm commitment to sustainability sets its properties apart. The company was recognized as North America's leading commercial office real estate company for sustainability in 2014, 2015 and 2016, according to the Global Real Estate Sustainability Benchmark. In 2013, Kilroy partnered with Yardi Energy to implement energy efficiency and ADR measures at some of its properties in southern California. After the successful implementation of the LOBOS technology at the initial sites outside of PG&E territory, the customer implemented similar projects at four properties located within the PG&E service territory, in conjunction with the PG&E ADR Program.

Technology Installed

Yardi Energy's LOBOS HVAC energy management system is an intelligent HVAC platform compatible with most modern HVAC systems. It evaluates real-time data points from the building meter to modify electric load using continuous feedback. Rather than rely on fixed setpoints, LOBOS optimizes the building central plant and air handler operation to provide space conditioning for each zone only as needed, which reduces energy consumption year-round. Additionally, LOBOS performs automated demand response participation with a precise, highly customizable 10-stage control. Energy usage in each zone is incrementally stepped down one or more stages to meet a demand response target, with an emphasis on maintaining thermal comfort based on tenant preferences. Additionally, the solution provides system-level fault detection and diagnostics. Yardi Energy has indicated that paybacks for LOBOS depending on the type of building can range between one and three years after receiving utility incentives.

With the ADR Program incentives, we were able to improve operating flexibility at four facilities. The installed systems overlaid existing facility controls and extracted additional capabilities from our equipment, and allow us to measure our demand more accurately with an increased ability to reduce load consistently. We can reach our target load reduction during events while monitoring space temperatures and other important parameters to ensure no areas are impacted negatively. The ADR-enabled control systems proved valuable for our facilities, so we are currently moving forward with implementing similar projects at additional facilities using ADR incentives.

**SARA NEFF, SENIOR VICE PRESIDENT
FOR SUSTAINABILITY**

Project Outcomes

In addition to bolstering Kilroy's energy efficiency objectives, the new system saves time for facility engineers and helps optimize tenant comfort. The benefits provided by installation of the system also include: ongoing demand response program payments and credits, increased utility bill savings, building operation enhancements and corporate recognition. These non-energy value streams made Kilroy's decision to implement the projects easy.

Automated Demand Response Program Information

PG&E's ADR Program provides incentives to offset the cost of equipment, controls and programming to automate the ability of a facility to reduce electric load during a demand response event. ADR incentives equip facilities to participate in DR events automatically. All customers that receive an ADR incentive must also enroll in an eligible PG&E Demand Response Program for three years and are expected to participate in all DR events called by PG&E.

Next steps

To learn more about PG&E's Automated Demand Response Program, call 1-855-866-2205 or visit pge-adr.com.