



TRICENTRE @ 333 ANITA DRIVE

A Demand Response Partnership Program Case Study

TriCentre is a 212,776-square-foot Class-A office building with an outdoor plaza, on-site restaurant, and fitness center. The building features a blue reflective glass exterior and a lobby with Italian marble, Herculite glass and polished granite flooring.

In 2013, Davis Partners, the on-site property manager, implemented demand response (DR) at TriCentre in an effort to improve energy efficiency, lower utility bills, and reduce environmental impact. By the end of the year, TriCentre contributed 1,881.3 kW of peak demand reduction and received nearly \$50,000 in demand response incentives.

IMPLEMENTING DEMAND RESPONSE

In July 2012, the management team at TriCentre installed a Trane centrifugal chiller to replace aging equipment. As part of this work, TriCentre

AT A GLANCE

Location:
Orange, CA

Use:
Multi-tenant commercial, Class-A

Size:
211,161 square feet

Built 1986

ENERGY STAR Score:
97 (2013)

Property Manager:
Davis Partners

Average monthly billed usage:
240,224 kWh

2013 Annual peak:
869.8 kW

Average DR event load shed:
49.5 kW (5.8% PLS)

Max DR load shed:
301.9 kW

2013 savings:
1,881.3 kW

2013 DR incentives and credits
received:
\$49,240

Annual DR revenue:
\$500/year

Central plant with (2) 300 tone
Trane CenTreVac chillers, (2) 100
hp Peabody fans and (2) 50 hp
Peabody return fans with ABB
VFDs, (2) 900,000 Btu Lochinvar
boilers.

Siemens Insight Energy
Management System and
Enerliance LOBOS Demand
Response/Energy Optimization
software

IN THEIR OWN WORDS

“The ability to reduce consumption and alleviate demands on the grid, while maintaining tenant comfort and reducing or maintaining operating expenses, is crucial when strategically managing a building.”

- **Kimberly Civita**
SVP, Davis Partners

also underwent an energy assessment which showed the demand response potential of the building. In December 2012, Davis Partners began conversations with Enerliance about their LOBOS demand management software, available incentives, and the potential cost savings. Based on the information from the energy assessment, as well as Enerliance’s input, the management team developed a ROI and recommendation to the owner to implement demand response.

The LOBOS software was installed in March 2013. Troubleshooting revealed the need to add an Ethernet cable to ensure reliable data transfer to the building automation system and other minor issues. Though the engineering team reports that these were all relatively easily to deal with. By June, TriCentre was ready for its full DR test. This test, required for Southern California

Edison’s (SCE) Technical Incentive Program, is used to demonstrate the maximum demand response potential for the building. TriCentre earned \$48,630 for shedding 162 kW, which covered a significant portion of the estimated \$60,000 DR enablement costs, including installation, implementation, and testing of the Enerliance software, a new energy management system computer, and chilled water and condenser water hardware.

TriCentre’s first event in SCE’s day-ahead demand response offering, the Demand Bidding Program, was June 6, 2013. Over the course of the year, TriCentre participated in 5 demand response events called by SCE.

BUILDING PERFORMANCE SUMMARY

When a demand response event is called, TriCentre receives 24 hours’ notice. Occupants are notified via elevator memos, lobby boards, and e-blasts the day-of. At the start of the event – typically noon – the LOBOS software automatically raises the chilled water and return air setpoints and reduces the fans per a pre-programmed schedule until 6pm when the building enters normal shut down procedures (Figure 1). The majority of TriCentre’s shed comes from reducing two large supply and return fans from 95% to 78%.



At first the management team was apprehensive about how participation in demand response would affect the building and tenants. Ultimately, however, the team at TriCentre found meeting and maintaining the reduced load while simultaneously maintaining occupant comfort to be very easy and cost effective. Based on Lawrence Berkeley National Lab's (LBNL) 10/10 adjusted baseline, TriCentre is able to achieve 49.5 kW in load shed, on average, without negatively impacting occupant comfort. On the best 2013 DR event day, TriCentre was able to save more than 106.1kW on average, while shedding as much as 301.9kW in a single hour (Figure 2).

CHALLENGES, BENEFITS AND LESSONS LEARNED

At TriCentre, demand response is proving to be a sound strategy to improve energy efficiency, lower utility bills, and reduce environmental impact in a way that aligns with Davis Partners' goals of proactively and cost efficiently driving energy efficiency and providing the highest benefit to the landlord.

"We are always looking for new ways to increase efficiency and reduce expenses," says Kimberly Civita, Senior Vice President of Davis Partners.

Before proposing the project to the building owner, Davis Partners considered the cost of upgrading the building systems, available utility incentives, potential energy savings, and of course, occupant comfort. With input from several third-party vendors, the management was able to demonstrate an attractive ROI. Though obtaining approval from the owner and landlord may require significant additional time and effort, achieving owner buy-in is a key part of the process.

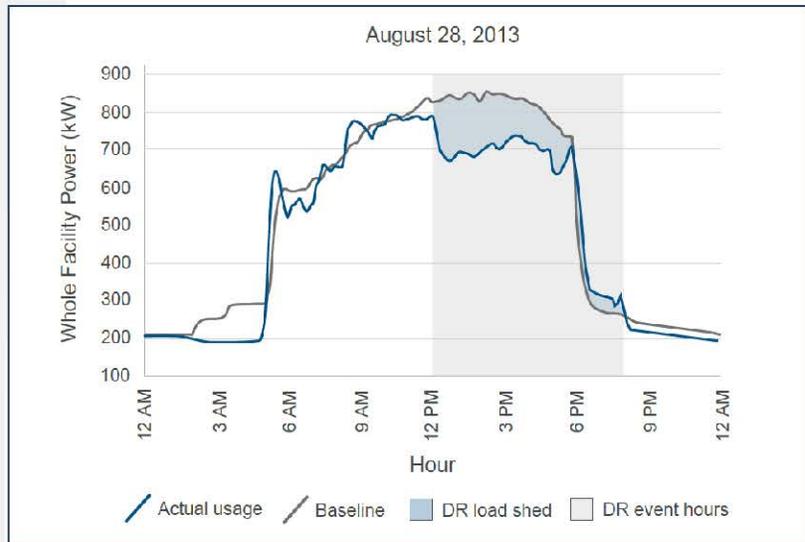


Figure 1. During an August 28, 2013 demand response event, TriCentre saved an average of 59.7 kW and a max of 173.8 kW over the LBNL adjusted 10/10 baseline.



Figure 2. Hourly minimum, average, and maximum load shed (kW) for all 2013 DR events based on the LBNL 10/10 baseline

All in all, TriCentre found the entire process of DR enablement and participation relatively straightforward. The on-site management cites a very positive interaction with Enerliance, who was consistently accessible and helpful during installation, testing, and strategy development. The relationship is ongoing as both TriCentre and Enerliance's engineering teams continuously explore ways to maximize energy savings. "They're just a phone call away," says Gary Lane, Chief Engineer.

TriCentre's success is an example where the building capabilities, incentives, and the goals of the management, owner, and tenants alike are aligned.

LOOKING FORWARD

The team at TriCentre initially estimated that revenue from demand response would be about \$1000/year, not including electricity cost savings. However, this revenue is not currently meeting expectations. Going forward, the management team plans to raise their demand response bids in small increments to see what additional load shed is possible without impacting tenant comfort. The team estimates that they can consistently achieve an additional 40 kW of shed. Furthermore, the team expects additional opportunities to emerge as tenants become more engaged in the energy savings of the building.

TriCentre has also been approached by EnerNOC to explore opportunities to further leverage the existing Enerliance software, and increase the number of demand response events per year.

Acknowledgements

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About the Demand Response Partnership Program

The Demand Response Partnership Program (DRPP) is a collaborative effort between the U.S. Green Building Council (USGBC) and the Environmental Defense Fund (EDF), bringing together both sides of the energy grid to increase participation in demand response and smart grid programs. DRPP connects utilities and technology solution providers with owners and managers of LEED registered and certified buildings. Southern California Edison (SCE) and NV Energy are the official utility hosts for this program, and DRPP research is led by Lawrence Berkeley National Laboratory (LBNL). Skipping Stone serves as the technical consultant facilitating the data transfers. Technology sponsors of DRPP include MelRok, a technology provider of energy monitoring and management for real-time energy solutions, and Enerliance, creators of an intelligent optimization system for large buildings offering fully-automated demand response capability.