SCE DRET Findings
September 2019

DR12SCE2.22: Backlit Menu Board Demand Response Field Evaluation

OPPORTUNITY

What does the study demonstrate about the potential for backlit menu board DR?

Controls for dimming ballasts on fluorescent lamps were successful in reducing demand during a manual demand response (DR) test. However, the controller was not successful with applying the automated DR (ADR) test. Controls for dimmable Light Emitting Diodes (LEDs) were unable to shed load for both manual and automated DR events.

TECHNOLOGY

How does automated demand response with backlit menu boards work?

In recent years, many advanced lighting systems have become available, including new technologies for controls, metering, and remote communications. These technologies can provide dimming to fluorescent lighting with dimmable ballasts and to LEDs if they are compatibly controlled. One of the challenges is to integrate systems from different manufacturers.

M&V

Where did Measurement and Verification occur?

This is a field study of four different lighting control products used to provide dimming, daylight harvesting, and demand response control of interior lighting. The study attempts to integrate existing dimmable backlit menu boards into the ADR capabilities of the lighting controllers. Five fast food restaurants in the Inland Empire region were selected by SCE for the study. The same fast food chain was selected for all field test sites because this helps achieve uniformity in conditions and minimizes the number of variables affecting results.

RESULTS

How did backlit menu demand response perform in M&V?

35% Reduction

For manual DR testing, the measured raw demand reduction for one of the locations (Temescal Canyon) was shown to be 0.11 kW or 35% at the 50% DR level.

Economics

Material and labor costs for the controller at the successful DR test site totaled $9,100. As far as cost effectiveness, DR capability would be considered an added bonus.

No Automated DR

No data was able to be obtained for automated demand response testing because none of the sites were able to successfully integrate the menu board dimming controls with the interior lighting control system.

RECOMMENDATIONS

What does the study recommend as next steps regarding demand response for backlit menus?

Barriers to Integrating Dimmable Backlit Sign Lighting into ADR-Compatible Controls

Further study of interior backlit signs with dimming controls should be considered for DR applications. Although these measures may not provide large kW savings individually, they may be combined with other dimming lighting at a facility to increase the overall demand reduction capacity. Another possibility to investigate is integrating the menu board lighting dimming system with the interior advanced lighting control system (ALCS). Assuming the devices are interoperable, this may present a means to reduce cost, as only one ALCS would be needed for the entire store.