PG&E
Advanced Lighting Control for EE/DR

Albert Chiu

Senior Program Manager

Demand Response

Pacific Gas and Electric Company®

DR Lighting – A Scoping Study by LBNL

- Lighting system in CA consume 30 GWh
- Demand from bi-level lighting in CA commercial buildings provide 1 GW demand shed capability
- Adding occupancy and light sensors to the remotely controllable lighting circuits, automatic controls provide 1BkWh/yr savings (above and beyond the savings that have already been achieved)
- Benefits of applying digital controls technologies to CA unique commercial buildings market are enormous

Rebate on Lighting Control

- Energy Efficiency Rebates for business
  - Occupancy Sensors ($7 - $44)
  - Photocells ($7)
  - Time Clocks ($36)
  - Plug Load Occupancy Sensors ($15)
- Energy Efficiency Rebates for Multifamily
  - Occupancy Sensors ($10)
  - Photocells ($10)
  - Time Clocks ($36)

PG&E DR ET Advanced Lighting Control

- DR ET Project goal:
  - Assess three advanced lighting control for DR and EE applications, including but not limited to the following areas:
    - reliability
    - cost-effectiveness
    - market availability
    - customer acceptance
    - Characterize the performance and availability of other products, similar to the one(s) tested, offered by other manufacturers.
    - needs for development and implementation of a PG&E DR program
    - Compatibility with the different type of lighting circuits exist in commercial, industrial and retail customers.

PG&E DR ET ALC Field Testing

In normal operation

Low shed Signal

High shed Signal

New Title 24 code and standard on lighting control

- Standards Adopted April 23, 2008
- Effective date (Required) Aug 1, 2009
- Programmable Communicating Thermostats (PCTs) not in standard
  - Public objection to mandatory load shedding
- Two demand responsive controls required
  - Demand responsive retail lighting
  - Demand responsive DDC to Zone t-stats

New Title 24 code and standard on lighting control – details [§131(g)]

- Applies to retails stores with sales floor area > 50,000 sf
- 15% of lighting power must be automatically controlled by DR control
  - **DR Lighting Control** reduces lighting power in response to DR signal
  - **DR signal** - an electronic signal from the local utility w/ request to customers to curtail electric usage
- Stores exempt > 50% lighting on daylight controls