Automated Demand Response for 2019 Title 24

What is Demand Response?

Demand response is a change in the power consumption of an electric utility customer to better match the demand for power with the supply. Until recently electric energy could not be easily stored. Utilities have traditionally matched demand and supply by throttling the production rate of their power plants, taking generating units on or offline or importing power from other utilities.

There are limits to what can be achieved on the supply side. Because some generating units can take a long time to come up to full power, some units may be very expensive to operate. Demand can also at times be greater than the capacity of all the available power plants put together. Demand response seeks to adjust the demand for power instead of adjusting the supply.

According to the Federal Energy Regulatory Commission, demand response is defined as:

> "Changes in electric usage by end-use customers from their normal consumption patterns in response to changes in the price of electricity over time, or to incentive payments designed to induce lower electricity use at times of high wholesale market prices or when system reliability is jeopardized."

Design Requirement

- Demand Response is a mandatory requirement, in buildings larger than 10,000 sq. ft., for indoor lighting controls in California under the Building Energy Efficiency Standards Title 24, Part 6.
- Many other building owners, municipalities and utilities across the country, also utilize Demand Response on a voluntary basis.

Source: 2019 Building Energy Efficiency Standards

SECTION 110.12 – MANDATORY REQUIREMENTS FOR DEMAND MANAGEMENT

Buildings, other than healthcare facilities, shall comply with the applicable demand responsive control requirements of Sections 110.12(a) through 110.12(d).

(a) Demand responsive controls.

1. All demand responsive controls shall be either:
   - A. A certified OpenADR 2.0a or OpenADR 2.0b Virtual End Node (VEN), as specified under Clause 11, Conformance, in the applicable OpenADR 2.0 Specification; or
   - B. Certified by the manufacturer as being capable of responding to a demand response signal from a certified OpenADR 2.0b Virtual End Node by automatically implementing the control functions requested by the Virtual End Node for the equipment it controls.
2. All demand responsive controls shall be capable of communicating using one or more of the following: Wi-Fi, ZigBee, BACnet, Ethernet, or hard-wiring.

Leviton Mfg. Co., Inc. Lighting & Controls
20497 SW Teton Avenue, Tualatin, OR 97062 **tel** 800-736-6682 **tech line** (8:30AM-7:30PM ET Mon-Fri) 800-959-6004

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Design Solutions

Solutions for providing demand responsive controls include connecting to or providing an OpenADR Gateway which is also known as a Virtual End Node device.

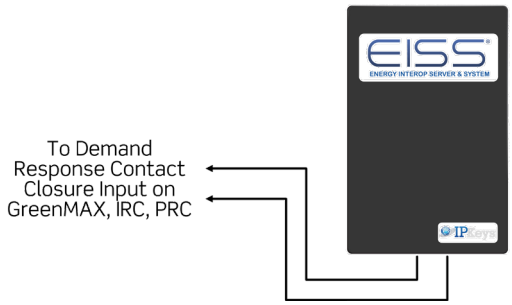
Solution #1:
Connect to an existing OpenADR 2.0a and 2.0b-certified Virtual End Node

- Many Leviton products incorporate a contact closure input and BACNet interface solution for Demand Response.
- Building Automation Systems, or other HVAC control systems typically offer an interface solution that can be used for these inputs or other interface solutions.
- California Title 24, Part 6 - Section 110.12(a)2 states “All demand responsive controls shall be capable of communicating using one or more of the following: Wi-Fi, ZigBee, BACnet, Ethernet, or hard-wiring.”
    - For California Title 24, Part 6 applications, the lighting control system can be connected to an existing OpenADR 2.0a and 2.0b-certified Virtual End Node device utilizing any of these communication methods.

Solution #2:
Provide an OpenADR 2.0a and 2.0b-certified Virtual End Node Device

- Many Leviton product incorporate a contact closure input for Demand Response. The IP Keys EISS® Box offers a solution for our customers to use these inputs.
- Using the IP Keys EISS Box acting as an Open ADR 2.0 certified Virtual End Node, provides demand response signaling into Leviton systems for use as a demand response solution.
- Energy Interop Server & System® Box (EISS Box) delivers a complete industrial grade solution to meet this need.
    - Relay, KYZ pulse, and ModBus outputs
    - OpenADR 2.0a and 2.0b-certified Virtual End Node
    - EISS Boxes are OpenADR 2.0 gateways designed to work with both simple and complex facility management systems, lighting controllers, distributed generation, cold storage, plug-in electric vehicle chargers, industrial controls and other building energy components and devices.

Application Diagrams



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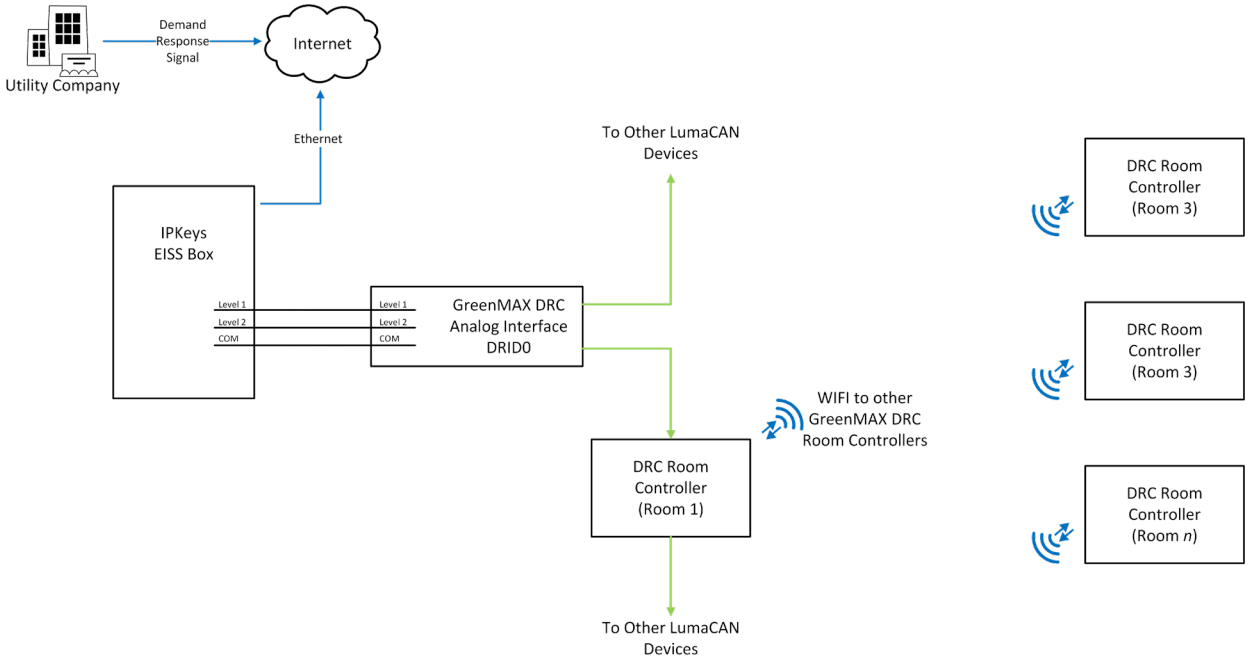
GreenMAX DRC Application



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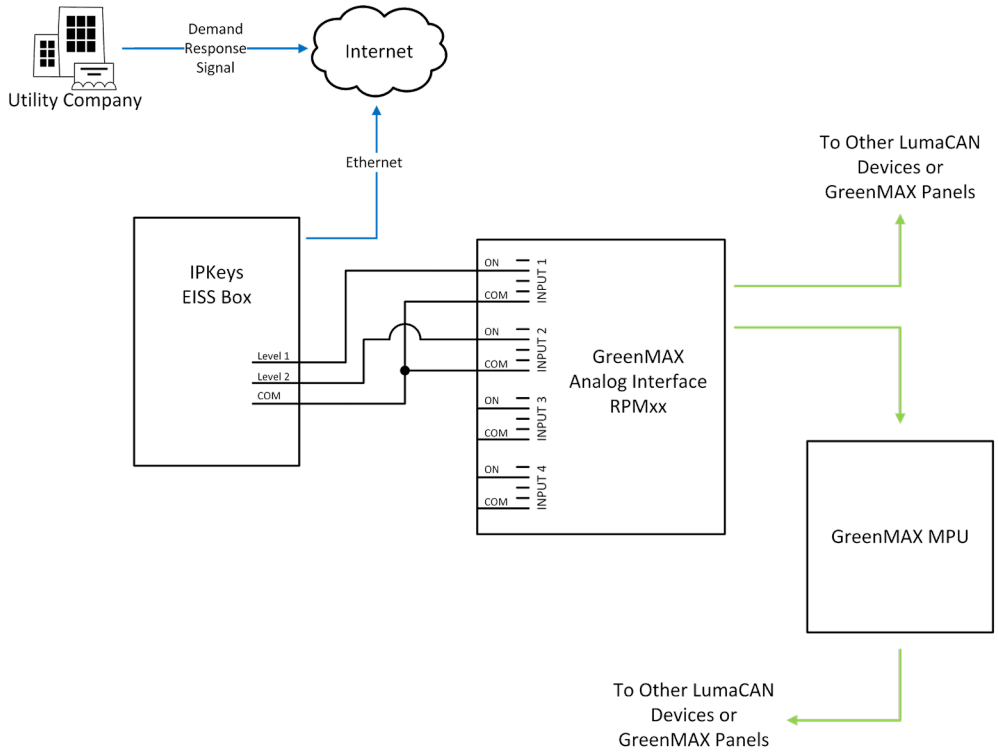

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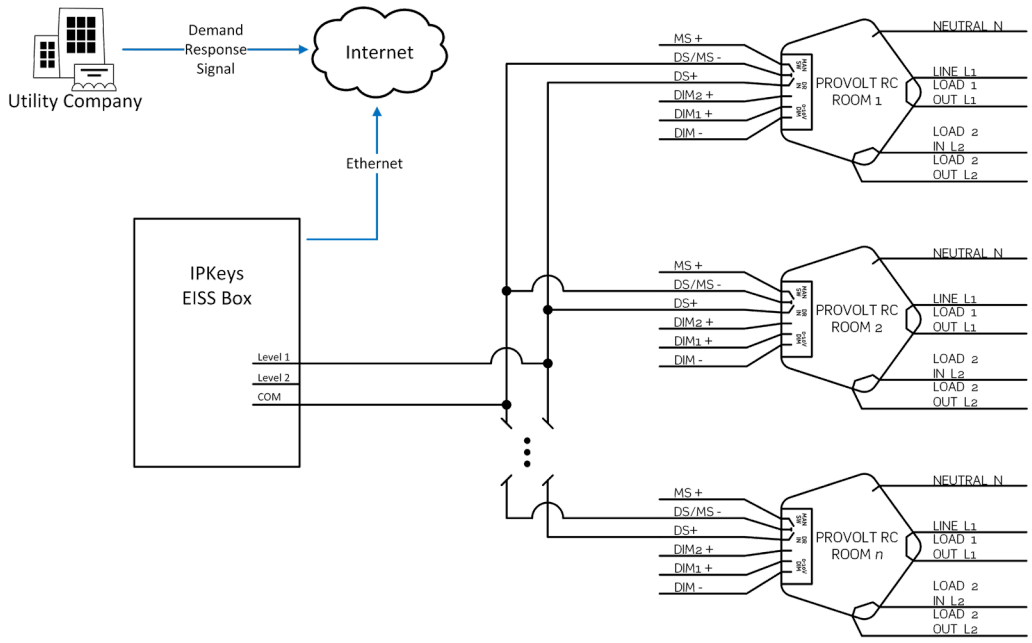
Provolt Room Controller (PRC) Application



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