



**CALIFORNIA  
ENERGY**  
CODES & STANDARDS

A STATEWIDE UTILITY PROGRAM

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# 2019 Title 24 Codes & Standards Enhancement (CASE) Proposal

## Demand Response Introduction

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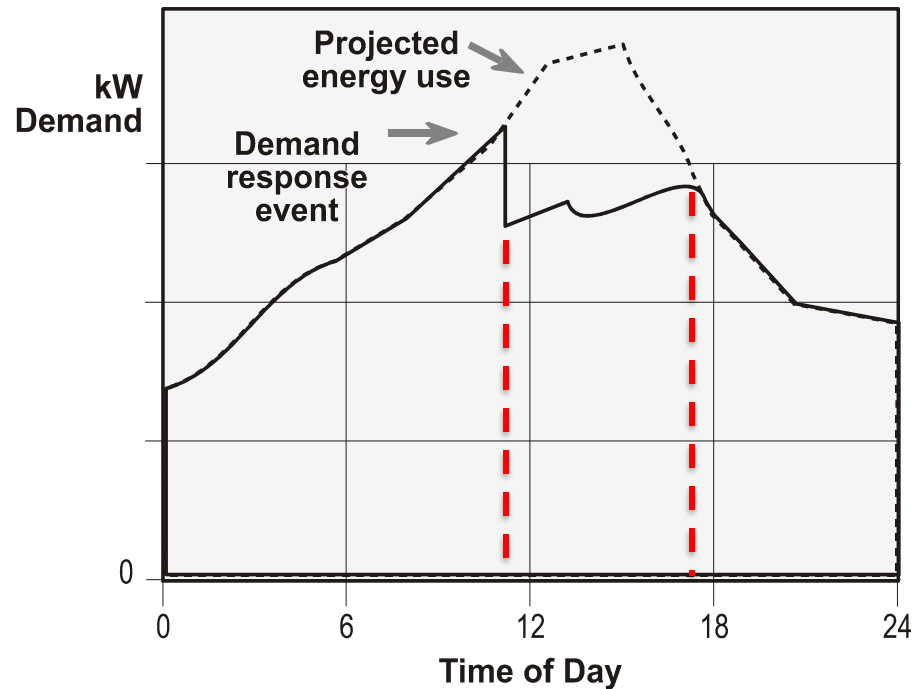


# What is Demand Response?

**Demand Response** is short-term changes in the electricity usage by end users from their normal consumption patterns.

These end users typically reduce (or increase) their energy use in response to a request for Demand Response event or Price signals.

Example: Electricity end user reducing or shedding kW Demand for an 11 AM to 5 PM event.



## How Demand Response Works (short version)

1. Demand Response events are usually triggered when:
  - Total electrical grid demand may exceed (nears) total electrical grid supply (generation plus renewables)
  - Cost of electrical generation is expensive
  - Cost of purchasing electricity is expensive
  - System or grid reliability is in jeopardy
  - Renewable energy sources produce overgeneration (future)
2. IOUs, CAISO, or other entities requests a Demand Response event
3. End users receive a Demand Response signal via a messaging protocol over the internet or from the cloud
4. End users respond by reducing (increasing) energy consumption

## The Value of Demand Response – End Users

Value of Demand Response for the End User:

- Prevent blackouts and/or brownouts
- Reduce electricity costs due to Time Of Use (TOU) tariffs
- Respond to market prices (Real Time Pricing tariffs)
- Accommodate overgeneration of renewable energy
- Environmental benefits

## The Value of Demand Response – IOUs and CAISO

Value of Demand Response for the California's power grid:

- Increase grid reliability
- Optimization of market pricing
- Plays a role in resource planning (new power plants)
- Provide “virtual generation”
- Reduce Greenhouse Gas emissions
- Manage overgeneration from renewable energy
- Future grid stabilization (e.g. frequency regulation)

By the way, IOU Demand Response programs are to be fully integrated with CAISO markets in 2018

## Current Title 24 Demand Response

- Definitions for Demand Response
- HVAC systems
- Occupant Controlled Smart Thermostat (JA5)
- Indoor Lighting Controls
- Sign Lighting Controls
- Electrical Power Distribution systems
- Applies to both residential and nonresidential

Participation in a Demand Response program is not a requirement in Title 24.

## Demand Response Trends– Past, Present and Future

	PAST	PRESENT	FUTURE
End Users	Large Facilities	All sizes, Residential	All sizes, Residential
Automation	Manual	Automatic	Automatic (Faster)
Communications	Phone call, Pager, Email	Internet, Cloud	Internet, Cloud, ?
Notification	24 hour prior notification	Day of event notification	Fast DR (quick as 4 secs)
Hardware	None	EMCS, DR Controls	EMCS, DR Controls
Applications	HVAC, Process Loads	HVAC, Lighting, Process Loads, Appliances	HVAC, Lighting, Process Loads, Appliances, IoT
Event Timing	Reduce Demand during hot summer days	Year around - Midday	Year around - Anytime
Purpose	Reduce Demand on power grid	Reduce Demand, React to Market Prices	Reduce Demand, Market Prices, Overgeneration, Frequency Regulation

# Goals of Proposed 2019 Title 24 Demand Response Codes & Standards

## Increase Enrollment in Demand Response Programs and Participation in Demand Response Events

- Enable end users to take advantage of Demand Response with minimal additional changes to building systems
- Update and harmonize all sections of Title 24 for Demand Response
- Better compliance and enforcement for Demand Response requirements
- Establish a pathway for future Demand Response and Demand Flexibility



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# Thank you.

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