

# DR16.08 Codes and Standards Enhancement Initiative, Demand Response Changes to Title 24, Part 6

## INTRODUCTION

The Codes and Standards Enhancement (CASE) initiative presents recommendations to support California Energy Commission's (CEC) efforts to update California's Building Energy Efficiency Standards (Title 24, Part 6) to include new requirements or to upgrade existing requirements for various technologies. These include space conditioning, lighting, energy management, power distribution, and solar ready sections. The initiative goal is to provide proposals that will result in cost-effective enhancements to improve energy efficiency and energy performance in California buildings, and improve the participation and effectiveness of the Demand Response (DR) program.


California's Building Energy Efficiency Standards are updated on an approximately three-year cycle. The 2019 Standards will continue to improve upon the 2016 Standards for new construction of, and additions and alterations to, residential and nonresidential buildings. The 2019 Standards went into effect on January 1, 2020.

## OBJECTIVE

The objective of this code change proposal is to clean up and clarify the existing DR requirements so that all sections of the standards use consistent terminology and approach.

The Statewide Utility Team recommends improvements to the language in the Standards, Reference Appendices, Compliance Manuals, and compliance documents to:

1. **Clarify the code language** without changing the stringency of the standards.
2. **Harmonize the demand responsive control requirements**, including requirements related to the application of open or standards-based communications protocols.
3. **Clarify and improve the compliance and enforcement process.**
4. **Establish a foundation that is flexible** enough to allow new measures and changes to be added in future code cycles.



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<sup>1</sup>The four California Investor Owned Utilities (IOUs) – Pacific Gas and Electric Company, San Diego Gas and Electric, Southern California Edison, and SoCalGas® – and two Publicly Owned Utilities (POUs) – Los Angeles Department of Water and Power and Sacramento Municipal Utility District

# SCOPE OF CHANGES

The modifications aim to align the terminology used in Title 24, Part 6 and the associated appendices and Joint Appendix 5, JA5, with terminology used by industry, model codes, utility programs, and other regulating bodies such as the Federal Energy Regulatory Commission and the California Independent System Operator (CAISO). ***The proposed changes will not modify the stringency of existing requirements or add new requirements.*** Revisions also aim to provide sufficient detail on how to comply with the standards while maintaining the appropriate level of leeway to allow for continued market innovation and transformation.

**Table 1. Summary of Proposed Revisions to Demand Response Standards**

Section of Existing Standards	Summary of Proposed Revision(s)
10-103(b)2	Adds language to clarify that building owner/occupant should receive information about the buildings' control systems, including the DR control systems.
100.1	Updates and adds definitions.
110.2(c)	Revises wording of requirements for thermostatic controls to improve clarity.
110.10	<ul style="list-style-type: none"> <li>Revises wording of solar-ready tradeoffs that allow the use of thermostatic controls that comply with Joint Appendix 5 (JA5) improve clarity.</li> <li>Replaces the phrase "home automation system," which is not defined, with the defined term "energy management control system," which is defined.</li> </ul>
110.12 (new section)	<ul style="list-style-type: none"> <li>Adds new section that contains all requirements for demand responsive controls.</li> <li>Content was removed from the following sections and added to this new section: 120.2, 130.1(e), 130.3, 130.5(e).</li> <li>The original language was reworded to improve clarity.</li> <li>Clarifies and harmonizes communications protocol requirements for all demand responsive controls other than thermostatic controls that comply with JA5 (revisions to JA5 include modifications to communications protocol requirements that harmonize with the communication protocol requirements for all other demand responsive control systems required by the standards).</li> </ul>
120.2	<ul style="list-style-type: none"> <li>Revises section heading name to be consistent with all other sub-sections with in Section 120.</li> <li>Revises wording of requirements for thermostatic controls to improve clarity.</li> <li>Moves demand responsive control requirements from this section to section 110.12. This section direct readers to section 110.12.</li> </ul>
130.0(e)	Moves requirements that indicate when EMCS can be used from this section to section 110.12.
130.1(e)	Moves demand responsive control requirements from this section to section 110.12. This section direct readers to section 110.12.
130.3	<ul style="list-style-type: none"> <li>Revises section heading name to be consistent with all other sub-sections with in Section 130.</li> <li>Moves demand responsive control requirements from this section to section 110.X. This section direct readers to section 110.12.</li> </ul>
130.5(e)	<ul style="list-style-type: none"> <li>Revises section heading name to be consistent with all other sub-sections with in Section 130.</li> <li>Moves demand responsive control requirements from this section to section 110.X. This section direct readers to section 110.12.</li> </ul>
141.0(b)2E	Revises wording of requirements for thermostatic controls to improve clarity.
150.0(i) and (k)	<ul style="list-style-type: none"> <li>Revises wording of requirements for thermostatic controls to improve clarity.</li> <li>Moves requirements that indicate when EMCS can be used from this section to section 110.12.</li> </ul>
150.2(b)1F	Revises wording of requirements for thermostatic controls to improve clarity.

a. The Occupant Controlled Smart Thermostat Declaration is the document that manufacturers use to submit information to the Energy Commission to declare that thermostats or thermostatic control systems are compliant with Joint Appendix 5 (JA5). The document for 2016 standards is available here: [http://www.energy.ca.gov/title24/equipment\\_cert/ocst/OCST\\_Declaration\\_2016.pdf](http://www.energy.ca.gov/title24/equipment_cert/ocst/OCST_Declaration_2016.pdf).

b. Compliance software will not be modified.

## CLARIFY LANGUAGE

The first focus for the update team was to sweep the documents to identify areas where more clarity could be provided. Recommendations take a particular interest in modifying the language used. There are many opportunities to revise definitions for terms that may not have been straight forward. There are also proposals for new definitions that are more aligned with terms that are used in the DR industry. These updates would be applied throughout Title 24 part 6 as well the appendices.

One example of the many proposed clarifications:

- Old Definition: **DEMAND RESPONSIVE CONTROL** is a kind of control that is capable of receiving and automatically responding to a demand response signal.
- Revised Definition: **DEMAND RESPONSIVE CONTROL** is an automatic control system that is capable of receiving a Demand Response Signal and automatically initiating a control strategy.

## HARMONIZE DR CONTROL REQUIREMENTS

The CASE Team recommends consolidating the requirements for **demand responsive controls** into a new section (section 110.12). Since the revisions move existing language from many sections of the 2016 Standards, the changes to the existing language appear extensive (see Section 7 for marked code language), but the intent is to keep the stringency of the requirements.

### New Section 110.12

All **Demand Responsive Controls** requirements will be located in this new section. This consolidates requirements from sections 120.2, 130.1 and 130.5. key items in this section:

- Clarifies the external communications requirements for all demand responsive controls
  - o Applies the same minimum capabilities requirements for all demand responsive controls, regardless of the building system to which the control is connected. So there are the same minimum requirements for HVAC and Lighting systems.
  - o Requires all systems to have an OpenADR 2.0a or OpenADR 2.0b VEN.
  - o Requires systems to be capable of using either wired or wireless communications.
  - o Presents requirements for Demand Responsive Controls for various building systems into tabular form making checking and referencing easier.
  - o Revises wording without modifying the intent or stringency of the requirements.

## COMPLIANCE AND ENFORCEMENT

Improving compliance and enforcement was a key driver of this CASE effort. Throughout the 2013 code cycle and during the first parts of the 2016 code cycle, the utility team has heard numerous comments that the DR requirements are causing confusion and there is suspected non-compliance as a result of this confusion.

Proposed recommendations for improved collateral aides include:

- Audience-appropriate manuals
- Training materials, and
- Resources to provide further explanation of the requirements in JA5 and the DR acceptance tests
- One page reference sheets with simple flow charts showing paths to compliance

The audience-appropriate material could include adding new content to the existing Compliance Manuals, developing fact sheets, frequently asked questions documents, or updating training materials that the IOUs and others use when delivering Title 24, Part 6.

## ESTABLISH A FOUNDATION THAT IS FLEXIBLE FOR THE FUTURE

The CASE Team is also striving to make it easier for occupants of compliant buildings to realize the economic benefits of their buildings' demand responsive controls by enrolling in DR programs. Revisions also aim to provide sufficient detail on how to comply with the standards while maintaining the appropriate level of leeway to allow for continued market innovation and transformation.

In short there are multiple options for designers to specify compliant ADR systems. It is also understood that the technology will change and as a result the code should refrain from overly prescriptive or restrictive language in how ADR systems should be configured.

The CASE Team is recommending that the 2019 standards allow a wide variety of configurations. Although the code would allow many configurations, it is critical that the building designer specify a system that meets eligibility requirements for DR programs, which may be more stringent than what is allowable in the code.

## CONCLUSION

The removal of ambiguous language and revising definitions to more accurate and clear are positive steps for cleaning up the DR portion the code. The 2019 version of the Title 24, Part 6 standard includes two new sections that outline Straight ADR requirements and how existing and new EMCS can be made.

These Findings are based on the report **"Demand Response Cleanup (Including Changes to Space Conditioning, Lighting, Energy Management, Power Distribution, and Solar Ready Sections) – Final Report,"** which is available from the California Energy Codes and Standards website, <http://title24stakeholders.com/demand-response-language-clean-up/>.

### Link to Updated & Approved Language:

<https://www.energy.ca.gov/title24/2019standards/index.html>