2016 Pre Rulemaking Workshop Reference Joint Appendices

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Reference Joint Appendix JA4
U-factor, C-factor and Thermal Mass

- Updated U-factor tables to capture proper insulation types
  - Added new insulation R-values and U-factors to the different tables to be used for meeting both Residential and nonresidential Prescriptive requirements.
- NOTE: Reference U-factors for assemblies can be updated at any time with valid support Information.

JA5 Occupant Controlled Smart Thermostats (OCST)

Considerations to revise the following sections:

- JA5.1 – Clarify that the communication interface consists of the physical communication interface and the logical communication interface.

- JA5.2.4 – Clarify that OCST responds regardless of whether communications are enabled or not.

- JA5.2.5 – Add default restart settings and automatic rejoin.

JA5 (continued)

- JA5.3.1
  - Clarify Wi-Fi and/or Zigbee as the physical communication interfaces.
  - Clarify that OpenADR 2.0 and SEP 1.1 are the standards for the logical communication interface within the OCST.
  - Clarify that logical communication is required to be two way.
- JA5.3.2 - Add “An expansion/communication port is a type of physical communication interface.”
- JA5.5 - Add a definition for “price signal”.

JA10 Test Method for measuring flicker of lighting systems and reporting requirements

- This is a new appendix created along with the revised JA8 high efficacy light source requirement for 2016 Standards.
- It describes the test method measuring flicker from lighting systems.
- JA10.1 Introduction

JA10 (continue)

- JA10.2 Equipment combinations - describes the different combinations of light sources controlled by dimmers or dimming systems.
  - Phase cut dimmer (PCD) controlling an incandescent line voltage lamp
  - PCD controlling a transformer for incandescent low voltage lamps.
  - PCD controlling a non-incandescent light source.
  - Light source controlled by other dimming control technologies

JA10 (continued)

- JA10.3 Test Equipment Requirements
  - Test enclosure with no stray light
  - Photodetector shall match CIE spectral curve.
  - If a signal amplifier is needed, it shall have a bandwidth of 20 kHz.
  - The device for data collection shall have sample rate greater than or equal to 100 kHz for 2 seconds.

JA10 (continued)

- JA10.4 Flicker Test Conditions
  - Product wiring shall be set up in accordance with Federal guideline 10 CFR 430.
  - Fluorescent lamps shall be seasoned. (Not needed for other light source types.)
  - Set input power at the rated primary voltage of the product.
  - Maintain temperature at 25 deg C plus and minus 5 deg C.
  - Dimming levels - Measurements taken at 100%, 80%, 50% and 20% of full light output.

JA10 (continued)

- JA10.5 Test Procedures
  - Lamp stabilization in accordance to the light source types.
  - Lamp light output to be stabilized before dimming measurements.
  - Recording interval no greater than 50 µs.
  - Equipment measurement period of 2 sec.
  - Measurements taken at 100%, 80%, 50% and 20% of full light output.

JA10 (continued)

- JA10.6 Calculations – Percent Flicker formula

$$\text{Percent Amplitude Modulation} = \frac{(\text{Max} - \text{Min})}{(\text{Max} + \text{Min})} \times 100$$

Where,

Max is the maximum recorded light level or voltage from the test apparatus during the duration of the test for a given dimming level.

Min is the minimum recorded light level or voltage from the test apparatus during the duration of the test for a given dimming level.

JA10 (continued)

- JA10.7 Test Report and Data Format – TABLE JA-10.7

TABLE JA-10. FLICKER DATA TO BE RECORDED AND SUBMITTED TO THE CALIFORNIA ENERGY COMMISSION	
Data	Units/Format