INSTALLER AND INSPECTOR QUICK-REFERENCE: 2025 NRCA-LTI-04-A

Demand Responsive Lighting Controls

Purpose and Scope of the Test

The purpose of this test is to ensure that demand responsive controls can reduce lighting power by at least 15 percent of total installed lighting power. The test also confirms that the lighting system produces a uniform level of illumination during a demand response event. There are three methods that may be used to perform the test:

- Method 1 uses illuminance measurements to determine the reduction in lighting power for each controlled space.
- Method 2 uses current measurements to determine the reduction in lighting power for each controlled space.
- Method 3 uses a current measurement for the entire building by measuring current at disaggregated lighting circuits.

Demand responsive controls allow building loads to be managed automatically in response to grid or economic needs. Demand responsive controls can help save energy and reduce electricity bills by automatically reducing noncritical building loads when electricity demand is high.

Test Trigger

This test is applicable when demand responsive lighting controls are required to be installed in nonresidential and hotel/motel buildings, and in multifamily building common use areas. Demand responsive lighting controls are required per 110.12(a) and 110.12(c) sections in code for:

- Newly constructed buildings with general lighting power of 4,000 watts or greater.
- Lighting alterations and additions with general lighting power of 4,000 watts or greater.

Exception: Spaces where a health or life safety statute, ordinance, or regulation does not permit the general lighting to be reduced are not required to install demand responsive controls and do not count toward the 4,000 watt threshold.

Relevant Energy Code References and Required Compliance Documents

Title 24, Part 6 of the California Building Standards Code, Building Energy Efficiency Standards (Energy Code) sections 110.12(a), 110.12(c), 130.1(e), 130.4(a), 160.5(b)4E, 160.5(e)1; Reference Nonresidential Appendix NA7.6.3; NRCC-LTI-E, LMCC-LTI-E.

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Demand Responsive Lighting Controls Acceptance Tests

Who Can Perform the Test

This test must be performed by an acceptance test technician certified by a CEC-approved Acceptance Test Technician Certification Provider, using compliance document NRCA-LTI-04-A.

Required Tools

If the lighting system has an inbuilt method of measuring (not estimating) the lighting power being consumed, this inbuilt measurement may be used instead. Otherwise, an illuminance meter or power meter (with current transformer and voltmeter) will be needed.

Estimated Time to Complete Test

Construction inspection: 0.25 to 0.5 hours.

Functional testing: 0.5 to 1 hours, depending on the number of controlled luminaires.

Potential Issues and Cautions

If using method 1 (illuminance measurement), mark the exact locations where the illuminance measurements were made, because even slight differences in the location of the illuminance meter or the angle at which it is held can affect the readings. If possible, take readings away from shadowed areas.

If either method is used in daylit areas with photocontrols, values can change significantly in just a few minutes due to changes in daylight. Try to take measurements as far from sources of daylight as possible.

Inspection Enforcement

- Verify that the construction inspection and functional testing items on NRCA-LTI-04-A are marked with "Complies."
- Verify the contact information of the acceptance test technician is complete with the acceptance test technician certification identification.
- Verify that all declaration statements on the last page of the NRCA-LTI-04-A are complete and that the document is signed.
- All NRCA forms for Lighting Controls must have a water mark logo from a certified Lighting Controls ATTCP Provider.

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Demand Responsive Lighting Controls

Acceptance Criteria

When a demand response signal is received, the control reduces lighting power by at least 15 percent of "full output." Full output is defined in the field test as being the output of the lighting system when all manual switches are on, but some luminaires may be dimmed or switched below their maximum output because they are controlled by automatic systems such as photocontrols and occupant/vacancy sensors.

The illuminance in the demand response condition must not be less than the illuminance of the lighting system set to minimum output. This will ensure that light levels do not go below any preset minimums that have been determined, for instance, by facilities managers. This is the purpose of the "minimum output test."

Follow the **Construction Inspection** and **Functional Testing** instructions on NRCA-LTI-04-A.