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California Energy Commission
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California Energy Commission

DOCKETED

15-BSTD-01

TN # 75486

MAR 19 2015

**Re: Docket # 15-BSTD-01 Proposed Revisions to 2016 NA7.6.3
Demand Responsive Controls Acceptance Tests.**

As currently written:

NA7.6.3 Demand Responsive Controls Acceptance tests

Suggestion:

Capitalize the word “tests” because it is of equal importance, and possibly even more important than the other words in the title because this whole section about testing.

**As currently written:
NA7.6.3.1**

(a) That the demand responsive control is capable of receiving a demand response signal directly or indirectly through another device and that it complies with the requirements in Section 130.5(e).

(b) If the demand response signal is received from another device (such as an EMCS), that system must itself be capable of receiving a demand response signal from a utility meter or other external source.

and

*Sec 130.5(e) **Demand responsive controls and equipment.** Demand responsive controls and equipment shall be capable of receiving and automatically responding to at least one standards based messaging protocol which enables demand response after receiving a demand response signal.*

Comment:

1. The language “standards based messaging protocol” is generally accepted to mean Open ADR 2.0 or Smart Energy Profile SEP 2.0. These are proprietary programs and are not generally available to the testing technician. The Open ADR Alliance website advertises a testing tool at the price of \$16,000.
2. If a customer is going to choose to contract with the utility company for a demand response program, then the customer will be looking at much more than just lighting. The customer will also be looking at motor loads and electric heating loads. The control of which will be handled by a building wide EMCS. When a customer contracts for demand responsive program, the customer and the utility company will test the whole system to make sure it provides the demand reduction that both parties expect.

Suggestion:

Allow testing of the demand responsive function to be initiated by a simple contact closure rather than requiring the purchase of a \$16,000 test set.

As currently written:

NA7.6.3.2 Functional testing of Demand Responsive Lighting Controls

For buildings with more than seven (7) enclosed spaces requiring demand responsive lighting controls, sampling may be done on additional spaces with similar lighting systems.

Comment:

1. The quantity of seven for a sampling group seems to be arbitrary.

Suggestion:

The sample quantity should be based on the quantity of spaces in the building. Recommend following guidelines used in the commissioning industry such as the International Performance Measurement & Verification Protocol, IPMVP.

As currently written:

NA7.6.3.2 Functional testing of Demand Responsive Lighting Controls

If the first enclosed space with a demand responsive lighting control in the sample group passes the acceptance test, the remaining building spaces in the sample group also pass.

Comment:

1. How is it known that all of the remaining spaces in the sample group would also pass the test if they were tested.

Suggestion:

Change “*the remaining building spaces in the sample group also pass.*” to read as “*the remaining building spaces in the sample group **will be assumed to** also pass.*”

As currently written:

NA7.6.3.2 Functional testing of Demand Responsive Lighting Controls

If the first enclosed space with a demand responsive lighting control in the sample group fails the acceptance test the rest of the enclosed spaces in that group must be tested.

Comment:

1. This places the test technician in an awkward position. Is he going to have to assume the financial losses of having to test much more than what was included in his lump sum fee, or is the client going to have to pay more than they had expected.

Suggestion:

After the first failure the acceptance testing should stop. The failed component shall be repaired, replaced or adjusted. During this time the rest of the system could also be verified. The acceptance testing would resume on a different space and if it passes then the remaining building spaces in the sample group will be assumed to also pass.

As currently written:

NA7.6.3.2 Functional testing of Demand Responsive Lighting Controls

Test the reduction in lighting power . . . using one or the following two methods.

Suggestion:

Change “using one or the following two methods” to “using one **of** the following two methods”

As currently written:

NA7.6.3.2 Functional testing of Demand Responsive Lighting Controls

Test the reduction in lighting power . . . using one or the following two methods.

Method 1: Illuminance Measurement

(b) Full output test

(c) Minimum output test

Method 2: Current measurement

(b) Full output test

(c) Minimum output test

Comment:

1. Section 130.1(e) requires a reduction of not less than 15% from the total installed lighting power.
2. Section 130.1(e) does not mention a minimum level.
3. The minimum output test increases the cost of the demand response acceptance test by 50% without a legal justification.

Suggestion:

Delete the minimum output test.

As currently written:

NA7.6.3.2 Functional testing of Demand Responsive Lighting Controls

Method 1: Illuminance Measurement

(a) The chosen location must not be in a primary skylit or sidelit area.

Comment:

1. “Primary skylit” is not a defined term.

Suggestion:

Change the sentence to read “*The chosen location must not be in a skylit area, primary sidelit area, or secondary sidelit area*”.

As currently written:

NA7.6.3.2 Functional testing of Demand Responsive Lighting Controls

Method 2: Current Measurement

(a) At the lighting circuit panel, select at least one lighting circuit that serves spaces required to meet Section 131(b).

Comment:

1. The wrong section number is referenced.

Suggestion:

Change “*Section 131(b)*” to “*Section 130.1(e)*”

As currently written:

NA7.6.3.2 Functional testing of Demand Responsive Lighting Controls

Method 2: Current Measurement

(a) At the lighting circuit panel, select at least one lighting circuit that serves spaces required to meet Section 130.1(e).

Comment:

1. Taking current measurements requires working on live circuits. While working on live circuits, OSHA requires the technician to wear personal protective equipment PPE in particular an arc flash suit. Such PPE cost between \$600 and \$1100.
2. Most electricians have readily available a handheld clamp-on ammeter. A typical meter would be a Fluke 323. This meter has a capacity of 400 amps with an accuracy of 2%. This computes to an accuracy of + or – 8 amps.
3. Most lighting circuits are rated either 15A or 20A. The electrical code limits the maximum load to 80% of the circuit rating. This computes to 12A or 16A.
4. Most electrical designs call for a 25% space capacity on circuits, so this now computes to 9.6A or 12.8A.
5. Sec 130.1(e) calls for a 15% reduction. This means the current would reduce from 9.6A to 8.16A or 12.8A to 10.88A, or by the amounts of 1.44A or 1.92A.
6. The reduction in current is less than the accuracy of the meter.
7. This method of determining demand response performance is not reliable.

Suggestion:

Allow the use of advanced lighting control systems to trend the total building lighting load before, during and after a demand response event.

Thank you for your consideration of these comments.

Respectfully submitted,

A handwritten signature in cursive script that reads "Richard N Miller".

Richard N. Miller, PE, LEED AP, IES, IAEE, IEEE, LC
President, RNM Engineering, Inc.