DOCKETED

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Description:	For ATTs, ATEs, and recertification.
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Friday, April 22, 2016

California Energy Commission
Docket Unit, MS-4
1516 Ninth Street
Sacramento, CA 95814-5504

Docket # 13-ATTCP-01 Changes to NLCAA Course Material

SUBJECT:

List indicating where the 2016 updates are addressed in the training materials (for ATTs, ATEs, and recertification)

National Lighting Contractors Association of America to the California Energy Commission in submitting our 2016 training Summary of Changes. Attached are the following:

1. Summary of Changes to 2016 Acceptance Test
   Technician Course Material for The National Lighting Contractors Association of America

2. Summary of Changes to 2016 Acceptance Test
   Technician Employer Course Material for The National Lighting Contractors Association of America

3. Summary of Changes to 2016 Acceptance Test Technician Employer Course for The National Lighting Contractors Association of America

Yours truly,

Vice President of Training
NLCAA - ATTCP

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Summary of Changes to 2016 Acceptance Test Technician Employer Course for The National Lighting Contractors Association of America

Prepared by Robert Shearer, BSEE – April 20th, 2016

Introduction

In order to aid The National Lighting Contractors Association of America in adjusting the training curricula for Lighting Controls Acceptance Test Technicians and their Employers – The California Energy Commission staff has identified the most significant minor changes from 2013 to 2016 for Lighting Acceptance Testing. CEC staff has prepared a table outlining these changes; this is presented here, with indications added to indicate where these 2016 Lighting Acceptance Testing requirements appear in the Lighting Controls Acceptance Test Technician Employer Student Handbook, Second Edition, Rev02.

Unless otherwise noted: Page numbers referred to are found in the "Handbook Section of the Handbook".

Updated Section in *Building Energy Efficiency Standards*, Part 6	Description of Change
§130.1(b)3 Mandatory Indoor Lighting Controls, Multi-level Lighting Controls	This update provides clarification that dimmable luminaires shall be controlled with a manual dimmer capable of ON and OFF functionality.

A preexisting requirement: Page 49

Updated Section in *Building Energy Efficiency Standards,* Part 6	Description of Change
§130.1(c)1 Mandatory Indoor Lighting Controls, Shut-off Controls, Exception 3	This update increases allowable continuous lighting for emergency exits from 0.05 watts/ft^2 to 0.1 watts/ft^2.

Students are forced to look this up as interactive Quiz question.

§130.1(c)1 Mandatory Indoor Lighting Controls, Shut-off Controls, Exception 5	This update adds a new exception to shut-off controls to allow illumination when provided by lighting equipment that is designated for emergency lighting, connected to an emergency power source or battery supply, and is intended to function in emergency mode only when normal power is absent.

Acceptance Testing is not overtly required for these controls – no test entries appear on form: NRCA-LTI-02-A, and no testing specifications appear in NA7. Exception 5 is not part of the course presentation.

§130.1(c)5 Mandatory Indoor Lighting Controls, Shut-off Controls	This update adds a requirement for specific areas to have vacancy/partial ON controls rather than normal occupancy sensors.

Page 58

§130.1(e) Mandatory Indoor Lighting Controls, Demand Responsive Controls	This update excludes areas with less than 0.5 watts/ft^2 from 10,000ft^2 threshold to reduce lighting power in response to a Demand Response Signal.

Page 117

§130.2(c)3B Outdoor Lighting Controls and Equipment, Controls for Outdoor Lighting	This update increases the maximum dimming permitted as part of an active motion controlled lighting system from 80% to 90%.

Pages 109 and 115

Updated Section in *Building Energy Efficiency Standards*, Part 6	Description of Change
§130.2(c)4 Outdoor Lighting Controls and Equipment, Controls for Outdoor Lighting	This update removes outdoor sales lots and sales canopies from this section. These spaces must now comply with Section 130.2(c)3.

This design criterion is not part of the course presentation.

§140.6(a)2J Prescriptive Requirements for Indoor Lighting, Calculation of Actual Indoor Lighting Power	This update clarifies that the only PAF permitted is Institutional Tuning.

This is patently untrue … please see Note 1. Nevertheless:

Pages: 128 -> 134

§140.6(a)3C Prescriptive Requirements for Indoor Lighting, Lighting Wattage Excluded	This update provides clarification that lighting wattage used for make-up and hair lighting purposes is excluded from the prescriptive calculations when controlled with a vacancy sensor.

This design criterion is not part of the course presentation.

§140.7(a)6 Requirements for Outdoor Lighting	This update removes ATMs from excluded wattages. Calculations now need to include ATM lighting for outdoor lighting power adjustments.

This design criterion is not part of the course presentation.

§141.0(b)2I Additions, Alterations, and Repairs to Existing Nonresidential, High-rise Residential, and Hotel/Motel Buildings to Existing Outdoor Lighting, and to Internally and Externally Illuminated Signs; Alterations; Prescriptive Approach; Entire Luminaire Alterations	This update changes the requirement to allow scenarios where alterations to multi-level controls, if triggered, can be more cost effective. If the lighting power is 85% or less of the allowance, then it is permissible to have one control step between 30-70%. If lighting power is greater than 85% of the allowance, then the requirement of 130.1(b) is applicable. There is an alternative option (§141.0(b)2(ii)) that allows the reduction of lighting power by 35-50% from existing, thereby allowing an exemption to the multi-level control requirement of 130.1(b). See Table 141.0-E at the end of §141.0 for further reference.

This design criterion is not part of the course presentation.

Updated Section in *Building Energy Efficiency Standards,* Part 6	**Description of Change**
§141.0(b)2J Additions, Alterations, and Repairs to Existing Nonresidential, High-rise Residential, and Hotel/Motel Buildings to Existing Outdoor Lighting, and to Internally and Externally Illuminated Signs; Alterations; Prescriptive Approach; Luminaire Component Modification	This update provides relief to the trigger for acceptance testing of smaller projects if controls added were for 20 or fewer luminaires.
§141.0(b)2L Additions, Alterations, and Repairs to Existing Nonresidential, High-rise Residential, and Hotel/Motel Buildings to Existing Outdoor Lighting, and to Internally and Externally Illuminated Signs; Alterations; Prescriptive Approach; Alterations to Existing Outdoor Lighting Systems	This update provides clarification for general requirements, adds specifics to certain areas, and provides relief to the trigger for acceptance testing for smaller projects if controls added were for 20 or fewer luminaires.

This will be addressed in code update training.

This will be added to the Online Employer Course monolog and Section 141.0 will be added to the Student Handbook Reference Section in its entirety.

§140.6 Table 140.6-A Lighting Power Density Adjustment Factors	This update removes all power adjustment factors such that the only remaining is the newly added Institutional Tuning factors.

Pages 51, 52, and 53 (See Note 1.)

§140.6 Table 140.6-B, Table 140.6-C, Table 140.6-D, Table 140.6-E, Table 140.6-F, Table 140.6-G	These updates modify lighting power densities to reflect the industry shift to LED lighting as the design baseline.

This design criterion is not part of the course presentation.

Updated Section in *Building Energy Efficiency Standards,* Part 6	Description of Change
Reference Nonresidential Appendices, NA7.6.1.2, NA7.6.2.3, NA7.6.3.2, NA7.8.2	These updates add descriptions for minimum sampling to test functionality of photocontrols.

Addressed for the following Control Types:

Indoor Occupancy Sensing Devices: Subject Introduced as a Quiz Question

Automatic Daylighting Controls: Page 81

Demand Responsive Controls: Page 120, 127

Outdoor Motion Sensors Page 109

Institutional Tuning Page 132

Note 1.

Section 140.6 (a) 2. H., I., J., and K. *still* allows four different PAFs to be claimed. Table 140.6-A still lists all four. NA7.7.6 contains specifications for Installation Inspections for these PAFs. The Acceptance Testing specification for Daylight Dimming plus OFF actually appears in NA7.6.1.2.1 for this PAF. An additional entry has, in fact, just been added to all four sections of form NRCA-LTI-03-A, thus rendering the form useless as the final pass/fail line numbers were not modified. Form NRCA-LTI-02-A *still* contains block 05. This stipulates Acceptance Testing of the "Large open office PAF". Therefore:

Daylight Dimming plus OFF PAF Acceptance Testing is presented on pages: 152 and 183; and …

… Occupant Sensing Controls in Large Open Plan Offices; pages: 89 -> 92

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Summary of Changes to 2016 Acceptance Test Technician Course Material for The National Lighting Contractors Association of America

Prepared by Robert Shearer, BSEE – April 20th, 2016

Introduction

Unless otherwise noted; the course material changes from the 2013 code cycle material to the 2016 code cycle material will be identified by page number. These page numbers refer to the "Handbook Section of the Student Handbook" for the Second Edition of the NLCAA ATT Course, Rev02. This section of the handbook contains material printed from a PowerPoint® file arranged 6-slides per page. Changes shown in italics do not address changes to the Code but are presented for completeness of this report.

Substantive Changes to the Handbook Section of the Student Handbook:

Pages 2 -> 6: *Contents of Student Handbook now presented in a formalized manner to speed up the class.*

Page 22: Rated Life of Fluorescent and LED lamps and luminaires added to aid in explaining the State-Mandated Automatic Lumen Maintenance limit placed on Closed-Loop Automatic Continuously-Dimmed Daylighting Controls per Acceptance Testing Form: NRCA-LTI-03-A.

Pages 31 and 32: Lumen Maintenance and Task-Tuning material added.

Page 38: *Occupancy Sensing Device "Flavors" introduced here to aid students in understanding these descriptions which are repeated several times in the course.*

Documents Section: New (2016) Code documents substituted in …

Page 55: New CEC website navigation tips shown.

Page 59: *Limitations of Title 20 contents mentioned.*

Pages 60 -> 64: CEC Appliance Efficiency Database use updated.

Page 70: The inability of a Designer to specify Acceptance Testing for Institutional Tuning on form NRCC-LTI-01-E is shown here.

Page 72: Institutional Tuning Acceptance Form added.

Pages 73 -> 79: *New, extensive, Install Form section added.*

Pages 77 and 79: Delegation of Signature Authority added.

Page 89: Changes to Table 140.6-A noted.

Page 89: The questionable requirement to test three PAFs is introduced.

Page 95: Changes to 130.1 (c) 5 addressed.

Pages 96 -> 99: New NRCA-LTI-02-A Form excerpts.

Page 101: Changes to 130.1 (e) addressed.

Page 103: *Undefined terms "defined".*

Page 109: *Nonsensical Minimum Output Test Parameters introduced.*

Pages 137 -> 140: New Acceptance Testing specifications for Parking Structures.

Pages 148 and 149: New definition of “Task Tuned”.

Page 153: Daylight Dimming Plus OFF PAF Acceptance Test added.

Pages 186 -> 192: Institutional Tuning section added.

Pages 193 -> 204: Outdoor Controls Acceptance Testing section replaced outright.

Page 206: *Verification of Installation Certificates Stressed.*

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Summary of Changes to 2016 Acceptance Test Technician Employer Course Material for The National Lighting Contractors Association of America

Prepared by Robert Shearer, BSEE – April 20th, 2016

Introduction

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Substantive Changes to the Handbook Section of the Student Handbook:

Pages 11 -> 16: New (2016) Code references substituted in …

Page 13: New CEC website navigation tips shown.

Pages 17 -> 20: CEC Appliance Efficiency Database use updated.

Page 27: The inability of a Designer to specify Acceptance Testing for Institutional Tuning on form NRCC-LTI-01-E is shown here.

Page 29: Institutional Tuning Acceptance Form added.

Pages 33 -> 39: *New, extensive, Install Form section added.*

Pages 37 and 39: Delegation of Signature Authority added.

Page 47: New exceptions concerning Area Controls Placement.

Page 48: Changes to Table 130.1-A presented.

Page 49: New Multi-Level Controls Exceptions noted.

Page 51: Changes to Table 140.6-A noted.

Page 52: Daylight Dimming Plus OFF PAF Acceptance Test added.

Page 54: Institutional Tuning Acceptance Form noted.

Page 58: Changes to 130.1 (c) 5 addressed.

Pages 60 -> 63: New NRCA-LTI-02-A Form excerpts.

Page 88: New Reference Location specifications for Parking Structures.

Pages 106 -> 116: Outdoor Controls Acceptance Testing section replaced outright.

Page 117: Changes to 130.1 (e) addressed.

Page 119: *Undefined terms "defined".*

Page 126: *Nonsensical Minimum Output Test Parameters introduced.*

Pages 128 -> 134: New Acceptance Testing section for Institutional Tuning.