

Energy - Docket Optical System

From: Loyer, Joe@Energy
Sent: Thursday, September 27, 2012 11:20 AM
To: Energy - Docket Optical System
Subject: FW: Comments on Acceptance Test Provider
Attachments: 2013 Cert Regs draft 45 day language 09052012 1614 (comments)
Categories: Waiting for Reply

California Energy Commission

DOCKETED
12-BSTD-02

TN # 67338

SEP 27 2012

Please docket this entire email and the related attached file under docket number 12-BSTD-02.

Thank you,
Joe Loyer

From: Brook, Martha@Energy
Sent: Thursday, September 27, 2012 10:38 AM
To: rickmiller@rnm-eng.com
Cc: Blair, Julia@Energy; Brehler, Pippin@Energy; Babula, Jared@Energy; Loyer, Joe@Energy
Subject: RE: Comments on Acceptance Test Provider

Rick,

Thank you for these detailed comments, they are most welcome!

One of your comments implies that there are other lighting control training programs that should be considered for interim approval. Is this correct? If so, can you please provide us with more details on these programs so that we can make a proper determination?

Will you be able to attend our workshop next Monday, October 1?

Thanks again, Martha

Martha Brook, P.E.
Senior Mechanical Engineer
High Performance Buildings & Standards Development
California Energy Commission
mbrook@energy.ca.gov
(916) 654-4086

From: rickmiller@rnm-eng.com [mailto:rickmiller@rnm-eng.com]
Sent: Wednesday, September 26, 2012 7:19 PM
To: Brook, Martha@Energy
Subject: Comments on Acceptance Test Provider

Martha,
My comments are attached.

Rick Miller
RNM Engineering, Inc

90 Baron Canyon Ranch Road
San Luis Obispo, CA 93401
Fax: 805-781-0816
Mobile: 415-307-5106
Email: RickMiller@RNM-eng.com

ARTICLE^[A1] 1 – ENERGY BUILDING REGULATIONS

SECTION 10-102 – DEFINITIONS

ACCEPTANCE TEST TECHNICIAN is a person who performs the nonresidential acceptance test requirements.

LIGHTING CONTROLS ACCEPTANCE TEST TECHNICIAN is a professional certified by an authorized Lighting Controls Acceptance Test Technician Certification Provider to perform lighting controls acceptance tests and complete the **first level of^[A2]** documentation required for lighting controls acceptance tests as required by Title-24, Part 6.

MECHANICAL ACCEPTANCE TEST TECHNICIAN is a professional certified by an authorized Mechanical Acceptance Test Technician Certification Provider to perform mechanical acceptance tests and complete the **first level of** documentation required for mechanical acceptance tests as required by Title-24, Part 6.

ACCEPTANCE TEST EMPLOYER is a person or entity who employs an Acceptance Test Technician and is certified by an authorized Acceptance Test Technician Certification Provider.

LIGHTING CONTROLS ACCEPTANCE TEST EMPLOYER is a person or entity who is the employer of a Lighting Controls Acceptance Test Technician and certified by an authorized Lighting Controls Acceptance Test Technician Certification Provider.

MECHANICAL ACCEPTANCE TEST EMPLOYER is a person or entity who is the employer of a Mechanical Acceptance Test Technician and certified by an authorized Mechanical Acceptance Test Technician Certification Provider.

ACCEPTANCE TEST TECHNICIAN CERTIFICATION PROVIDER is an agency, organization or entity approved by the Energy Commission to train and certify Acceptance Test Technicians and Employers according to the requirements of Sections 10-103-A and B.

LIGHTING CONTROLS ACCEPTANCE TEST TECHNICIAN CERTIFICATION PROVIDER is an agency, organization or entity approved by the Energy Commission to train and certify Lighting Controls Acceptance Test Technicians and Employers according to the requirements of Section 10-103-A.

MECHANICAL ACCEPTANCE TEST TECHNICIAN CERTIFICATION PROVIDER is an agency, organization or entity approved by the Energy Commission to train and certify Mechanical Acceptance Test Technicians and Employers according to the requirements of Section 10-103-B.

NOTE: Authority cited: Sections 25402 ~~and~~, 25402.1, and 25213, Public Resources Code. Reference: Sections 25007, 25402(a)-(b), ~~and~~ 25402.1, 25402.4, 25402.5, 25402.8 and 25910, Public Resources Code.

SECTION 10-103-A – NONRESIDENTIAL LIGHTING CONTROLS ACCEPTANCE TEST REQUIREMENTS

(a) **Scope.** The requirements of this section apply to nonresidential lighting control Acceptance Test Technicians and Employer, and the Certification Providers that train and certify them.

(b) **Industry Certification Threshold.** Lighting Controls Acceptance Test Technician and Employer certification requirements shall take effect when the Energy Commission finds that each of the following conditions are met:

1. **Number of Certified Acceptance Test Technicians^[A3].** There shall be no less than 1,000 Lighting Controls Acceptance Test Technicians certified to perform the acceptance tests in Title 24, Part 6, Section 130.4. The number of certified Acceptance Test Technicians shall be demonstrated by Certification Provider-prepared reports submitted to the Energy Commission.

2. **Industry Coverage by Certification Provider(s).** The [A4] Certification Provider(s) approved by the Energy Commission, in their entirety, provide reasonable access to certification for technicians representing the majority of the following industry groups: electrical contractors, certified general electricians, professional engineers, controls installation and start-up contractors and certified commissioning professionals who have verifiable training, experience and expertise in lighting and electrical systems. The Energy Commission will determine reasonable access by considering factors such as certification costs commensurate with the complexity of the training being provided, certification marketing materials, prequalification criteria, class availability, and curriculum.

- (c) **Qualifications and Approval of Certification Providers.** The Acceptance Test Technician Certification Providers (ATTCPs) shall submit a written application to the Energy Commission with a summary and the related background documents to explain how the following criteria and procedures have been met:

1. **Requirements for Applicant ATTCPs to Document Organizational Structure.** ATTCPs shall provide written explanations of the organization type, by-laws, and ownership structure. ATTCPs shall explain in writing how their certification program meets the qualification requirements of Title 24, Part 1, Section 10-103-A(c) [A5]. ATTCPs shall explain in their application to the Energy Commission how their organizational structure and procedures include independent oversight, quality assurance, supervision and support of the acceptance test training and certification processes.
2. **Requirements for Certification of Employers.** The ATTCPs shall provide written explanations of how their program includes certification and oversight of Acceptance Test Employers to ensure quality control and appropriate supervision and support for Acceptance Test Technicians.
3. **Requirements for Applicant ATTCPs to Document Training and Certification Procedures.** ATTCPs shall provide a complete copy of all training and testing procedures, manuals, handbooks and materials. ATTCPs shall explain in writing how their training and certification procedures include, but are not limited to, the following:

A. **Training Scope.** Both hands-on experience [A6] and theoretical training [A7] such that Acceptance Test Technicians demonstrate their ability to apply the Title 24, Part 6 acceptance testing and documentation requirements to a comprehensive variety of lighting control systems and networks that are reflective of the range of systems currently encountered in the field.

B. Lighting Controls Acceptance Test Technician Training.

- (i) **Curricula.** [A8] Acceptance Test Technician Certification Provider training curricula for Lighting Control Acceptance Test Technicians shall include, but not be limited to, the analysis, theory, and practical application of the following:

- Lamp and ballast systems;
- Line voltage switching controls;
- Low voltage switching controls;
- Dimming controls;
- Occupancy sensors;
- Photosensors; [A9]
- Demand responsive signal inputs to lighting control systems;
- Title-24 required lighting control systems;
- Title-24 required lighting control system-specific analytical/problem solving [A10] skills;
- Integration of mechanical and electrical systems for Title-24 required lighting control installation and commissioning;
- Safety procedures for low-voltage retrofits (> [A11] 50 volts) to control medium [A12] voltage systems (120 to 480 volts);
- Accurate and effective tuning, calibration, and programming of Title-24 required lighting control systems;
- Measurement of illuminance on standard measurement grids [A13];
- Title 24 lighting controls acceptance testing procedures; and
- Title 24 acceptance testing compliance documentation for lighting controls.

(ii) **Prequalification.** Participation in the technician certification program shall be limited to persons who have at least three years of verifiable professional experience and expertise in lighting and electrical systems as determined by the Lighting Controls ATTCPs, to demonstrate their ability to understand and apply the Lighting Controls Acceptance Test Technician certification training. The criteria and review processes used by the ATTCP to determine the relevance of technician professional experience shall be described in the ATTCP application to the Energy Commission.

(iii) A sufficient ratio of instructors to participants in classroom and laboratory work to ensure integrity and efficacy of the curriculum and program.

(iv) A written and practical test [A14] that demonstrates each certification applicant's competence in all specified subjects. The ATTCPs shall retain all results of these tests for five years from the date of the test.

(v) Requirements and Procedures for recertification of Acceptance Test Technicians each time Title-24, Part 6 is updated with new and/or modified acceptance test requirements.

C. Lighting Controls Acceptance Test Employer Training. Training for Lighting Controls Acceptance Test Employers shall consist of a minimum of a one day class that covers the scope and process of the acceptance tests in Title 24, Part 6, Section 130.4.

D. Procedures described in writing for notifying building departments and the public [A15] that the Acceptance Test Certification Provider will accept complaints regarding the performance of any certified acceptance test technician or employer, and procedures for how the Provider will address these complaints.

E. Procedures described in writing for revoking the certification [A16] of Acceptance Test Technicians and Employers based upon poor quality or ineffective work, failure to perform acceptance tests, falsification of documents, failure to comply with requirements for the issuance of building permits or other specified actions that justify decertification.

F. The ATTCP shall describe in their application to the Energy Commission how their certification business practices include quality assurance, independent oversight and accountability measures, such as, third party oversight of the certification processes and procedures, visits to building sites where certified technicians are completing acceptance tests, certification process evaluations, building department surveys to determine acceptance testing effectiveness, and expert review of the Title 24, Part 6, Section 130.4 training curricula. Third party oversight may be demonstrated by accreditation under the ISO/IEC 17024 standard.

4. The Lighting Control ATTCP . . . [A17]

(d) **Requirements for ATTCPs to Provide Annual Reports.** The ATTCP shall provide an annual report to the Energy Commission summarizing the certification services provided over the reporting period, including the total number of Acceptance Test Technicians and Employers certified by the agency (a) during the reporting period and (b) to date, and a report as to what adjustments have been made to the training curricula, if any, to address changes to Title 24 Acceptance Testing requirements or to ensure training is reflective of the variety of lighting controls that are currently encountered in the field. The annual report shall also contain a signed certification that the ATTCP has met all requirements for this program.

(e) **Interim Approval of Lighting Controls Acceptance Test Technician Certification Provider.** The California Advanced Lighting Controls Training Program (CALCTP) [A18] [A19] shall be approved as authorized Lighting Controls Acceptance Test Technician Certification Provider subject to the below conditions:

1. Interim approval shall be conditioned upon submittal of an application that contains the information required by subdivision (c)(1)-(3), including documentation that demonstrates that certification includes training and testing on Title 24 lighting control acceptance testing procedures and Title 24 acceptance testing compliance documentation for lighting control systems.

2. Technicians who have been certified by CALCTP prior to the inclusion of training on Title 24 acceptance testing procedures and compliance documentation shall qualify as a Lighting Control Acceptance Test Technicians upon successful completion of a class or webinar on Title 24 [A20] acceptance testing procedures and compliance documentation.
3. Employers who have been certified by CALCTP prior to the inclusion of training on Title 24 acceptance testing procedures and compliance documentation shall qualify as a Lighting Control Acceptance Test Employer upon successful completion of a class or webinar on Title 24 acceptance testing procedures and compliance documentation.
4. Interim approval for all ATTCPs shall end on the later date of, July 1, 2014 or six months after the effective date of the 2013 California Building Energy Efficiency Standards. The Energy Commission may extend the interim approval period for up to six additional months total, if it determines the threshold requirements in Section 10-103-A(b) have not been met for the certification requirements to take effect. If the Energy Commission determines that an extension is necessary, its determination shall be approved at a publicly-noticed meeting.

(f) **Application Review and Determination.** The Energy Commission shall review Acceptance Test Technician Certification Provider applications according to the criteria and procedures in Section 10-103-A(c) to determine if such providers are approved to provide acceptance testing certification services [A21].

1. Energy Commission staff will review and validate all information received on Acceptance Test Technician Certification Provider applications, and determine that the application is complete and contains sufficient information to be approved .
2. The Executive Director may require that the applicant provide additional information as required by staff to fully evaluate Provider applications. The Executive Director shall provide a copy of its evaluation to interested persons and provide an opportunity for public comment.
3. The Executive Director shall issue a written recommendation that the Energy Commission designate the applicant as an authorized Acceptance Test Technician Certification Provider or deny that Provider application.
4. The Energy Commission shall make a final decision on the application at a publically noticed hearing.

(g) Review by the Energy Commission.

If the Energy Commission determines there is a violation of these regulations or that an Acceptance Test Technician Certification Provider is no longer providing adequate certification services, the Energy Commission may revoke the authorization of the Acceptance Test Technician Certification Provider pursuant to Section 1230 et. seq. of Title 20 of the California Code of Regulations.

NOTE: Authority cited: Sections 25402, 25402.1, 25213, Public Resources Code. Reference: Sections 25007, 25402(a)-(b), 25402.1, 25402.4, 25402.5, 25402.8 and 25910, Public Resources Code.

SECTION 10-103-B – NONRESIDENTIAL MECHANICAL ACCEPTANCE TEST REQUIREMENTS

- (a) **Scope.** The requirements of this section apply to and mechanical Acceptance Test Technicians and Employers and the Certification Providers that train and certify them.
- (b) **Industry Certification Threshold.** Mechanical Acceptance Test Technician and Employer certification requirements shall take effect when the Energy Commission finds that each of the following conditions are met:
1. **Number of Certified Acceptance Test Technicians.**
 - A. There shall be no less than 1,000 Mechanical Acceptance Test Technicians certified to perform all of the acceptance tests in Title 24, Part 6, Section 120.5, except as provided in Subsection 10-103-B(b)1.B, below. The number of certified Mechanical Acceptance Test Technicians shall be demonstrated by Certification Provider-provided reports submitted to the Energy Commission.
 - B. If there are less than 1,000 Mechanical Acceptance Test Technicians certified to perform all of the acceptance tests in Title 24, Part 6, Section 120.5, then there shall be at least 1,000 Mechanical Acceptance Test Technicians certified to complete the following tests:
 - (i) NA7.5.1 Outdoor Air Ventilation Systems
 - (ii) NA7.5.2 Constant Volume, Single Zone Unitary Air Conditioners and Heat Pumps
 - (iii) NA7.5.4 Air Economizer Controls
 - (iv) NA7.5.5 Demand Control Ventilation Systems
 - (v) NA 7.5.6 Supply Fan Variable Flow Controls
 - (vi) NA7.5.7, NA7.5.9 Hydronic System Variable Flow Controls
 - (vii) NA7.5.10 Automatic Demand Shed ControlsThe number of certified Mechanical Acceptance Test Technicians shall be demonstrated by Certification Provider-provided reports submitted to the Energy Commission.
 2. **Industry Coverage by Certification Provider(s).** The Mechanical Acceptance Test Technician Certification Provider(s) approved by the Energy Commission, in their entirety, provide reasonable access to certification for technicians representing the majority of the following industry groups: Professional engineers, HVAC installers, mechanical contractors, TAB certified technicians, controls installation and startup contractors and certified commissioning professionals who have verifiable training, experience and expertise in HVAC systems. The Energy Commission will determine reasonable access by considering factors such as certification costs commensurate with the complexity of the training being provided, certification marketing materials, prequalification criteria, class availability and curriculum.
- (c) **Qualifications and Approval of Certification Providers.** The Acceptance Test Technician Certification Providers (ATTCPs) shall submit a written application to the Energy Commission with a summary and the necessary background documents to explain how the following criteria and procedures have been met:
1. **Requirements for Applicant ATTCPs to Document Organizational Structure.** ATTCPs shall provide written explanations of the organization type, by-laws, and ownership structure. ATTCPs shall explain in writing how their certification program meets the qualifications of Title 24, Part 6, Section 10-103-B(c). ATTCPs shall explain in their application to the Energy Commission how their organizational structure and procedures include independent oversight, quality assurance, supervision and support of the acceptance test training and certification processes.
 2. **Requirement for Certification of Employers.** The ATTCPs shall provide written explanations of how their program includes certification and oversight of Acceptance Test Employers to ensure quality control and appropriate supervision and support for Acceptance Test Technicians.
 3. **Requirements for Applicant ATTCPs to Document Training and Certification Procedures.** ATTCPs shall provide a complete copy of all training and testing procedures, manuals, handbooks and materials. ATTCPs shall explain in writing how their training and certification procedures include, but are not limited to, the following:

A. Both hands-on experience and theoretical training such that Acceptance Test Technicians demonstrate their ability to apply the Title 24, Part 6 acceptance testing and documentation requirements to a comprehensive variety of mechanical systems and controls that is reflective of the range of systems currently encountered in the field.

B. Mechanical Acceptance Test Technician Training.

(i) **Curricula:** Acceptance Test Technician Certification Provider training curricula for Mechanical Acceptance Test Technicians shall include, but not be limited to, the analysis, theory, and practical application of the following:

- Constant volume system controls;
- Variable volume system controls;
- Air-side economizers;
- Air distribution system leakage;
- Demand controlled ventilation with CO2 sensors;
- Demand controlled ventilation with occupancy sensors;
- Automatic demand shed controls;
- Hydronic valve leakage;
- Hydronic system variable flow controls;
- Supply air temperature reset controls;
- Condenser water temperature reset controls;
- Outdoor air ventilation systems;
- Supply fan variable flow controls;
- Boiler and chiller isolation controls;
- Fault detection and diagnostics for packaged direct-expansion units;
- Automatic fault detection and diagnostics for air handling units and zone terminal units;
- Distributed energy storage direct-expansion air conditioning systems;
- Thermal energy storage systems;
- Title 24 mechanical acceptance testing procedures; and
- Title 24 acceptance testing compliance documentation for mechanical systems.

(ii) **Prequalification:** Participation in the technician certification program shall be limited to persons who have at least three years of verifiable professional experience and expertise in mechanical controls and systems as determined by the Mechanical ATTCPs to demonstrate an ability to understand and apply the Mechanical Acceptance Test Technician certification training. The criteria and review processes used by the ATTCP to determine the relevance of technician professional experience shall be described in the ATTCP application to the Energy Commission.

(iii) A sufficient ratio of instructors to participants in classroom and laboratory work to ensure integrity and efficacy of the curriculum and program.

(iv) A written and practical test that demonstrates each certification applicant's competence in all specified subjects. The ATTCPs shall retain all results of these tests for five years from the date of the test.

(v) Requirements and Procedures for recertification of Acceptance Test Technicians each time Title-24, Part 6 is updated with new and/or modified acceptance test requirements.

C. Mechanical Acceptance Test Employer Training. Training for Mechanical Acceptance Test Employers shall consist of a minimum of a one day class that covers the scope and process of the acceptance tests in Title 24, Part 6, Section 120.5.

D. Procedures described in writing for notifying building departments and the public that the Acceptance Test Certification Provider will accept complaints regarding the performance of any certified acceptance test technician or employer, and procedures for how the Provider will address these complaints.

- E. Procedures described in writing for revoking the certification of Acceptance Test Technicians and Employers based upon poor quality or ineffective work, failure to perform acceptance tests, falsification of documents, failure to comply with requirements for the issuance of building permits or other specified actions that justify decertification.
 - F. The ATTCP shall describe in their application to the Energy Commission how their certification business practices include quality assurance, independent oversight and accountability measures such as third party oversight of the certification processes and procedures, visits to building sites where certified technicians are completing acceptance tests, certification process evaluations, building department surveys to determine acceptance testing effectiveness, and Title 24, Part 6, Section 130.4 expert review of training curricula.. Third party oversight may be demonstrated by accreditation under the ISO/IEC 17024 standard.
- 4. The Mechanical ATTCP shall demonstrate sufficient quality assurance, oversight and accountability measures to ensure quality control of its certification program, including third party assessment and accreditation pursuant to the ISO/IEC 17024 standard. Quality assurance shall include site visits to ensure the integrity of the curriculum and training. [A22]
- (d) **Requirements for ATTCPs to Provide Annual Reports.** The ATTCP shall provide an annual report to the Energy Commission summarizing the certification services provided over the reporting period, including the total number of Acceptance Test Technicians and Employers certified by the agency (a) during the reporting period and (b) to date and a report as to what adjustments have been made to update the training curricula, if any, to ensure training is reflective of the mechanical systems and controls that are currently encountered in the field and of any changes to Title 24 Acceptance Testing requirements. The annual report shall also contain a signed certification that the ATTCP has met all requirements for this program.
- (e) **Interim Approval of Mechanical Acceptance Test Technician Certification Providers.** The Associated Air Balance Council (AABC), National Environmental Balancing Bureau (NEBB), and the Testing Adjusting and Balancing Bureau (TABB) shall be conditionally approved as authorized Mechanical Acceptance Test Technician Certification Providers, each separately subject to the below conditions:
 - 1. Interim approval shall only apply to Mechanical Acceptance Test Technicians completing the following mechanical acceptance tests required in Title 24, Part 6, Section 120.5. Mechanical Acceptance Test Technicians certified by one of the above organizations do not have interim approval to complete all other mechanical acceptance tests in Title 24, Part 6, Section 120.5. Interim approval applies only to the following mechanical acceptance tests:
 - A. NA7.5.1 Outdoor Air Ventilation Systems
 - B. NA7.5.2 Constant Volume, Single Zone Unitary Air Conditioners and Heat Pumps
 - C. NA7.5.4 Air Economizer Controls
 - D. NA7.5.5 Demand Control Ventilation Systems
 - E. NA 7.5.6 Supply Fan Variable Flow Controls
 - F. NA7.5.7, NA7.5.9 Hydronic System Variable Flow Controls
 - G. NA7.5.10 Automatic Demand Shed Controls
 - 2. Interim approval shall be conditioned upon submittal of an application that contains the information required by subdivision (c)(1)-(3), including documentation that demonstrates that certification includes training and testing on Title 24 mechanical acceptance testing procedures and Title 24 acceptance testing compliance documentation for mechanical systems.
 - 3. Technicians who have been certified by AABC, NEBB, or TABB prior to the inclusion of training on Title 24 acceptance testing procedures and compliance documentation shall qualify as a Mechanical Acceptance Test Technicians upon successful completion of a class or webinar on Title 24 acceptance testing procedures and compliance documentation.
 - 4. Employers who have been certified by AABC, NEBB, or TABB prior to the inclusion of training on Title 24 acceptance testing procedures and compliance documentation shall qualify as a Mechanical

Acceptance Test Employer upon successful completion of a class or webinar on Title 24 acceptance testing procedures and compliance documentation.

5. Interim approval for all ATTCPs shall end on the later date of, July 1, 2014 or six months after the effective date of the 2013 California Building Energy Efficiency Standards. The Energy Commission may extend the interim approval period for up to six additional months total, if it determines the threshold requirements in Section 10-103-B(b) have not been met for the certification requirements to take effect. If the Energy Commission determines that an extension is necessary, its determination shall be approved at a publicly-noticed meeting.

(f) Application Review and Determination. The Energy Commission shall review Acceptance Test Technician Certification Provider applications according to the criteria and procedures in Section 10-103-B(c) to determine if such providers are approved to provide acceptance testing certification services.

1. Energy Commission staff will review and validate all information received on Acceptance Test Technician Certification Provider applications, and determine that the application is complete and contains sufficient information to be approved.
2. The Executive Director may require that the applicant provide additional information as required by staff to fully evaluate Provider applications. The Executive Director shall provide a copy of its evaluation to interested persons and provide an opportunity for public comment.
3. The Executive Director shall issue a written recommendation that the Energy Commission designate the applicant as an authorized Mechanical Acceptance Tester Certification Provider or deny that designation.
4. The Energy Commission shall make a final decision on the application at a publically noticed hearing.

(g) Review by the Energy Commission.

If the Energy Commission determines there is a violation of these regulations or that an Acceptance Test Technician Certification Provider is no longer providing adequate certification services, the Energy Commission may revoke the authorization of the Acceptance Test Technician Certification Provider pursuant to Section 1230 et. seq. of Title 20 of the California Code of Regulations.

NOTE: Authority cited: Sections 25402, 25402.1, 25213, Public Resources Code. Reference: Sections 25007, 25402(a)-(b), 25402.1, 25402.4, 25402.5, 25402.8 and 25910, Public Resources Code.

EFFICIENCY STANDARDS
CALIFORNIA CODE OF REGULATIONS
TITLE 24, PART 6

**SECTION 120.5 – REQUIRED NONRESIDENTIAL MECHANICAL SYSTEM
ACCEPTANCE**

- (a) Before an occupancy permit is granted [A23] the following equipment and systems shall be certified as meeting the Acceptance Requirements for Code Compliance, as specified by the Reference Nonresidential Appendix NA7. A Certificate of Acceptance shall be submitted to the enforcement agency that certifies that the equipment and systems meet the acceptance requirements:

1. Outdoor air ventilation systems shall be tested in accordance with NA7.5.1
2. Constant volume, single zone unitary air conditioning and heat pump unit controls shall be tested in accordance with NA7.5.2.
3. Duct systems shall be tested in accordance with NA7.5.3 where either:
 - A. They are new duct systems that meet the criteria of Sections 140.4(l)1, 140.4(l)2, and 140.4(l)3; or
 - B. They are part of a system that meets the criteria of Section 141.0(b)2D.
4. Air economizers shall be tested in accordance with NA7.5.4.

EXCEPTION to Section 120.5(a)4: Air economizers installed by the HVAC system manufacturer and certified to the Commission as being factory calibrated and tested are exempt from the Functional Testing section of the Air Economizer Controls acceptance test as described in NA7.5.4.2.

5. Demand control ventilation systems required by Section 120.1(c)3 shall be tested in accordance with NA7.5.5
6. Supply fan variable flow controls shall be tested in accordance with NA7.5.6
7. Hydronic system variable flow controls shall be tested in accordance with NA7.5.7 and NA7.5.9
8. Boiler or chillers that require isolation controls per Section 140.4(k)2 or 140.4(k)3 shall be tested in accordance with NA7.5.7
9. Hydronic systems with supply water temperature reset controls shall be tested in accordance with NA7.5.8
10. Automatic demand shed controls shall be tested in accordance with NA7.5.10.
11. Fault Detection and Diagnostics (FDD) for Packaged Direct-Expansion Units shall be tested in accordance with NA7.5.11.
12. Automatic fault detection and diagnostics (FDD) for air handling units and zone terminal units shall be tested in accordance with NA7.5.12.
13. Distributed Energy Storage DX AC Systems shall be tested in accordance with NA7.5.13.
14. Thermal Energy Storage (TES) Systems shall be tested in accordance with NA7.5.14.
15. Supply air temperature reset controls shall be tested in accordance with NA7.5.15.
16. Water-cooled chillers served by cooling towers with condenser water reset controls shall be tested in accordance with NA7.5.16.
17. When an Energy Management Control System is installed, it shall functionally meet all of the applicable requirements of Part 6.

- (b) The acceptance test requirements in this section shall be performed by a Certified Mechanical Acceptance Test Technician who is employed by a Certified Mechanical Acceptance Test Employer as specified in Title 4 [A24], Part 1.

Section 10-103-A[A25]. A copy of the certification documentation shall be attached to the acceptance and documentation forms as required in Section 10-103(a[A26]).

NOTE: Authority cited: Sections 25402, 25402.1, and 25213, Public Resources Code. Reference: Sections 25007, 25402(a)-(b), 25402.1, 25402.4, 25402.5, 25402.8 and 25910, Public Resources Code.

SECTION 130.4 –LIGHTING CONTROL ACCEPTANCE AND INSTALLATION CERTIFICATE REQUIREMENTS

- (a) **Lighting Control Acceptance Requirements.** Before an occupancy permit is granted [A27] for a newly constructed building or area, or a new lighting system serving a building, area, or site is operated for normal use, indoor and outdoor lighting controls serving the building, area, or site shall be certified as meeting the Acceptance Requirements for Code Compliance in accordance with Section 130.4. A Certificate of Acceptance shall be submitted to the enforcement agency under Section 10-103(a) of Part 1, that:
1. Certifies plans, specifications, installation certificates, and operating and maintenance information meet the requirements of Part 6.
 2. Completes the applicable procedures in Reference Nonresidential Appendix NA7.6, NA7.7, NA7.8, and NA7.9; and submits all applicable compliance forms.
 3. Certifies that automatic daylight controls comply with Section 130.1(d) and Reference Nonresidential Appendix NA7.6.1
 4. Certifies that lighting shut-OFF controls comply with Section 130.1(c) and Reference Nonresidential Appendix NA7.6.2
 5. Certifies that demand responsive controls comply with Section 130.1(e) and Reference Nonresidential Appendix NA7.6.3
 6. Certifies that outdoor lighting controls comply with the applicable requirements of Section 130.2(c) and Reference Nonresidential Appendix NA7.8.
- (b) **Lighting Control Installation Certificate Requirements.** To be recognized for compliance with Part 6 an Installation Certificate shall be submitted in accordance with Section 10-103(a) for any lighting control system, Energy Management Control System, track lighting integral current limiter, track lighting supplementary overcurrent protection panel, interlocked lighting system, lighting Power Adjustment Factor, or additional wattage available for a videoconference studio, in accordance with the following requirements, as applicable:
1. Certification that when a lighting control system is installed to comply with lighting control requirements in Part 6 it complies with the applicable requirements of Section 110.9; and complies with Reference Nonresidential Appendix NA7.7.1.
 2. Certification that when an Energy Management Control System **or a Lighting Control System** is installed to function as a lighting control required by Part 6 it functionally meets all applicable requirements for each application for which it is installed, in accordance with Sections 110.9, 130.0 through 130.5, 140.6 through 150.0, and 150.2; and complies with Reference Nonresidential Appendix NA7.7.2.
 3. Certification that line-voltage track lighting integral current limiters comply with the applicable requirements of Section 110.9 and installed wattage has been determined in accordance with Section 130.0(c); and comply with Reference Nonresidential Appendix NA7.7.3.
 4. Certification that line-voltage track lighting supplementary overcurrent protection panels comply with the applicable requirements of Section 110.9 and installed wattage has been determined in accordance with Section 130.0(c); and comply with Reference Nonresidential Appendix NA7.7.4.
 5. Certification that interlocked lighting systems used to serve an approved area comply with Section 140.6(a)1; and comply with Reference Nonresidential Appendix NA7.7.5.
 6. Certification that lighting controls installed to earn a lighting Power Adjustment Factor (PAF) comply with Section 140.6(a)2; and comply with Reference Nonresidential Appendix NA7.7.6.
 7. Certification that additional lighting wattage installed for a videoconference studio complies with Section 140.6(c)2Gvii; and complies with Reference Nonresidential Appendix NA7.7.7.

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- (b) The acceptance test requirements in this section shall be performed by a Certified Lighting Controls Acceptance Test Technician who is employed by a Certified Lighting Controls Acceptance Test Employer as specified in Title 4[A28], Part 1, Section 10-103-A. A copy of the certification documentation shall be attached to the acceptance and documentation forms as required in Section 10-103(a[A29]).

NOTE: Authority cited: Sections 25402, 25402.1, 25213, Public Resources Code. Reference: Sections 25007, 25402(a)-(b), 25402.1, 25402.4, 25402.5, 25402.8 and 25910, Public Resources Code.