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## ARTICLE 1 – ENERGY BUILDING REGULATIONS

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### SECTION 10-101 – SCOPE

- (a) This article contains administrative regulations relating to the energy building regulations in Title 24, Part 6. This article applies to all residential and nonresidential buildings.
- (b) Nothing in this article lessens any necessary qualifications or responsibilities of licensed or registered building professionals or other designers or builders, or the duties of enforcement agencies that exist under state or local law.

**NOTE:** Authority cited: Sections 25402 and 25402.1, Public Resources Code. Reference: Sections 25402 and 25402.1, Public Resources Code.

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### SECTION 10-102 – DEFINITIONS

**ACCEPTANCE TEST PROVIDER** is a professional qualified to perform the nonresidential acceptance test requirements.

**LIGHTING CONTROLS ACCEPTANCE TEST PROVIDER** is a professional certified by an authorized Lighting Controls Acceptance Test Provider Certification Agency to perform lighting controls acceptance tests and complete the documentation for lighting controls acceptance tests as required by Title-24, Part 6.

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

**ACCEPTANCE TEST PROVIDER CERTIFICATION AGENCY** is an agency, organization or entity approved by the Energy Commission to train and certify Acceptance Test Providers according to the requirements of Section 10-103-A.

**LIGHTING CONTROLS ACCEPTANCE TEST PROVIDER CERTIFICATION AGENCY** is an agency, organization or entity approved by the Energy Commission to train and certify Lighting Controls Acceptance Test Providers.

**MECHANICAL ACCEPTANCE TEST PROVIDER CERTIFICATION AGENCY** is an agency, organization or entity approved by the Energy Commission to train and certify Mechanical Acceptance Test Providers.

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

- (a) **Scope.** The requirements of this section apply to nonresidential lighting control and mechanical Acceptance Test Providers and the Certification Agencies that train and certify them.
  - (b) **Industry Certification Threshold.** These requirements shall be applied separately for the lighting controls acceptance test requirements in Title 24, Part 6, Section 130.4 and the nonresidential mechanical acceptance test requirements in Title 24, Part 6, Section 120.5. Acceptance Test Provider certification requirements shall be enforced when each of the following conditions are deemed met by the Energy Commission:
    - 1. **Number of Certified Acceptance Test Providers.** There shall be no less than **2,000** Acceptance Test Providers certified to perform the acceptance tests in Title 24, Part 6. This minimum number of certified Acceptance Test Providers shall be applied separately for the lighting control acceptance tests and the nonresidential mechanical acceptance tests. The number of certified Acceptance Test Providers shall be computed by the Energy Commission based on quarterly reports provided by Certification Agencies (see Section 10-103-A (c)3).
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**2. Industry Coverage by Certification Agencies.** The Certification Agencies approved by the Energy Commission, in their entirety, serve the majority of industry groups that have the professional knowledge, skills and abilities to perform the nonresidential lighting controls and mechanical acceptance tests. The following list of industry groups shall be used by the Energy Commission to determine if the majority of these have available training and certification opportunities within the state of California:

- A. Lighting Control Industry Groups: IBEW Electrical Contractors, Other Electrical Contractors, Low Voltage Control Contractors, Commissioning Providers, ...
- B. Mechanical Industry Groups: TAB Certified Technicians, Professional Engineers, Mechanical Contractors, Commissioning Providers, ...

**(c) Qualifications and Approval of Certification Agencies.** The Energy Commission shall approve Acceptance Test Provider Certification Agencies to train and certify Lighting Control and/or Mechanical Acceptance Test Providers based on the following criteria:

**1. Training and Certification Procedures.** Acceptance Test Provider Certification Agencies shall document to the Energy Commission that 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 Providers are capable of applying the Title 24, Part 6 acceptance testing and documentation requirements to the variety of lighting controls and/or mechanical systems and controls that are typically encountered in the field.

**(i) Lighting Control Acceptance Test Provider Training.** Acceptance Test Provider Certification Agency training curricula for Lighting Control Acceptance Test Providers 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;
- Demand responsive signal inputs to lighting control systems;
- Title-24 required lighting control systems;
- Title-24 required lighting control system-specific analytical/problem solving skills;
- Integration of mechanical and electrical systems for Title-24 required lighting control installation and commissioning;
- Safety procedures for low-voltage retrofits (>50 volts) to control medium 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;
- Title 24 lighting controls acceptance testing procedures; and
- Title 24 acceptance testing compliance documentation for lighting controls.

**(ii) Mechanical Acceptance Test Provider Training.** Acceptance Test Provider Certification Agency training curricula for Mechanical Acceptance Test Providers 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.
- B. Class/lecture and laboratory/field training shall have a ratio of no higher than 15 to 1 trainees to instructors.
- C. A written and practical test that demonstrates each certification applicant's competence in all specified subjects. The Acceptance Test Provider Certification Agency shall retain all results of these tests for five years from the date of the test.
- D. The Acceptance Test Provider Certification Agency shall recertify Acceptance Test Providers each time Title-24, Part 6 is updated with new and/or modified acceptance test requirements.
- F. The Acceptance Test Provider Certification Agency shall establish and maintain written procedures for revoking the certification of Acceptance Test Providers based upon poor quality 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.
2. **Application for Energy Commission Approval.** The Acceptance Test Provider Certification Agency shall document compliance with Section 10-103-A(c)1 in writing and submit this documentation to the Energy Commission in a request for approval as an Acceptance Test Provider Certification Agency.
3. **Provision of Quarterly Reports.** The Acceptance Test Provider Certification Agency shall provide a quarterly report to the Energy Commission summarizing the certification services provided over the reporting period. A total number of Acceptance Test Providers certified by the agency (a) during the reporting period, and (b) to date, shall be included in this quarterly report.
- (d) **Energy Commission Determination.** The Energy Commission shall review Acceptance Test Provider Certification Agency applications and determine if such agencies are approved to provide acceptance testing certification services. If the Energy Commission determines after initial approval that the Acceptance Test Provider Certification Agency is no longer providing adequate certification services, pursuant to Section 1230 et. seq. of Title 20 of the California Code of Regulations, the Energy Commission may revoke the authorization of the Acceptance Test Provider Certification Agency.

**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 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 Lighting Controls Acceptance Test Provider as specified in Title 4, 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).

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## SECTION 130.4 –LIGHTING CONTROL ACCEPTANCE AND INSTALLATION CERTIFICATE REQUIREMENTS

- (a) **Lighting Control Acceptance Requirements.** Before an occupancy permit is granted 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 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.

- (b) The acceptance test requirements in this section shall be performed by a Certified Lighting Controls Acceptance Test Provider as specified in Title 4, 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).

