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ADMINISTRATIVE REGULATIONS

CALIFORNIA CODE OF REGULATIONS
TITLE 24, PART 1

ARTICLE 1 – ENERGY BUILDING REGULATIONS

[Skipping Section 10-101 through Section 10-103.3(a)]

10-103.3 Administrative Procedures for the Energy Code Compliance Program

(b) **General Provisions**.

1. **Conflicts of Interest**.

A. **Prohibition of Conflicts of Interest**.

i. ECC-Providers shall be independent from, and have no financial interest in, ECC-Rater Companies or ECC-Raters.

ii. ECC-Providers, ECC-Raters, and ECC-Rater Companies shall operate independently and shall not have any financial interest in the builder, designer, or subcontractor serving as the "Responsible Person" signatory as specified in Section 10-103(a)1 and Section 10-103(a)3 on a project. However, an exception applies if the ECC-Rater Company submits a Declaration of ECC-Rater Company Separation of Services, as provided in Section 10-103.3(f)2Diii. This applies specifically to projects where the ECC-Rater is involved in, or is reasonably expected to provide, field verification and diagnostic testing services.

iii. For the purposes of this subdivision, a "financial interest" includes:

a. a business entity in which the entity or individual has a direct or indirect investment worth $2,000 or more, or in which the entity or individual is a director, officer, partner, trustee, or employee. However, this prohibition on investments does not include ownership of less than five percent of a publicly traded company.

b. an ownership interest, debt agreement, or employer/employee relationship.

iv. ECC-Providers, ECC-Raters, and ECC-Rater Companies, or principals of an ECC-Provider or ECC-Rater Company shall not perform field verification or diagnostic tests services for builders, designers, or subcontractors owned or operated by close familial relatives. For purposes of this subdivision, "close familial relative" means a spouse, domestic partner, or cohabitation partner or a parent, grandparent (including greats), sibling, child, grandchild (including

greats) of the individual or spouse, domestic partner, or cohabitation partner, and any person living in the same household.

v. ECC-Raters and ECC-Rater Companies shall not perform any construction activity on a project site for which a construction permit is issued and for which they will or are reasonably expected to perform field verification or diagnostic testing services.

vi. ECC-Raters or ECC-Rater Companies shall provide a report to the building or project owner for field verification or diagnostic testing services performed on the project site. The report may be provided through a contractor or other project representative to the building or project owner but must be a conspicuous and separate document from other documents provided by the contractor or project representative. The report must include all of the following elements:

   a. The ECC-Rater's or ECC-Rater Company's name, logo (if any), contact information, and certification number.

   b. The ECC-Provider data registry link and registry numbers for all compliance documents registered by the ECC-Rater or ECC-Rater Company for the project.

   c. An itemization of each field verification or diagnostic test, as well as any other services performed for the project, the amount charged, and the results in terms of pass or fail.

vii. The ECC- *Provider shall develop a Consumer Information Form, and the Commission may request to review and provide recommendations on the content of that form.* ~~*Rater or ECC-Rater Company must register a*~~ *The* Consumer Information Form ~~*with the ECC-Provider, which includes*~~*shall include* educational materials regarding the ECC Program, the roles and responsibilities of ECC-Raters, ECC-Providers and ECC-Rater Companies, and the means by which the owner may file a complaint. The Consumer Information Form must also include the owner's valid contact information, comprised of the owner's name, project address, phone number, and email. *Prior to the start of any field verification or diagnostic testing at a project site, the ECC-Rater or ECC-Rater Company shall provide a copy of the most recent version of the Consumer Information Form developed by the ECC-Provider to the owner or owner representative and shall submit a completed Consumer Information Form to the ECC-Provider.* Failure to register a valid Consumer Information Form will make the ECC-Rater or ECC-Rater Company subject to discipline as

described in Sections 10-103.3(d)7 and 10-103.3(d)8. For projects with no current owner in residence, the owner's contact information may be that of the landlord, developer, builder, or any other such person with a real property interest. ~~*The Consumer Information Form shall be developed by the ECC-Provider, and the Commission may request to review and provide recommendations.*~~ *For the purposes of a Consumer Information Form, register is defined as submitting the information outlined in this paragraph to the ECC-Provider.*

viii. Once an ECC-Rater has registered a failed field verification or diagnostic test, that ECC-Rater or ECC-Rater Company (or Independent Rater) shall become the ECC-Rater of Record (ROR) for the specific field verification or diagnostic test at the project site. If the ROR is an ECC-Rater Company or Independent Rater, then the ROR may be replaced by any ECC-Rater that is a fulltime employee of the ECC-Rater Company or Independent Rater and in good standing with the ECC-Provider. Except as provided in subdivision (a) below, only the ROR may register a subsequent passing field verification or diagnostic test previously registered as a failure.

a. Under any of the following circumstances, the ECC-Provider may release a project from the ROR but must verify that the retest for the failed field verification or diagnostic test is legitimate either through a site visit, photographic evidence (or other remote verification), or a desk audit (Section 10-103.3(d)5Civ) on the project:

(i) The ROR agrees to release the project.

(ii) The ROR is physically unable to continue work on the project due to injury, misfortune, or availability.

(iii) The ROR's certification has been suspended (Section 10-103.3(d)7C) or decertified (Section 10-103.3(d)7D).

(iv) The ROR is unwilling to continue work on the project.

b. The ECC-Provider shall lock the project compliance documentation within the data registry by address, permit number, or other reasonable means and shall not allow any further compliance documents to be registered for a failed test at the project site other than from the ROR or allowable substitute under Section 10-103.3(b)1Aviiia.

c. An ECC-Provider shall not knowingly accept compliance documents for registration for a project that has an active failed field verification or diagnostic tests in any other ECC-Provider data registry.

(i) ECC-Providers shall submit a complaint to the Commission (Section 10-103.3(d)6B) upon suspected violation of this requirement.

(ii) Upon investigation, the Commission may take disciplinary action against an ECC-Provider (Section 10-103.3(d)15) if the CEC can demonstrate noncompliance or recommend disciplinary action against an ECC-Rater or ECC-Rater Company (Sections 10-103.3(d)7 and 10-103.3(d)8).

ix. **Use of Registered Certificates**. The use of registered certificates, including Certificates of Compliance, Certificates of Installation, and Certificates of Verification, is limited to the demonstration and documentation of the project compliance with the Building Energy Efficiency Standards. Other uses of registered certificates, such as for federal tax credits, is only permitted for projects that have been completed and are closed within the data registry.

[Skipping Section 10-103.3(b)1B through 10-103.3(d)4]

5. **Quality Assurance**. An ECC-Provider shall maintain a quality assurance program to ensure appropriate oversight of the ECC-Raters it certifies. This program shall, at a minimum, include the following:

A. **Quality Assurance Staff.** ECC-Providers shall maintain the necessary qualified staff to ensure a functioning quality assurance program that includes, at a minimum, performing the types of quality assurance reviews listed in Section 10-103.3(d)5 on ECC-Raters. Any form of audit is subject to the same standards of required conduct as any other field verifications and diagnostic tests and is also subject to Quality Assurance review. Quality Assurance staff may not include active ECC-Raters.

B. **Exemplary ECC-Rater.** An ECC-Rater is designated as a "Exemplary ECC-Rater" once the ECC-Rater has been (1) continuously certified as an ECC-Rater for a minimum of five years and (2) confirmed for designation by the applicable ECC-Provider after passing all required quality assurance audits within a 12-month period, including at least one annual quality insulation installation (QII) shadow audit~~, one non-QII shadow audit, one in-lab audit,~~ and one desk audit.

i. The ECC-Provider shall immediately revoke this designation for any audit failure or the failure to be recertified as an ECC-Rater in any subsequent Triennial Code Cycle.

ii. This designation, once obtained, may be included in marketing materials. If this designation is revoked, it shall be removed from marketing materials within 10 business days.

C. **Types of Quality Assurance Review**. Quality Assurance Review shall take the form of onsite, shadow, and desk audits.

i. **Onsite Audits**. The ECC-Provider performs an onsite audit following field verification and diagnostic testing by an ECC-Rater it certified. Onsite audits are performed at the invitation of the homeowner through the complaint process, at the request of the Commission, or at the discretion of the ECC-Provider. Every year, at least one onsite audit shall be performed by the ECC-Provider for each ECC-Rater it has certified either at random or as directed above. For Exemplary ECC-Raters the minimum onsite audit frequency shall be reduced from once per year to once per Triennial Code Cycle. ~~*Additionally, onsite audits shall be performed for every 100 dwelling units or single family residences (or both in combination) in a single development constructed by a single developer that make use of the sample group provisions (Building Energy Efficiency Standards Reference Appendix RA 2.6)*~~seventh ~~sample group used in a single residential development~~. The audit results shall be included in the annual reporting to the Commission (Section 10-103.3(d)11E) or provided in response to a request by the Commission. Onsite audits shall comply with the following:

a. Onsite audits must not be performed in the presence of the ECC-Rater and can be performed any time after the ECC-Rater has left the project site.

b. ECC-Raters must not be informed that their field verification and diagnostic test is receiving an onsite audit until the onsite audit is complete and the results are documented.

c. At a minimum, onsite audits shall include all of the following:

(i) A verification of correctly completed certificates of installation (if the ECC-Rater is acting as the Authorized Representative under Section 10-103(a)3A) and verification (Section 10-103(a)4) for the project.

(ii) Performance of the field verification and diagnostic test that was performed by the ECC-Rater.

d. A Passing result shall include the following at a minimum:

(i) Correct and completed certificates of installation (if the ECC-Rater is signature authorized under Section 10-103(a)3A) and verification (Section 10-103(a)4) for the project free from false, inaccurate, or incomplete information.

(ii) All field verifications and diagnostic tests audit results that include a field test or measurement must pass as required in the Building Energy Efficiency Standards, Reference Appendices RA1, RA2, RA3, RA4, NA1, and NA2.

e. Onsite audits shall be performed when an ECC-Provider is investigating a complaint from a homeowner about a field verification and diagnostic test.

f. Onsite audits shall be performed for every 100 dwelling units or single family residences (or both in combination) in a single development constructed by a single developer that make use of the sample-group provisions (Building Energy Efficiency Standards Reference Appendix RA 2.6) *beginning with the hundredth dwelling unit or single family residence* ~~seventh sample-group used in a single residential development~~. Nothing in this provision shall require that any dwelling unit in any sample-group remain open beyond the requirements in Building Energy Efficiency Standards Reference Appendix RA 2.6. These onsite audits shall comply with the following:

(i) The ECC-Provider shall perform the onsite audit at an untested home ~~in the same sample-group being tested~~ and a tested home.

(ii) If the ECC-Provider is refused access to the development, all sample-groups for the development will be considered conflicted data (Section 10-103.3(b)1B).

(iii) At the discretion of an ECC-Provider, this onsite audit may also be used to satisfy the requirements for an onsite audit as required by Section 10-103.3(d)5Ci (Onsite Audits) or, if applicable, Section 10-103.3(d)5Cii (Shadow Audits) for an ECC-Rater.

(iv) A failed onsite audit of the tested dwelling unit shall constitute a failed onsite audit for the ECC-Rater. A failed onsite audit of either the tested or untested dwelling unit shall be recorded in the ECC-Provider's quality assurance database (Section 10-103.3(d)9B). ~~.~~A failed onsite audit of either the tested or untested dwelling unit shall be reported to the developer, ECC-Rater, and ECC-Rater Company as soon as is possible. Failed onsite audits of dwelling units within a sample-group shall not be deemed to fail or impact in any way the compliance status of the sample-group.

g. If the ECC-Provider is refused access to the development, the ECC-Rater may be subject to investigation and disciplinary action at the discretion of the ECC-Provider. The ECC-Provider shall document onsite audit results, provided to the ECC-Rater and ECC-Rater Company, provided to the homeowner, and recorded in the ECC-Provider's quality assurance database (Section 10-103.3(d)9B).

h. If the onsite audit reveals the ECC-Rater did not accurately perform the field verification and diagnostic test or accurately collect or report data, the ECC-Provider shall initiate disciplinary action (Section 10-103.3(d)7).

i. Onsite audits shall include the use of photographic evidence to be recorded in the ECC-Provider data registry as provided in Building Energy Efficiency Standards Reference Appendix JA7.5.6.3.

[Skipping Sections 10-103.3(d)5Cii through 10-103.3(d)11F]

G. **Annual Reporting Requirements Regarding ECC-Rater Companies**.

i. ~~*Beginning*~~ *By the first of June of each year starting* in 2027, an ECC-Provider shall submit an ECC-Rater Company Annual Report to the Commission ~~by June first of each year~~. *The report shall be clearly labeled* ~~*designated*~~ *as confidential and transmitted to the Commission as a confidential submission and will be treated as such as permitted by law.* ~~*The report is not subject to Title 20 Cal. Code. Regs, Section 2505 et seq. upon initial submission.*~~ *The report becomes nonconfidential 5 years following submission but may receive confidential redesignation if the ECC-Provider requests*

extension of confidential status using the steps outlined in Title 20 Cal. Code. Regs., Section 2505 et seq.

ii. *Reserved ~~The data used as the basis for the ECC-Rater Company Annual Report shall include submitted reports from all ECC-Rater Companies (Section 10-103.3(f)2H) and all ECC-Raters filing as an independent (Section 10-103.3(e)2G).~~*

iii. The ECC-Provider shall ensure that the ECC-Rater Company Annual Report includes *the current ECC-Provider pricing assigned to each ECC-Rater Company and Independent ECC-Rater for the costs of all services for Field Verification and Diagnostic Testing registration, including any Quality Assurance Fees.~~all of the following:~~*

~~*a. The compliance status of the principal licensure requirements (Section 10-103.3(f)1B) are met for each ECC-Rater Company and the certification status of ECC-Rater filing as independent (Section 10-103.3(e)1A).*~~

~~*b. The number of all types of certificate status (Section 10-103.3(e)1A) for all ECC-Raters employed by each ECC-Rater Company.*~~

~~*c. Whether the total number of field verifications and diagnostic tests registered by each ECC-Rater Company and ECC-Rater filing as an independent is accurate as compared to the ECC-Provider data registry.*~~

~~*d. An aggregation of the total and average costs of services for each type of field verifications and diagnostic tests reported by all ECC-Rater Companies and ECC-Rater filing as an independent without any associated identification. The ECC-Provider shall summarize the cost of services data by local jurisdiction and climate zone independently. All aggregations shall consist of at least three reports of either ECC-Rater Company (Section 10-103.3(f)2H) or ECC-Rater (Section 10-103.3(e)2G) filing as independent. All unaggregated results shall be included in a "other" category if consisting of at least three ECC-Rater Companies or ECC-Rater filing as independent. The ECC-Provider shall include the total number of reports for ECC-Rater Companies and ECC-Raters filing as an independent that were not possible to aggregate or are otherwise not included in the report.*~~

~~*e. Current ECC-Provider pricing assigned to the ECC-Rater Company for the costs and services for Field Verification*~~

~~*and Diagnostic Testing registration, including any Quality Assurance Fees.*~~

[Skipping Sections 10-103.3(d)11H through 10-103.3(e)2F]

2. **Required Conduct**.

G. ECC-Raters not employed by an ECC-Rater Company are considered independent. Independent ECC-Raters shall submit *an A*~~a~~nnual *Activity* ~~*r*~~*R*eport~~*s*~~ no later than the end of March of each year starting in 2027 to the ~~*ECC-Provider*~~ *Commission* that includes the information listed in *Section10-103.3(f)2Fiii*~~*-10-103.3(f)2Hiii-*~~and Section *10-103.3(f)2Fiv*~~*10-103.3(f)2Hiv*~~.

[Skipping Sections 10-103.3(e)3 through 10-103.3(f)1]

(f) **ECC-Rater Company Certification and Responsibilities**

2. **Required Conduct**.

A. *Reserved*~~*ECC-Rater Companies shall maintain a publicly available list of all of its ECC-Raters.*~~

[Skipping Sections 10-103.3(f)2B through 10-103.3(f)2E

F. *By the end of March of each year starting in 2027*~~*No later than March 31 of each year*~~, each ECC-Rater Company shall submit *an Annual Activity Report* to the *Commission*. ~~*ECC-Provider-*~~ *The report must be clearly labeled as confidential and* must be transmitted to the Commission *as a confidential submission and will be treated as such as permitted by law.* ~~*The report is not subject to 20 Cal. Code. Regs., Section 2505 et seq. upon initial submission.-*~~*The report becomes nonconfidential 5 years following submission but may receive confidential redesignation if the ECC-Provider requests extension of confidential status using the steps outlined in Title 20 Cal. Code. Regs., Section 2505 et seq. The report shall contain all of the following:*~~*an annual report that includes:*~~

i. ECC-Rater Company Contact details, principals, and required certificates.

ii. A list of all ECC-Raters working for the ECC-Rater Company.

iii. The total number of field verifications and diagnostic tests performed by ECC-Raters working for the ECC-Rater Company during the prior calendar year, organized by *enforcement agency*~~*building code jurisdiction*~~.

iv The total and average cost of services charged for each type of field verification and diagnostic test performed by ECC-Raters working for the ECC-Rater Company during the prior calendar year.

[Skipping Sections 10-103.3(f)2G through 10-109(b)]

10-109 – COMPLIANCE SOFTWARE, ALTERNATIVE COMPONENT PACKAGES, EXCEPTIONAL METHODS, DATA REGISTRIES AND RELATED EXTERNAL DIGITAL DATA SOURCES, ALTERNATIVE RESIDENTIAL FIELD VERIFICATION PROTOCOLS, ELECTRONIC DOCUMENT REPOSITORIES, PHOTOVOLTAIC, AND BATTERY-ENERGY STORAGE SYSTEM REQUIREMENT DETERMINATIONS

(c) **Compliance Software.**

1. **Compliance Manager.** The compliance manager is the public domain computer program, including simulation and compliance rule implementation software, developed by the Energy Commission pursuant to Public Resources Code Section 25402.1. The compliance manager software simulates the energy use of a proposed residential or nonresidential building and compares it to a standard design energy budget to determine if the building complies with the Building Energy Efficiency Standards. The compliance manager shall be able to do the following:

   A. Standard design – The standard design building is a building simulated to establish the baseline energy budget for space heating, space cooling, indoor air quality ventilation, and water heating for a proposed building.

   For newly constructed buildings, the standard design building shall be modeled as in the same location and having the same characteristics, including but not limited to floor area, volume, and configuration, as the proposed building, except that wall and fenestration areas shall be distributed equally between the four main compass points. For additions and alterations, the standard design shall be modeled as in the same location and having the same characteristics and shall have the same wall and fenestration areas and orientations as existing building.

   Where the Energy Commission specifies that the standard design building includes a covered product subject to 42 USC 6295, or an appliance regulated by the Appliance Efficiency Regulations, the standard design building shall be modeled to meet but not exceed the efficiency level required by 42 USC 6295 for that covered product or applicable standards required by the Appliance Efficiency Regulations for that regulated appliance, respectively.

   The standard design building shall be modeled to include the mandatory requirements of the Building Energy Efficiency Standards, and to meet but not exceed the prescriptive requirements that would apply to the proposed building.

   The process of generating the standard design shall be performed automatically. This modeling shall be based on the inputs that describe the proposed building, substituting the assumptions for wall and fenestration area distribution, required efficiency for the covered product subject to 42 USC 6295 that the Energy Commission specifies in the standard design, and the applicable standards for the appliance regulated by the Appliance Efficiency Regulation that the Energy

Commission specifies in the standard design, and mandatory and prescriptive options applicable to the proposed building, thereby creating a standard design building against which the energy use of the proposed building can be evaluated.

B. The modeled energy budgets of the standard design building and the energy consumption of the proposed building are described *in Title 24 Part 6, Sections 140.1(a), 150.1(b)1, and 170.1(a)* ~~***below***~~. These requirements ensure that all modeled building features are specified on a one-for-one equivalent energy use or equivalent energy cost basis. Compliance credit for covered products subject to 42 USC 6295 having efficiencies exceeding the efficiency levels required by 42 USC 6295 shall be calculated in terms of long-term system cost, and source energy thereby ensuring that the compliance credit is on a one-for-one equivalent energy or equivalent cost basis.

Long-term system cost (LSC) ~~-~~– All electricity, gas or propane used within the modeled buildings shall be converted to LSC. ~~*LSC includes the efficiency LSC, which is the sum of LSC energy for space conditioning, water heating, and mechanical ventilation, and total LSC, which includes efficiency LSC and LSC energy from photovoltaic, energy storage systems, lighting, demand flexibility, and other plug loads.*~~

Source energy – The energy used within the modeled buildings shall be represented as long-run marginal, hourly source energy.

[Skipping Sections 10-109(b)1C through 10-116]

BUILDING ENERGY EFFICIENCY STANDARDS

CALIFORNIA CODE OF REGULATIONS
TITLE 24, PART 6

[Skipping Section 100.0 through Section 100.1, NATURAL GAS AVAILABILITY]

NEEA is the Northwest Energy Efficiency Alliance.

NEEA ADVANCED WATER HEATER SPECIFICATION is the Northwest Energy Efficiency Alliance (NEEA) specification version 8~~7.0~~1, effective date ~~*March 1, 2022*~~*July 15, 2024* for heat pump water heaters.

[Skipping Section 100.1, NET EXHAUST FLOW RATE through Section 100.1, SEASONAL ENERGY EFFICIENCY RATIOW (SEER2)]

SELF-UTILIZATION CREDIT *is the limited Efficiency LSC energy budget compliance credit available for combined PV and battery energy storage systems for single-family, as specified by the Residential ACM Reference Manual, and low-rise multifamily, as specified by the Nonresidential and Multifamily ACM Reference Manual.*

Skipping Section 100.1, SENSIBLE ENERGY RECOVERY RATIO through Section 100.2]

SUBCHAPTER 3
NONRESIDENTIAL, HOTEL/MOTEL OCCUPANCIES, AND COVERED PROCESSES—MANDATORY REQUIREMENTS

[Skipping Section 120.0 through Section 120.9]

SECTION 120.10 – MANDATORY REQUIREMENTS FOR FANS

a) Each fan or fan array with a combined motor nameplate horsepower greater than 1.00 hp or with a combined fan nameplate electrical input power greater than 0.89 kW shall have a fan energy index (FEI) of 1.00 or higher at fan system design conditions. Each fan and fan array used for a variable-air-volume system that meets the requirements of Section 140.4(c)2 shall have an FEI of 0.95 or higher at fan system design conditions.

1. The FEI for fan arrays shall be calculated in accordance with ANSI/AMCA 208-18 Annex C.
2. All FEI values shall be provided by a manufacturer, where fan selection software and/or fan catalogs display third party verified FEI values in accordance with *Appendix A to Subpart J of Part 10 CFR 431*~~*ANSI/AMCA 208-18*~~.

   Exception to Section 120.10(a)2: FEI values for embedded fans do not need to be third-party verified.

[Skipping Exception 1 to Section 120.10(a) through Exception 4 to Section 120.10(a)]

SUBCHAPTER 5
NONRESIDENTIAL AND HOTEL/MOTEL OCCUPANCIES—PERFORMANCE AND PRESCRIPTIVE COMPLIANCE APPROACHES FOR ACHIEVING ENERGY EFFICIENCY

[Skipping Section 140.0 through Section 140.1]

(a) Energy Budget. The energy budget ~~for~~ is expressed in terms of Long-Term System Cost (LSC) and Source Energy.

1. **Long-term System Cost (LSC).** The LSC energy budget is determined by applying the mandatory and prescriptive requirements of the standard design to the proposed design building and has two components, the Efficiency LSC and the Total LSC.
   A. The Efficiency LSC energy is the sum of the LSC energy for space-conditioning, water heating, ~~*and*~~ mechanical ventilation, *and lighting*.
2. The Total LSC energy is the sum of the Efficiency LSC energy and LSC energy from the photovoltaic system, *battery* energy storage systems *(BESS)*~~*, lighting, and*~~ demand flexibility~~*, and other plug loads*~~.

[Skipping Section 140.1(a)2 through Section 140.4(a)2]

3. **Multi-zone~~-zone~~ space-conditioning system types.** ~~Multizone s~~ *Space conditioning systems in o*ffice buildings and school buildings not covered by Section 140.4(a)2 shall meet the following requirements:

   EXCEPTION 1 to Section 140.4(a)3*: Buildings greater than 150,000 square feet or greater than 5 habitable stories.*

   EXCEPTION 2 to Section 140.4(a)3*: School buildings in climate zones 6 and 7.*

   A. *Space-conditioning systems* ~~***Offices.*** *Office buildings*~~ shall ~~*use space-conditioning systems*~~ comply~~*ing*~~ with one of the following requirements:

      i. The space-conditioning system shall be a variable refrigerant flow (VRF) heat pump system that incorporates refrigerant-loop heat recovery and ~~with~~ a dedicated outdoor air system (DOAS) providing ventilation to all zones served by the space-conditioning system. Indoor fans shall meet the requirements of Section 140.4(a)3D. The DOAS shall comply with Section 140.4(a)3E~~; or~~.

ii. The space-conditioning system shall be ~~a~~ four-pipe fan coil (FPFC) terminal units ~~system~~ with a DOAS providing ventilation to all zones served by the space-conditioning system. The FPFC hot water coils shall be supplied by an air-to-water heat pump (AWHP) space-heating hot water loop ~~which~~ that complies with Section 140.4(a)3C. Indoor fans shall meet the requirements of Section 140.4(a)3D. The DOAS shall comply with Section 140.4(a)3E ~~; or .~~.

iii. *For office buildings in all climate zones and school buildings in climate zones 2, 4,* and ~~6~~ *8 through 16, the space-conditioning system shall be a variable air volume (VAV) system with* ~~*The space-conditioning system shall utilize*~~ heating supplied through a hot water loop served by an AWHP ~~which~~ that complies with Section 140.4(a)3C *and the following:* ~~. The system shall be designed to operate with a water temperature leaving the AWHP that is no greater than 105 °F. Ventilation systems shall include DCV in all zones. All air~~ Ventilation systems serving the space-conditioning system zones shall be equipped with a heat recovery system in compliance with Section 140.4(q). A hydronic recirculated air heating system complying with Section 140.4(a)3F shall be used in climate zones 2 through 4 and 6 through 16.~~

a. For Office buildings:

I. The portion of perimeter zone terminal unit heating capacity utilizing parallel fan-powered boxes complying with Section 140.4(a)3E shall be:

a. 100 percent in climate zones 1 through 6, and 16.

b. 25 percent in climate zones 7 through 15.

II. Ventilation systems in climate zones 1, 3, and 5 shall be equipped with a heat recovery system in compliance with Section 140.4(q).

III. The maximum allowed fan power in climate zones 3 and 5 shall be 15 percent lower than specified by Section 140.4(c)1.

b. For school buildings:

I. All perimeter zone terminal units shall be parallel fan-powered boxes complying with Section 140.4(a)3E.

II. Ventilation systems in climate zones 2, 4, and 11 through 16 shall be equipped with a heat recovery system in compliance with Section 140.4(q).

III. The maximum allowed fan power in climate zone 2 shall be 15 percent lower than specified by Section 140.4(c)1.

IV. The design leaving water temperature of the heating loop shall be no greater than 120°F in climate zone 2.

iv. The space conditioning system shall be a dual-fan dual-duct (DFDD) system with hot and cold decks each served by separate fan systems, and:

a. When required by Section 140.4(e), economizers shall be located on the cold deck,

b. The hot deck shall supply 100% return air, except outdoor air may be supplied as required to supplement the cold deck to maintain the design minimum outdoor air rate,

c. The hot deck heating source shall be a heat pump, and

d. The DFDD and DFDD terminal unit control sequence shall comply with ASHRAE Guideline 36.

v. A space-conditioning system determined by the Executive Director to use no more energy than the systems specified in Section 140.4(a)3.

B. ~~***School buildings.** The space conditioning system shall be four-pipe fan coil (FPFC) terminal units with a DOAS providing ventilation to all zones served by the space-conditioning system. The FPFC hot water coils shall be supplied by an air-to-water heat pump (AWHP) space-heating hot water loop which complies with Section 140.4(a)3C. Indoor fans shall meet the requirements of Section 140.4(a)3D. The DOAS shall comply with Section 140.4(a)3E.~~Reserved

C. **AWHP space-heating hot water loop**. ~~Air-source heat pumps~~AWHPs used to comply with the requirements of Section ~~140.4(a)3Ai, or~~ 140.4(a)3Aii, 140.4(a)3Aiii, ~~*or 140.4(a)3B*~~, when used for space-heating hot water shall meet the following requirements:

i. The minimum efficiency requirements specified in Table 110.2-J,

ii. ~~*The design water temperature leaving the AWHP shall not be greater than the leaving water temperature at which the installed product is rated*~~have a rated heating COP of not less than 3.29 when the outdoor air temperature is 47°F dry-bulb and 43°F wet-bulb at a leaving water temperature not less than the design supply water temperature of the hot water loop. If chilled water produced by an AWHP is used for space-cooling then ~~it~~ the heat recovery system shall comply with Section 140.4(s), *and*

~~only be used when the AWHP is simultaneously supplying space-heating hot water equal to the AWHP's space-heating hot water demand. The loop fluid volume shall not be less than 8 gallons per nominal ton of heating capacity of the loop., and~~

iii. Supplemental heating shall be provided by an electric resistance boiler with a capacity of not greater than *50 percent* ~~*the following percentage*~~ of the design space-heating hot water loop heating capacity~~:~~.

~~*a. For systems complying with Section 140.4(a)3Aii and Section 140.4(a)3B shall not be greater than 50%.*~~

~~*b. For systems complying with Section 140.4(a)3Aiii:*~~

~~*I. In climate zone 16, shall not be greater than 5%,*~~

~~*II. In climate zone 11, shall not be greater than 10%,*~~

~~*III. In climate zones 1, 2, 4, 12, and 14, shall not be greater than 15%,*~~

~~*IV. In climate zones 5, shall not be greater than 20%,*~~

~~v. In climate zones 3, shall not be greater than 25%,~~

~~vi. In climate zones 13, shall not be greater than 30%,~~

~~vii. In climate zones 6 through 10 and 15, shall not be greater than 50%.~~

~~Supplemental heating shall be an electric resistance boiler with a capacity of not greater than 50% of the design hot water loop heating capacity~~.

D. **Indoor fans**. Indoor fans used to comply with the requirements of Section 140.4(a)3Ai, or 140.4(a)3Aii, ~~*or 140.4(a)3B,*~~ shall have ~~an energy consumption~~a maximum fan power of ~~at design airflow of not greater than~~ 0.35 W/cfm at design airflow, shall have not less than three speeds, and shall turn off when there is no demand for heating or cooling in the space. At 66 percent air flow the power draw shall be no more than 51 percent of the fan power at full fan speed, and at 33 percent air flow the power draw shall be no more than 12 percent of the fan power at full fan speed.

E. **DOAS**. DOAS used to comply with the requirements of Section 140.4(a)3Ai, or 140.4(a)3Aii~~, *or 140.4(a)3B,*~~ shall comply with Section 140.4(p), ~~shall~~ be equipped with a heat recovery system in compliance with Section 140.4(q), and ~~shall~~ have a maximum fan ~~energy consumption~~power ~~at design airflow~~ of 0.77 W/cfm at design airflow. *DOAS units that provide active* ~~*H*~~*h*eating ~~*and*~~*or* cooling ~~*for DOAS*~~ shall meet one of the following requirements:

i. For hydronic heating or cooling:

a. DOAS heating coils shall be hydronic heating coils utilizing the AWHP space-heating hot water loop.

b. DOAS cooling coils shall be hydronic cooling coils utilizing space-cooling chilled water loop.

ii. Other heating or cooling shall be provided by a heat pump. Electric resistance heating shall not be used.

~~iii. If heating coils on the DOAS are included, they shall be hydronic heating coils utilizing the AWHP space-heating hot water loop. If cooling coils are included on the DOAS, they shall be hydronic cooling coils utilizing space-cooling chilled water.~~

~~**EXCEPTION to Section 140.4(a)3E:** If an AWHP space-heating hot water loop is not included in the design, or space-cooling chilled water is not included in the design, DOAS heating and cooling shall be supplied by heat pump coils.~~

F. ~~***Hydronic Recirculated Air Heating System.*** *Hydronic*~~ *Parallel fan-powered boxes used to comply with Section 140.4(a)3Aiii shall use* ~~*R*~~recirculated ~~*Air Heating Systems used to comply with the requirements of Section 140.4(a)3Aiii shall be parallel fan-powered boxes, or single zone systems that use only recirculated air from the*~~ zone or plenums~~*as supply*~~ air ~~*when*~~ in heating mode. ~~*The systems shall use hydronic coils supplied by the AWHP space-heating hot water*~~

~~*loop.*~~Fans shall cycle on only when there is a demand for heating and shall have a *maximum* fan power ~~*not greater*~~*of* ~~*than*~~ 0.3 W/cfm *at design airflow*. ~~*Systems*~~*Terminal units* providing ventilation air shall be set to ~~*their*~~*no greater than the* minimum ~~*position*~~*ventilation rate* when ~~*there is a demand*~~*the zone is in deadband or in* ~~*for*~~ heating *mode*.

~~*G. A space-conditioning system determined by the Executive Director to use no more energy than the systems specified in Section 140.4(a)3.*~~

[Skipping Section 140.4(b) through Exception 7 to Section 140.4(e)1]

Exception 8 to Section 140.4(e)1: Systems complying with Sections 140.4(a)3Ai, *or* 140.4(a)3Aii~~, *or 140.4(a)3B*~~.

[Skipping TABLE 140.4-E through Section 141.0(b)2C]

SUBCHAPTER 6
NONRESIDENTIAL, AND HOTEL/MOTEL OCCUPANCIES—ADDITIONS, ALTERATIONS, AND REPAIRS

Table 141.0-E-1 – NEW OR REPLACEMENT SINGLE ZONE AIR CONDITIONER OR HEAT PUMP REQUIREMENT

Building Type	CZ 1	CZ 2	CZ 3	CZ 4	CZ 5	CZ 6	CZ 7	CZ 8	CZ 9	CZ 10	CZ 11	CZ 12	CZ 13	CZ 14	CZ 15	CZ 16
Retail and grocery	NR	~~SZHP1 or SZAC1~~NR	SZHP or SZAC1	SZHP or SZAC1	SZHP or SZAC1	SZHP or SZAC1	SZHP or SZAC1	SZHP or SZAC1	SZHP or SZAC1	SZHP or SZAC1	SZHP or SZAC1	SZHP or SZAC1	SZHP or SZAC1	~~SZHP1 or SZAC1~~NR	SZHP or SZAC*1*~~2~~	NR
School	SZHP or SZAC*1*~~2~~	SZHP or SZAC*1*~~2~~	SZHP or SZAC*1*~~2~~	SZHP or SZAC*1*~~2~~	SZHP or SZAC1	SZHP or SZAC1	SZHP or SZAC*1*~~2~~	SZHP or SZAC1	SZHP or SZAC*1*~~2~~	SZHP or SZAC*1*~~2~~	SZHP or SZAC*1*~~2~~	SZHP or SZAC*1*~~2~~	SZHP or SZAC*1*~~2~~	SZHP or SZAC*1*~~2~~	SZHP or SZAC*1*~~2~~	NR
Office, financial institution	NR	~~SZHP1or SZAC1~~NR	SZHP or SZAC1	SZHP or SZAC1	SZHP or SZAC1	SZHP or SZAC1	SZHP or SZAC1	SZHP or SZAC1	SZHP or SZAC1	SZHP or SZAC1	SZHP or SZAC*1*~~2~~	SZHP or SZAC1	SZHP or SZAC1	~~SZHP1 or SZAC1~~NR	SZHP or SZAC*1*~~2~~	NR
Library	SZHP or SZAC1	~~SZHP1 or SZAC1~~NR	SZHP or SZAC1	SZHP or SZAC1	SZHP or SZAC1	SZHP or SZAC1	SZHP or SZAC1	SZHP or SZAC*1*~~2~~	SZHP or SZAC*1*~~2~~	SZHP or SZAC*1*~~2~~	SZHP or SZAC*1*~~2~~	SZHP or SZAC*1*~~2~~	SZHP or SZAC*1*~~2~~	SZHP or SZAC*1*~~2~~	SZHP or SZAC*1*~~2~~	NR

Footnotes to Table 141.0-E-~~0~~1

- SZHP – Single Zone Heat Pump *+ Economizer in accordance with Section 140.4(e)*
- ~~*SZAC – Single Zone Air Conditioner with furnace, or Dual Fuel Heat Pump*~~
- ~~*SZAC1 – Single Zone Air Conditioner with furnace + Economizer, or Dual Fuel Heat Pump + Economizer*~~
- SZAC*1*~~2~~ – Single Zone Air Conditioner with furnace + ~~*Economizer +*~~Variable Speed Fan *+ Economizer in accordance with Section 140.4(e)*, or Dual Fuel Heat Pump + ~~*Economizer +*~~Variable Speed Fan ~~Demand Controlled Ventilation~~*+ Economizer in accordance with Section 140.4(e)*
- ~~*SZAC3 – Single Zone Air Conditioner with furnace + Economizer + Variable Frequency Drive*~~
- ~~SZHP1 – Single Zone Heat Pump + Economizer~~
- NR – No Requirement

[Skipping Exception to Section 141.0(b)2Cii through Section 141.1]

SUBCHAPTER 8
SINGLE-FAMILY RESIDENTIAL BUILDINGS - PERFORMANCE AND PRESCRIPTIVE COMPLIANCE APPROACHES

[Skipping Section 150.0 through Section 150.1(a)]

SECTION 150.1 – PERFORMANCE AND PRESCRIPTIVE COMPLIANCE APPROACHES FOR SINGLE-FAMILY RESIDENTIAL BUILDINGS

(b) **Performance approach~~standards.~~** A building complies with the performance approach~~standards~~ if the energy consumption calculated for the proposed design building is no greater than the energy budget calculated for the standard design building using Commission-certified compliance software as specified by Section 10-109(c) and Section 10-116~~the Alternative Calculation Methods Approval Manual~~.

1. ~~**Newly constructed buildings.**~~**Energy budget.** The e~~E~~nergy b~~B~~udget ~~for newly constructed buildings~~ is expressed in terms of ~~the Energy Design Ratings, which are based on~~ S~~s~~ource E~~e~~nergy, and Long-Term System Cost (LSC).~~time-dependent valuation (TDV) energy.~~

   A. **Long-term System Cost (LSC)**-The LSC energy budget is determined by applying the mandatory and prescriptive requirements of the standard design to the proposed design building and has two components, the Efficiency LSC and the Total LSC.

      i. The Efficiency LSC energy is the sum of the LSC energy for space-conditioning, water heating, ~~*and*~~ mechanical ventilation*, and the self-utilization credit*.

      ii. The Total LSC energy is the sum of the Efficiency LSC energy and LSC energy from the photovoltaic system, *battery* energy storage systems (*B*ESS), lighting, demand flexibility, and other plug loads.

[Skipping Section 150.1(b)1B through Section 150.2]

SUBCHAPTER 10
MULTIFAMILY BUILDINGS—MANDATORY REQUIREMENTS

[Skipping Section 160.0 through Section 160.3(b)5Lii]

L. **System airflow rate and fan efficacy.** Space-conditioning systems that utilize forced air ducts to supply cooling to an individual dwelling unit shall:

iii. **Zonally controlled central forced air systems.** Zonally controlled central forced air cooling systems shall be capable of simultaneously delivering, in every zonal control mode, an airflow from the dwelling, through the air handler fan and delivered to the dwelling, of greater than or equal to 350 cfm per ton of nominal cooling capacity, and operating at an air-handling unit fan efficacy of less than or equal to the maximum W/cfm specified in Subsection a or b below. The airflow rate and fan efficacy requirements in this section shall be confirmed by field verification and diagnostic testing in accordance with the applicable procedures specified in Reference Residential Appendix RA3.3.

a. 0.45 W/cfm for gas furnace air-handling units.

b. 0.58 W/cfm for air-handling units that are not gas furnaces.

Exception 1 to Section 160.3(b)5Liii: Multispeed or variable speed compressor systems, ~~*or single speed compressor systems that utilize the performance compliance approach, shall*~~ *with* ~~*that incorporate*~~ *controls that vary fan speed subject to* ~~*with respect to*~~ *the number of zones,* ~~*calling*~~ *as certified by the installer, may* demonstrate compliance with the airflow (cfm/ton) and fan efficacy (watt/cfm) requirements of Section 160.3(b)5Liii by operating the system at maximum compressor capacity and system fan speed with all zones calling for conditioning~~*, rather than in every zonal control mode*~~.

Exception 2 to Section 160.3(b)5Liii: Gas furnace air-handling units manufactured prior to July 3, 2019 shall comply with a fan efficacy value less than or equal to 0.58 w/cfm as confirmed by field verification and diagnostic testing in accordance with the procedures given in Reference Residential Appendix RA3.3.

[Skipping Section 160.3(b)5Liv through Section 160.8]

SUBCHAPTER 11
MULTIFAMILY BUILDINGS - PERFORMANCE AND PRESCRIPTIVE COMPLIANCE APPROACHES

[Skipping Section 170.0]

SECTION 170.1 – PERFORMANCE APPROACH

A building complies with the performance approach if the energy ~~budget calculated for the proposed design building under Subsection (b) is no greater than the energy budget calculated for the standard design building under Subsection (a).~~ consumption calculated for the proposed design building is no greater than the energy budget calculated for the standard design building using Commission-certified compliance software as specified by Sections 10-109, 10-116 and the Alternative Calculation Method Reference Manual.

(a) **Energy budget ~~for the standard design building~~.** The Energy budget is expressed in terms of Long-Term System Cost (LSC) and Source Energy:

1. **Long-term System Cost (LSC).** The LSC energy budget is determined by applying the mandatory and prescriptive requirements of the standard design to the proposed design building and has two components, the Efficiency LSC and the Total LSC.
   A. The Efficiency LSC energy is the sum of the LSC energy for space-conditioning, water heating, ~~*and*~~ mechanical ventilation*, lighting and the self-utilization credit*.
   B. The Total LSC energy is the sum of the Efficiency LSC energy and LSC energy from the photovoltaic system, *battery* energy storage systems (*B*ESS), *and* ~~*lighting,*~~ demand flexibility~~*, plug loads, and covered process loads*~~.

[Skipping Section 170.1(a)2 through 170.2]

Joint Appendix JA8

Appendix JA8 – Qualification Requirements for High Luminous Efficacy Light Sources

[Skipping Section JA8.1 through Section JA8.4.6]

JA8.5 Marking

Light sources meeting the requirements of this Appendix shall be marked with "JA8-2025" to indicate their compliance with the criteria of this Appendix. *Light sources* ~~*Lamps*~~ that have passed ~~*the Elevated Temperature Life Test specified* in the ENERGY STAR Product Specification~~in ~~*Section 8.9* Lamps Version 2.1, or that have passed the rated life test specified in the ENERGY STAR Product Specification for Luminaires Version 2.1,~~ *the "time to failure " portion of the federal test procedures specified in Appendix BB to Subpart B of 10 CFR 430 (2018) with a rated life of 15,000 hours or greater when the ambient temperature for the test is maintained at 45 °C ± 5°C tolerance or at a manufacturer-selected temperature higher than 45 °C with ± 5°C tolerance* shall instead be marked with "JA8-2025-E" to indicate that they comply with this Appendix and may additionally be installed in elevated temperature applications such as enclosed fixtures. Light sources that do not comply with this Appendix shall not be marked with "JA8-2025" or "JA8-2025-E".

[Skipping Section JA8.6 through Section JA8.8]

~~JA8.9 Elevated Temperature Life Test (ETLT) Method~~

JA8.9.1 ~~Methods of Measurement and Reference Documents~~

~~A. IES LM-65, Approved Method: Life Testing of Single-Based Fluorescent Lamps~~

~~B. IES LM-79, Optical and Electrical Measurements of Solid State Lighting Products~~

JA8.9.2 ~~Test Setup~~

~~A. Test Setup and Instrumentation: Test setup and instrumentation for the lamp operation portions of this procedure shall be in accordance with the requirements of IES LM-79, unless otherwise noted in this document. In the event of conflicting requirements, the requirements of Section JA8.9 shall take precedence.~~

~~B. Lamp Seasoning and Pre-burning: LED lamps shall not be seasoned.~~

~~C. Input Power for Photometric Measurements: During the stabilization and photometric testing of products intended to be powered from AC mains, the product shall be connected to a voltage source that meets the requirements in IES LM-79 as applicable.~~

~~D. Input Power During Aging: During the product on-time between photometric measurement points, products intended to be powered from AC mains shall be connected to a voltage source that meets the requirements in IES LM-79. When selecting a power supply for use with integrated lamps, it is necessary to apply the appropriate power factor when specifying the volt-amp capacity of the power supply.~~

~~E. Ambient Temperature: Ambient temperature shall be as stated in the specification for the duration of the test. Temperature measurements shall be taken using a temperature measurement device consisting of a thermocouple junction or resistance temperature detector (RTD) probe combined with an appropriate meter. Thermocouples or probes shall be chosen to ensure accuracy within the test temperature range.~~

~~F. Power Meter: Power meters shall be capable of measuring to the appropriate requirements of IES LM-79 as applicable.~~

~~G. Environmental Conditions: The test environment shall be clean and free from large amounts of dust and moisture. During the lamps' ON cycle, drafts shall be minimized.~~

~~H. Sample Selection: Samples shall be representative of the manufacturer's typical product. The samples shall be clean and thoroughly inspected before testing. Any flaws or inconsistencies in the lamp samples shall be noted.~~

JA8.9.3 ~~Test Conduct~~

~~A. Photometric Measurements~~

~~1. For integrating sphere measurements, refer to IES LM-79 as applicable.~~

~~2. For non-integrating sphere measurements, the photodetector used for photometric measurements shall be a silicon detector corrected to closely fit the Commission Internationale de l'Eclairage (CIE) spectral luminous efficiency curve (V λ). For integrating sphere measurements, see IES LM-79 as applicable.~~

~~B. Lamp Monitoring~~

~~*The lamps shall be monitored for continuous operation in accordance with IES LM-65, section 6.5.*~~

~~*C. Operating Cycle*~~

~~*For LED lamps the operation of lamps shall be continuous.*~~

Joint Appendix JA13

Appendix JA13 – Qualification Requirements for Heat Pump Water Heater Demand Management Systems

[Skipping JA 13.1 through JA 13.3.1]

JA13.3.2 Minimum Performance Requirements

The installed System shall meet or exceed the following performance specifications:

(a) **Efficiency**: meet all requirements of ~~*version 7.0*~~*8.0 of* the Northwest Energy Efficiency Alliance (NEEA) Advanced Water Heater Specification Tier 3 or higher~~, excluding Appendix A~~.

[Skipping JA 13.3.2(b) through JA 13.4]