

Proposal Summary



2022 California Energy Code (Title 24, Part 6)

Multifamily Solar Thermal (Solar Water Heating)

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Introduction

The document summarizes proposed revisions to the California Energy Code (Title 24, Part 6) that will be discussed during a utility-sponsored stakeholder meeting on October 3, 2019. The Statewide Utility Codes and Standards Enhancement (CASE) Team is seeking input and feedback. To provide your comments, email info@title24stakeholders.com by October 17, 2019.

Measure Description

This submeasure will investigate ways to expand solar thermal water heating requirements for new high-rise and low-rise multifamily buildings for individual/central gas water heaters and individual/central heat pump water heaters. The Statewide CASE Team will evaluate energy savings and cost-effectiveness of the following solar water heating measures.

- Increase the prescriptive solar savings fraction (SSF) requirement of solar thermal water heating for central gas water heating systems.
- Add requirement of solar thermal water heating for individual gas water heaters, if feasible and cost-effective.
- Develop prescriptive solar water heating (SWH) requirement for central heat pump water heaters. Evaluate option for installing an energy-equivalent PV system if solar water heating is not cost effective for this system type.
- Evaluate an option to combine solar thermal system with individual heat pump water heater, if feasible and cost effective.
- Revise performance approach to include an hourly model of solar thermal energy production, for improved accuracy.



Draft Code Language

The Energy Commission plans to create a multifamily chapter for inclusion in 2022 Title 24, Part 6. The multifamily chapter will draw from the appropriate sections of the 2019 residential and nonresidential Standards. The Statewide CASE Team uses the language and section numbering from residential and nonresidential Standards and Reference Appendices to show the proposed changes below. Changes to the 2019 documents are marked with red underlining (new language) and ~~strikethroughs~~ (deletions). These changes are specific to multifamily buildings and not indicative of changes that apply to residential or nonresidential buildings.

Standards

SECTION 140.5 – PRESCRIPTIVE REQUIREMENTS FOR SERVICE WATER HEATING SYSTEMS

- (a) **Nonresidential Occupancies.** A service water heating system installed in a nonresidential building complies with this section if it complies with the applicable requirements of Sections 110.1, 110.3 and 120.3.
- (b) **High-Rise Residential and Hotel/Motel Occupancies.** A service water heating system installed in a high-rise residential or hotel/motel building complies with this section if it meets the requirements of Section 150.1(c)8.

EXCEPTION to Section 140.5(b): Buildings of ~~eight~~TBD¹ stories or greater are not required to comply with the solar fraction requirement of Section 150.1(c)8Biii.

SECTION 150.1, Section 8(c)Biii:

iii. A solar water-heating system meeting the installation criteria specified in Reference Residential Appendix RA4 and with a minimum solar savings fraction ~~of either a or b below~~

a. ~~A minimum solar savings fraction of 0.20 TBD* in Climate Zones 1 through 9 16 or a minimum solar savings fraction of 0.35 in Climate Zones 10 through 16 or~~

b. ~~A minimum solar savings fraction of 0.15 in Climate Zones 1 through 9 or a minimum solar savings fraction of 0.30 in Climate Zones 10 through 16. In addition, a drain water heat recovery system that is field verified as specified in the Reference Appendix RA3.6.9.~~

B. For systems serving multiple dwelling units, a central water-heating system that includes the following components shall be installed:

- i. Gas or propane system, or a central heat pump water heating system, that meet the minimum efficiency requirements of Sections 110.1 and 110.3; and

¹ TBD indicates “to be determined”: value depends on results of the study. For instance, the solar fraction exception could be increased to 10 or more stories; the required solar savings fraction could be increased to 0.5.

- ii. A water heating recirculation loop system that meets the requirements of Sections 110.3(c)2 and 110.3(c)5, includes two or more separate recirculation loops serving separate dwelling units, and is capable of automatically controlling the recirculation pump operation based on measurement of hot water demand and hot water return temperature

EXCEPTION to Section 150.1(c)8CBii: Buildings with eight or fewer dwelling units may use a single recirculation loop.

Reference Appendices

No significant changes are expected. The required inputs for compliance forms are not expected to change.

ACM Reference Manual (Performance Approach)

A new procedure to estimate annual energy production of solar water heating systems using EnergyPlus may be included, to improve accuracy in modeling. This should have minimal effect on the users of compliance software.