

# Proposal Summary

## Fenestration improvements

Updated: Tuesday, September 23, 2025

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## Measure Description

This proposal recommends updates to two issues related to windows in nonresidential buildings: New Construction U-Factors in Climate Zones 1 and 16 for fixed and operable windows and Alteration U-Factors for fixed and operable window replacements.

These proposals do not apply to Glazed Doors or to Storefront, Curtainwall, or Skylight fenestration.

**NEW CONSTRUCTION U-FACTORS.** Improved U-factors for nonresidential fixed and operable windows in Climate Zones 1 and 16.

**ALTERATION U-FACTORS.** Updated prescriptive U-factors and RSHGC in Table 141.0-A for alterations, in line with requirements for new construction when certain thresholds are met.

Table 1 summarizes the scope of the proposed code change.

**Table 1: Scope of Proposed Code Change**

An "X" indicates the proposed code change is relevant.

<b>Building Type(s)</b>		single family	<b>Construction Type(s)</b>	X	new construction
		multifamily		X	additions
	X	nonresidential		X	alterations
<b>Type of Change</b>		mandatory	<b>Updates to Compliance Software</b>		no updates
	X	prescriptive		X	update existing feature
		performance		X	add new feature
<b>Third Party Verification</b>		no changes to third party verification			
	X	update existing verification requirements			

	x	add new verification requirements
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## Justification for Proposed Change

**NEW CONSTRUCTION U-FACTORS.** The last update to Title 24 fenestration U-factors occurred in 2022, when the requirement for fixed fenestration in Climate Zones 9, and 11-15 was changed from 0.36 to 0.34. Prior to this (at least as far back as the 2013 code), the requirement in all climate zones for fixed fenestration has been 0.36 and for operable fenestration has been 0.46.

The International Energy Conservation Code (IECC) proposal CE44-24 for the IECC Commercial code made slight improvements to U-factors for fixed and operable fenestration in IECC Climate Zones 1, and 4 through 8. The changes in IECC Climate Zones 4B (Mixed Dry) and 4C (Mixed Marine) only impact Climate Zones 1 and 16 in California (IECC 4B overlaps CA CZ 16, and IECC 4C overlaps CA CZ 1), leading the Statewide CASE Team to recommend U-factor improvements for fixed and operable windows in Climate Zones 1 and 16. This proposal would maintain code equivalency with the IECC, while cost-effectively maximizing energy savings for Californians.

The existing Title 24 U-factors in CA Climate Zones 2-15 are better than the required fenestration U-factors in the IECC and therefore did not require upgrades.

**ALTERATION U-FACTORS.** The required U-factors for fenestration alterations have been unchanged since at least the 2013 code. The current requirements are U-0.58 in Climate Zones 3 and 5, and U-0.47 in all other climate zones, applicable to both fixed and operable windows.

The Statewide CASE Team proposes to update these values by requiring that replacement windows (where a certain threshold number of windows are being replaced) comply with the U-factor values for new construction. For fixed windows in California Climate Zones 2-8 and 10, that would be U-0.36; in all other climate zones the requirement would be U-0.34. Similarly, the requirement for operable windows would be U-0.39 in Climate Zone 1, U-0.43 in Climate Zone 16, and U-0.46 in all other climate zones.

IECC proposal CE141-24 provided clarity to the requirements for replacement windows by including a table in the chapter for existing buildings. The proposal was not a technical change; IECC has long required replacement windows to comply with the prescriptive U-factor and SHGC requirements for new construction. At the request of the CEC the Statewide CASE Team evaluated the possibility of using the IECC fenestration

replacement requirements but found that their original proposal as noted above would provide significantly more energy savings.

## Data Needs / Information Requests

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The Statewide CASE Team is seeking the following information to inform the code change proposal. Data may be provided anonymously. To participate or provide information, please email Maureen Guttman, [mguttman@energy-solution.com](mailto:mguttman@energy-solution.com) directly and copy [info@title24stakeholders.com](mailto:info@title24stakeholders.com).

- First Costs – Incremental costs for the new construction and alteration window U-factor improvements proposed.
- Market Readiness – The Statewide CASE Team is interested in any available data on the rate of window replacements in existing nonresidential buildings. Specifically, we are looking for information on projects where multiple windows are replaced at one time (an entire floor, an entire façade, etc.).

## Draft Code Language

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### 1.1 Guide to Marked Up Language

The proposed changes to the Standards and Reference Appendices are provided below. Changes to the 2025 documents are marked with [blue underlining](#) (new language) and [strikethroughs](#) (deletions).

### 1.2 Title 24, Part 1

There are no proposed changes to Title 24, Part 1.

### 1.3 Title 24, Part 6

**TABLE 140.3-B PRESCRIPTIVE ENVELOPE CRITERIA FOR NONRESIDENTIAL BUILDINGS (INCLUDING RELOCATABLE PUBLIC SCHOOL BUILDINGS WHERE MANUFACTURER CERTIFIES USE ONLY IN SPECIFIC CLIMATE ZONE, NOT INCLUDING HIGH-RISE RESIDENTIAL BUILDINGS AND GUEST ROOMS OF HOTEL/MOTEL BUILDINGS)**

[illegible]

## SECTION 141.0(b) Alterations.

**2. Prescriptive approach.** The altered components of the envelope, or space conditioning, lighting, electrical power distribution and water heating systems, and any newly installed equipment serving the alteration, shall meet the applicable requirements of Sections 110.0 through 110.9, Sections 120.0 through 120.6, and Sections 120.9 through 130.5.

A. Fenestration alterations other than repair and those subject to Section 141.0(b)2 shall meet the requirements below:

i. Window alterations replacing fifty percent or more of the windows on any single façade or for any single floor shall meet the requirements of Table 140.3-B..

ii. All other vertical ~~Vertical~~ fenestration alterations shall meet the requirements in Table 141.0-A.

ii. Added vertical fenestration shall meet the requirements of TABLE 140.3-B, C, or D.

iii. All altered or newly installed skylights shall meet the requirements of TABLE 140.3-B, C or D.

**Exception 1 to Section 141.0(b)2Aii:** In an alteration, where 150 square feet or less of the entire building's vertical fenestration is replaced, RSHGC and VT requirements of TABLE 141.0-A shall not apply.

**Exception 2 to Section 141.0(b)2Aiii:** In an alteration, where 50 square feet or less of vertical fenestration is added, RSHGC and VT requirements of TABLE 140.3-B, C or D shall not apply.

**Exception 3 to Section 141.0(b)2Aiviii:** In an alteration, where 50 square feet or less of skylight is added, SHGC and VT requirements of TABLE 140.3-B, C or D shall not apply.

- **NOTE:** Glass replaced in an existing sash and frame, or sashes replaced in an existing frame are considered repairs. In these cases, Section 141.0(c) requires that the replacement be at least equivalent to the original in performance.

*Table 141.0-A Altered Vertical Fenestration Maximum U-Factor and Maximum RSHGC*

Requirement	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
<b>U-factor</b>	0.47	0.47	0.58	0.47	0.58	0.47	0.47	0.47	0.47	0.47	0.47	0.47	0.47	0.47	0.47	0.47
<b>RSHGC</b>	0.41	0.31	0.41	0.31	0.41	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.41

NOTE: The required values for VT are located in Tables 140.3-B, C, and D for all Climate Zones.

## **1.4 Reference Appendices**

There are no proposed changes to the reference appendices.