

New or Replacement Windows (Fenestration) In Existing Homes

Permit Guide - 2016 Energy Code

Permit DATE: _____ Permit NUMBER: _____ Climate Zone: 2 3 4 12

Permit ADDRESS: _____ City, Zip: _____

REPLACEMENT-ONLY or MINOR INCREASE OF TOTAL AREA: Answer both questions

Are you adding more than 75 ft² of fenestration area?

Fenestration includes windows, sliding glass doors, skylights, and any doors with ≥ 50% glass

- Yes. Use SUBSTANTIAL INCREASE OF TOTAL AREA section below.
- No. Install only windows that meet the applicable requirements in the table below. (lower values are better)

Are you adding more than 16 ft² of skylight area?

- Yes. Use SUBSTANTIAL INCREASE OF TOTAL AREA section below.
- No. Install only skylights that meet the applicable requirements in the table below. (lower values are better)

	Replacement Windows (and added windows up to 75 sq ft.)	Replacement Skylights (and added skylights up to 16 sq ft.)
Maximum U-Factor*	0.40	0.55
Maximum SHGC*	0.35	0.30

SUBSTANTIAL INCREASE OF TOTAL AREA:

Calculate the fenestration area as a percent of conditioned floor area of home:

$$\frac{(\text{Existing total fenestration area: } \underline{\hspace{2cm}} \text{ sqft}) + (\text{Added fenestration area: } \underline{\hspace{2cm}} \text{ sqft})}{(\text{conditioned floor area of home: } \underline{\hspace{2cm}} \text{ sqft})} \times 100 = \underline{\hspace{2cm}} \%$$

Is the total fenestration greater than 20% of conditioned floor area?

- No. Install only windows that meet the applicable requirements in the table below. (lower values are better)
- Yes. This is a major change to the energy use of the house. The Performance Compliance Approach must be used**.

Repeat the calculation above using just west facing existing and added fenestration areas. Is the west-facing fenestration greater than 5% of conditioned floor area? (Does not apply to Climate Zone 3)

- No. Install only windows that meet the applicable requirements in the table below. (lower values are better)
- Yes. This is a major change to the energy use of the house. The Performance Compliance Approach must be used**.

Maximum U-Factor*	0.32
Maximum SHGC*	0.25
SHGC does not apply in CZ 3	

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Building Inspector:

Each new or replacement fenestration product must have a factory-installed National Fenestration Rating Council (NFRC) Label attached at time of final inspection. The installed U-Factor and SHGC values must be equal to or lower than the selected table values on page 1 (value may be area weighted average).

Reference the CF1R-ENV-01-E Fenestration Installation Certificate, and – if applicable - the CF2R-ENV-02-E Area Weighted Average Calculation Worksheet.

Required Forms:

- 2016-CF1R-ALT-05-E: Certificate of Compliance, Prescriptive Residential Alterations (sections A, D, E, F, and Declaration Statement)
- 2016-CF2R-ENV-01-E: Certificate of Installation, Fenestration Installation
- Optional: 2016-CF1R-ENV-02-E: Area Weighted Average Calculation Worksheet

An Example of the NFRC Label You Should Look for and the Numbers You May See

U-factor U-factor ratings generally fall between 0.20 and 1.20. The lower the U-factor, the better a product is at keeping heat in. U-factor is particularly important during the winter heating season. This label displays U-factor in U.S. units. Labels on products sold in markets outside the United States may display U-factor in metric units.

 National Fenestration Rating Council® CERTIFIED	World's Best Window Co. Series "2000" Casement Vinyl Clad Wood Frame Double Glazing • Argon Fill • Low E ABC-X-1-00001-00001
ENERGY PERFORMANCE RATINGS	
U-Factor (U.S. / I-P) 0.35	Solar Heat Gain Coefficient 0.32
ADDITIONAL PERFORMANCE RATINGS	
Visible Transmittance 0.51	Air Leakage (U.S. / I-P) 0.2
Manufacturer stipulates that these ratings conform to applicable NFRC procedures for determining whole product performance. NFRC ratings are determined for a fixed set of environmental conditions and a specific product size. NFRC does not recommend any product and does not warrant the suitability of any product for any specific use. Consult manufacturer's literature for other product performance information. www.nfrc.org	

Solar Heat Gain Coefficient (SHGC) is expressed as a number between 0 and 1. The lower the SHGC, the better a product is at blocking unwanted heat gain. Blocking solar heat gain is particularly important during the summer cooling season.

Visible Transmittance (VT) is expressed as a number between 0 and 1. The higher the VT, the higher the potential for daylighting.

Air Leakage (AL) rates typically fall in a range between 0.1 and 0.3. The lower the AL, the better a product is at keeping air out. AL is an optional rating, and manufacturers may choose not to include it on their labels. This label displays AL in U.S. units. Labels on products sold in markets outside the United States may display AL in metric units.

For more information:

- Visit www.energy.ca.gov/title24/2016standards
- Visit the NFRC website: www.NFRC.org
- Contact the energy code hotline at (800) 772-3300 or email: title24@energy.state.ca.us
- Contact the BayREN Codes & Standards Program by email: codes@bayren.org

* U-Factor and SHGC are performance ratings available from the manufacturer and shown on a temporary NFRC label attached to new windows (see above). Note: Lower values are better. **Do not remove label until building inspector verifies numbers.** Weight-averaging by area is allowed. See 2016-CF1R-ENV-02-E.

** Some alterations to existing homes, especially adding windows, will substantially increase energy consumption. Additional conservation measures are likely required to offset this. The performance approach is a way to determine what measures will cost-effectively offset the additional use. Contact an energy consultant at www.cabec.org