

Fenestration

Package D requirements for glazing area were modified. Prior to 2005, the maximum glazing area that was permitted depended on climate zone. Along the coast, fenestration area was limited to 20% of the conditioned floor area (CFA), where in other California climate zones the limit was 16% of the CFA.

With the 2005 update, the Standards were changed to have a consistent fenestration area of 20% of the CFA in all California climate zones and west-facing glass to a maximum of 5% of the floor area in climate zones 2, 4, and 7-15. West-facing fenestration area includes skylights tilted to the west or tilted in any direction when the pitch is less than 1:12. See §151(f) 3 C and in Section 3.2.3 of this chapter.

With the 2005 Standards, there is no longer a credit for reducing window area below the prescriptive limit of 20%. This approach is similar to the Standards for nonresidential buildings that have been in force since 1992. This change does not mean that the Energy Commission believes that reducing fenestration area will not save energy, but that window area is really more of an amenity, like floor area itself, and should not be treated as a conservation measure.

One of the significant impacts of making fenestration area neutral is that the standards become significantly more stringent for multifamily buildings and for other low-rise buildings that typically have small glass area. Multifamily buildings typically have fenestration areas in the range of 12% to 15% of the floor area. Prior to the 2005 update, when the performance method was used, a considerable credit was available based on the difference between the fenestration area in the building and the fenestration area allowed by the 2001 standards (either 16% or 20%). This credit allowed trade-offs and therefore resulted in lesser energy efficiency features installed in buildings.

The U-factors (default and required) of fenestration products were modified with the 2005 update, but these changes do not represent a change in stringency. The National Fenestration Rating Council (NFRC) rating procedure for windows was changed, resulting in the same window having a slightly lower U-factor. This change brings the requirements in line with the test results. A window that complied with the 2001 standards will still comply with the 2005 standards; both the criteria and the rated value are slightly lower.

Insulation Installation Quality

Another significant change with the 2005 update is that credit is offered for improving the quality of insulation installation. This credit, which is available only with the performance approach, requires third-party verification. The quality of the installation has a significant impact on thermal performance. Three problems can be created by improper installation: when insulation is not in contact with the air barrier(s), an air space can be created that in effect “short circuits” the effectiveness of the insulation; gaps or voids in the insulation can lead to significant portions of the wall, roof or floor being essentially not insulated; and compression of the insulation, usually around pipes or other building services