

Title 24 Energy Compliance for Residential Additions

What You Need to Know

Definition: An addition is an increase in *both* conditioned floor area, *and* conditioned volume. Garage conversions, and the like, are considered "additions;" whereas putting a floor in a tall interior space is not.

The information given here assumes that the owner/client wishes to be most cost-effective in minimizing overall design and construction costs. The information also holds true for those who desire maximum design flexibility. The only situation in which this information may be off target is the situation of a designer who wishes to absolutely minimize the energy compliance *documentation* cost in spite of all other *construction* costs that path may later entail (in which case the designer's standard of care would be open to question).

The Title 24 Standards divide additions into three categories: 1) Up to 100 square feet; 2) Up to 1,000 square feet; and 3) Larger than 1,000 square feet. To further complicate matters, there are four possible methods of showing compliance: i) Filling out a form; ii) Package D prescriptive; iii) Existing-plus-addition; and iv) Addition alone performance [a method that is almost never cost-effective].

- 1) **Up to 100 square feet:** Provided the addition's glazing area does not exceed 50 sqft, then compliance is a simple matter of filling out a form (method i). Many building departments have some sort of streamlined compliance procedure for these additions, so you may not need to hire an energy analyst. Even if you do, the documentation cost should be nominal. **If the addition's glazing area exceeds 50 sqft, then see category 3 below.**
- 2) **Up to 1,000 square feet:** With the new 2005 Standards, prescriptive (Package D) compliance may regain some popularity. To use Package D, your *net glazing percentage* must be 20% or less. Your *net glazing percentage* is [area of glazing in the addition] less [area of existing glazing removed where the addition is attached] divided by [floor area of the addition]. In **Climate Zones 3, 5, 6 and 7** (Mendocino coast southward, including the inner San Francisco Bay area), Package D's requirements are particularly lenient (method ii). However, Climate Zone 7 has an additional limit on West facing glass area. In other Climate Zones, it is now difficult to tell whether or not Package D will be cost-effective. Generally speaking, the existing-plus-addition performance method will be better for additions to older homes, while—for homes built since 1992—Package D might be better in a few cases. The only way to tell for sure is to test the existing-plus-addition performance method, and compare its results with the requirements of Package D. **If your addition is not in the Climate Zones mentioned above, or has greater than 20% net glazing, then the recommended energy compliance path is the same as that described in the last category below.**
- 3) **Larger than 1,000 square feet:** In nearly all cases (with exceptions noted below), the "existing-plus-addition" method of energy compliance is by far the most cost-effective (method iii), even when the cost of gathering additional information is considered. Other—less appropriate—methods may needlessly add onerous and costly construction requirements. The reason is that existing-plus-addition is the only method that takes full credit for all of the improvements to the existing house (e.g. covering up old walls/floors/ceilings with an addition that is better insulated, removing old windows, replacing mechanical equipment, etc.). This method also has other possible benefits: A whole range of highly cost-effective improvements to the existing house are now available for trade-off against new construction requirements. Also, a whole-house heating load calculation is included when you use this method (most building departments will require this when heating equipment will be replaced, or when they doubt the adequacy of existing heating units). Cases where the addition alone performance method (method iv), or Package D (method ii) may be used are: a) When the "addition" is detached from the house; or b) When the owner is not concerned with minimizing construction cost, nor with design flexibility, and Package D's requirements are satisfactory.

