Public Review Draft

Proposed Addendum am to Standard 189.1-2011

Standard for the Design of High-Performance Green Buildings

Except Low-Rise Residential Buildings

First Public Review (May 2013)
(Draft Shows Proposed Changes to Current Standard)

This draft has been recommended for public review by the responsible project committee. To submit a comment on this proposed standard, go to the ASHRAE website at www.ashrae.org/standards-research--technology/public-review-drafts and access the online comment database. The draft is subject to modification until it is approved for publication by the Board of Directors and ANSI. Until this time, the current edition of the standard (as modified by any published addenda on the ASHRAE website) remains in effect. The current edition of any standard may be purchased from the ASHRAE Online Store at www.ashrae.org/bookstore or by calling 404-636-8400 or 1-800-727-4723 (for orders in the U.S. or Canada).

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(This foreword is not part of this standard. It is merely informative and does not contain requirements necessary for conformance to the standard. It has not been processed according to the ANSI requirements for a standard and may contain material that has not been subject to public review or a consensus process. Unresolved objectors on informative material are not offered the right to appeal at ASHRAE or ANSI.)

Foreword

A recent Pacific Northwest National Laboratory (PNNL) analysis showed that energy consumption of a medium office building increased with increasing Window-to-wall ratio (WWR). The analysis used Radiance to perform daylighting simulations that were ported to EnergyPlus to complete the energy simulation. The analysis considered blinds, window VT, six climate zones, exterior obstructions, and interior furniture. Figure 1 summarizes one of the main results from the analysis.

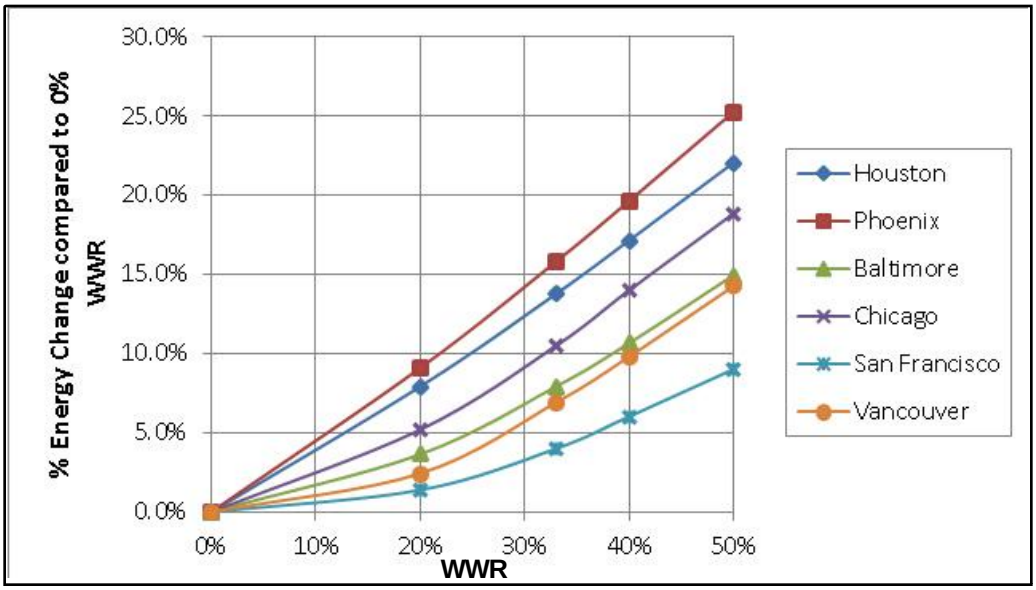

Figure 1: Medium Office - percent change in total building energy consumption with WWR (baseline = 0% WWR, no windows)

Modern buildings with low lighting power densities and occupancy sensors cannot save as much energy from windows and daylighting as was previously predicted. Also some simplified daylight simulation tools (split flux method) tend to overestimate how deeply one could daylight from windows. Even though energy consumption increases with increased window area, windows are valued by building occupants for view and marking the passage of time. Thus this proposal recommends that the prescriptive compliance option allow a moderate amount of windows for the view they provide and other amenities, but limit the WWR to 30% in small and medium sized buildings for the purpose of reducing energy use. The 25,000 ft^2 threshold accounts for 38% of commercial building stock.[1] The performance path is always available for buildings that wish to use higher WWRs while attempting to consume the same amount of energy as a building with 30% WWR.

[1] DOE – U.S. Department of Energy. 2011. "2011 Buildings Energy Data Book." at http://buildingsdatabook.eren.doe.gov/

Note: In this addendum, changes to the current standard are indicated in the text by underlining (for additions) and ~~strikethrough~~ (for deletions) unless the instructions specifically mention some other means of indicating the changes. Only these changes are open for review and comment at this time. Additional material is provided for context only and is not open for comment except as it relates to the proposed substantive changes.

Addendum am to 189.1-201

Modify Section 3.2 Definitions as follows:

***gross conditioned floor area**:* see ANSI/ASHRAE/IES Standard 90.1

Modify Section 7.4.2.4 as follows:

7.4.2.4. Vertical Fenestration Area. The total *vertical fenestration* area shall be less than 30% of the *gross wall area* for buildings smaller than 25,000 ft^2 (2500 m^2) of *gross conditioned floor area* and shall be less than 40% of the *gross wall area* for all other buildings. This requirement supersedes the requirement in Section 5.5.4.2.1 of ANSI/ASHRAE/IES Standard 90.1.