

# Can Codes Require Windows?

## Should Windows Be a Part of Health and Safety Codes?

by Helen Sanders and Mark Silverberg

**T**he ASHRAE Standard 90.1 committee is already well into the development process for the 2019 version of this building energy standard. The current focus of discussion regarding fenestration is around lowering the prescriptive values for U-factor and solar heat gain coefficient, though thankfully not on reducing the minimum allowable window-to-wall ratio—at least not yet. That said, the energy savings available due to the transmission of daylight through windows, which can be used to offset the energy used to power electric lighting, is diminishing. This is because of the rapid, widespread adoption of low-energy LED lighting, and as a result, the window-to-wall ratio discussion will likely restart soon.

### WHY DAYLIGHT MATTERS

There is an overwhelming body of evidence that daylighting and quality views not only add to the productivity of occupants in buildings, but also to their physical and mental health<sup>1</sup>. Exposure to daylight at the right times and in the right amount has a wide-ranging impact on human health, from supporting the production of vitamin D, to regulating our internal systems that control mood, behavior and physical health. Disruption of the body's natural circadian rhythms by eliminating or restricting access to daylight, or exposure to light at the wrong times of

day, has been linked to increased risk of heart attacks, obesity, diabetes and mental health disorders<sup>2-5</sup>. It has been proven that exposure to daylight and views positively impacts mood, stress and mental health<sup>1-6</sup>.

With the U.S. population now spending 90 percent of its time inside buildings, it's not a large leap to conclude that our built environment can have a significant impact—positive or negative—on occupant health and well-being, depending on design.

### FINDING A BALANCE

Energy codes and standards are focused solely on improving energy efficiency in buildings, and it's not within their scope to consider human health and well-being. But we do have building codes that mandate requirements to ensure human health and safety. The International Building Code (IBC) mandates structural safety requirements, fire safety requirements and healthy ventilation requirements, among others, so why not daylight and views? The scope of the IBC states a purpose “to establish minimum requirements to provide a reasonable level of safety, public health and general welfare through structural strength, means of egress facilities, stability, sanitation, adequate light and ventilation, energy conservation, and safety to life and property from fire and other hazards

attributed to the built environment ...”

Based on IBC's stated purpose, one would expect that public health issues associated with access to daylight and views—or lack thereof—should be addressed within the scope of this code. Currently, there is no language in the IBC related to this public health issue, but that doesn't mean it must remain this way. In fact, a code official from North Dakota submitted a proposal for the next IBC revision to require that all classrooms and daycare rooms be daylight. This presents us with a tremendous opportunity to engage key stakeholders and help drive the dialog toward the creation of a health and safety requirement for daylight and views in our building codes. Unfortunately, the proposal failed at the first stage of the code development process in April, but the dialog will continue.

We encourage all companies in the glazing industry that are active in the code arenas to advocate participation in the next stage—the public comment period<sup>7</sup>—through industry associations and code consultants, and to raise awareness in the broader construction community. ■

### the authors



**Helen Sanders** is in strategic business development for Technoform North America Inc.



**Mark Silverberg** is president of the company in Twinsburg, Ohio.

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1. See for example: Productivity & Health Benefits. The Business Case for Green Building, World Green Building Council, 2013. <http://www.worldgbc.org/news-media/building-business-case-health-wellbeing-and-productivity-green-offices>
- 2-5. [http://www.who.int/whr/2001/media\\_centre/press\\_release/en/](http://www.who.int/whr/2001/media_centre/press_release/en/); <https://www.usnews.com/news/best-countries/articles/2016-09-14/the-10-most-depressed-countries>; <http://www.who.int/diabetes/global-report/en/>; <http://www.who.int/mediacentre/factsheets/fs355/en/>
6. The economics of Biophilia, Terrapin Bright Green LLC, 2012. <https://www.terrapinbrightgreen.com/report/economics-of-biophilia/>
7. Information on the code development process and public comment period at <https://www.iccsafe.org/>