GG263-14
202 (New), 202, 808.3.1, 808.3.1.2, 808.3, 808.3.1.1, 808.3.2

Proponent: Jack Bailey, One Lux Studio, representing International Association of Lighting Designers (jbailey@oneluxstudio.com)

Add new definition as follows:

DAYLIGHT ZONE. That portion of a building's interior floor area that is illuminated by natural light.

Delete without substitution:

~~**DAYLIT AREA.** That portion of a building's interior floor area that is regularly illuminated by natural light.~~

Revise as follows:

808.3 Daylit area of building spaces. In buildings not greater than two stories above grade, not less than 50 percent of the net floor area shall be located within a daylit area. In buildings three or more stories above grade, not less than 25 percent of the net floor area shall be located within a daylit area. Buildings required to have more than 25,000 square feet (2323 m^2) of daylit area shall comply with Section 808.3.2. All other buildings shall comply with either Section 808.3.1 or Section 808.3.2.

> **Exception:** For buildings not less than three stories above grade with obstructed exterior walls or shaded roofs, the required daylit area shall be modified in accordance with Equation 8-1.

Required daylit area ≥ 25% × TDP **(Equation 8-1)**

The total daylight potential (TDP) is a weighted average of the individual daylight potentials for each floor:

$TDP = \Sigma(DP_1 \times FA_1/TF) + (DP_2 \times FA_2/TF) +$ …

For floors with roof area immediately above:

$DP_{1,2} = 1 - [(OW_1/TW_1) \times (OR_1/TR_1)]$

For floors without roof area immediately above:

$DP_{1,2} = 1 - (OW_1/TW_1)$

$OW_{1,2}$ = The length of obstructed exterior wall for each floor. A wall shall be considered to be obstructed where the distance from the wall to any building or geological formation that would block access to daylight is less than the height from the top of the finished floor to the top of the building or geologic formation. ~~that does not face a public way or a yard or court complying with Section 1206 of the *International Building Code* or where the distance to any buildings, structures, or geological formations in front of the wall is less than two times the height of the buildings, structures, or geological formations.~~ For the purposes of this determination, the maximum allowed heights of buildings or structures on adjacent property under existing zoning regulations is permitted to be considered.

$TW_{1,2}$ = The total length of exterior wall for each floor.

$OR_{1,2}$ = The roof area immediately above each floor that is shaded during the peak sun angle on the summer solstice by permanent features of the building, or by permanent features of adjacent buildings or geologic formations.

$TR_{1,2}$ = The total roof area immediately above each floor.

$FA_{1, 2}$ = The *total floor area* of each
TF = The *total building floor area*.

Delete without substitution:

~~**808.3.1 Daylight prescriptive requirements.** Daylit areas shall comply with Section 808.3.1.1 or 808.3.1.2. For determining the total daylit area, any overlapping daylit areas shall be counted only once.~~

~~The total daylight area shall be the sum of the area of all sidelighting daylight zones and the area of all toplighting zones, except that sidelighting daylight zones shall not be included in the calculation of the area of toplighting daylight areas.~~

Revise as follows:

808.3.1 ~~808.3.1.1Sidelighting~~ Daylight prescriptive requirements. ~~The daylit area shall be illuminated by fenestration that complies with Table 808.3.1.1 and Figure 808.3.1.1(4). Where fenestration is located in a wall, the daylit area shall extend laterally to the nearest 56-inch-high (1422 mm) partition, or up to 1.0 times the height from the floor to the top of fenestration facing within 45 degrees (0.785 rad) of east or west or up to 1.5 times the height from the floor to the top of all other fenestration, whichever is less, and longitudinally from the edge of the fenestration to the nearest 56-inch-high (1422 mm) partition, or up to 2 feet (610 mm), whichever is less, as indicated in Figure 808.3.1.1(1). Where fenestration is located in a rooftop monitor, the daylit area shall extend laterally to the nearest 56-inch-high (1422 mm) partition, or up to 1.0 times the height from the floor to the bottom of the fenestration, whichever is less, and longitudinally from the edge of the fenestration to the nearest 56-inch-high (1422 mm) partition, or up to 0.25 times the height from the floor to the bottom of the fenestration, whichever is less, as indicated in Figures 808.3.1.1(2) and 808.3.1.1(3).~~

Daylit areas shall comply with the following:

1. Each daylit area shall be located within a toplight or sidelight daylight *zone*, determined in accordance with Section C405 of the International Energy Conservation Code.
2. The effective aperture of fenestration for the *daylight zone*, determined in accordance with Equation 8-2, shall comply with Table 808.3.1.
3. Overlapping *daylight zones* shall be counted only once.

$$EA = (AF \times VT)/DA \qquad \textbf{(Equation 8-2)}$$

where:

EA = Effective aperture.
AF = Area of fenestration.

VT = Visible transmittance of the fenestration.
DA = Daylit area.

TABLE 808.3.1 ~~808.3.1.1~~
MINIMUM EFFECTIVE APERTURE

SKY TYPE	MINIMUM EFFECTIVE APERTURE (percentage)		
	Sidelighting from fenestration in a wall ~~[see Figure 808.3.1.1(1)]~~	Sidelighting from rooftop monitor ~~[see Figures 808.3.1.1(2) and 808.3.1.1(3)]~~	Toplighting ~~(see Figure 808.3.1.2)~~
A[a]	~~10.0~~ 12.5	5.0	1.0
B[b]	~~12.0~~ 15.0	6.0	1.2
C[c]	~~16.0~~ 20.0	8.0	2.2

a. Sky Type A – more than 75 percent mean sunshine, in accordance with the NOAA Annual Mean Sunshine Percentage Table.
b. Sky Type B – 45 percent to 75 percent mean sunshine, in accordance with the NOAA Annual Mean Sunshine Percentage Table.
c. Sky Type C – less than 45 percent mean sunshine, in accordance with the NOAA Annual Mean Sunshine Percentage Table.

Delete without substitution:

~~**FIGURE 808.3.1.1(1)**~~
~~**DAYLIT AREA ADJACENT TO FENESTRATION IN A WALL**~~

~~**FIGURE 808.3.1.1(2)**~~
~~**DAYLIT AREA ADJACENT UNDER A ROOFTOP MONITOR**~~

~~**FIGURE 808.3.1.1(3)**~~
~~**DAYLIT AREA ADJACENT UNDER A ROOFTOP MONITOR**~~

~~**FIGURE 808.3.1.1(4)**~~
~~**SKY TYPES**~~

~~**808.3.1.2Toplighting. The** daylit area shall be illuminated by a roof fenestration assembly such as a skylight, sloped glazing or tubular daylighting device that complies with Table 808.3.1.1 and Figure 808.3.1.2. The daylit area extends laterally and longitudinally beyond the glazed opening of the roof fenestration assembly to the nearest 56-inch-high (1422 mm) partition, or up to 0.7 times the height from the floor to the bottom of the rough opening of the daylighting well, whichever is less, as indicated in Figure 808.3.1.2.~~

~~**FIGURE 808.3.1.2**~~
~~**DAYLIT AREA UNDER A SKYLIGHT**~~

Revise as follows:

808.3.2 Daylight performance ~~requirements~~ path. Each daylit area shall comply with the requirements of either Section 808.3.2.1 or 808.3.2.2. Daylight analysis shall be conducted in accordance with Section 808.3.2.3.

Reason: CE294 AMPC1/3 will add the daylight zone definitions and diagrams from the 2012 IgCC into the 2015 IECC. CE36 AS will require that daylight zones are indicated on floor plans submitted for permit to demonstrate compliance with the lighting controls requirements in the IECC 2015. Taken together, these two code change proposals mean that the IECC 2015 now requires a relatively robust and accurate set of daylight zone determinations for all projects, and there is no reason for the IgCC to retain a duplicate set of prescriptive daylighting requirements. There are several aspects to this proposal:

1. The term "daylit area" should no longer be a defined term in the IGCC since it is so close to the term "daylight zone" in the IECC. Furthermore, the term is only used in this section and has a generally understood meaning.

2. In Equation 8-1 the requirements for a wall or roof to be obstructed have been modified to match daylight zone terminology in CE294.
3. Minimum effective aperture values for fenestration in a wall have been increased by 25% in Table 808.3.1.1 because the depth of a daylight zone in CE294 is 1.0 times the window head height, compared to 1.0 (east-west) or 1.5 (north-south) times the window head height in the IgCC 2012. This increase in the minimum effective aperture will result in the same amount and type of fenestration being required for buildings complying with the 2015 IgCC as compared to the 2012 IgCC (on average).

Cost Impact: Will not increase the cost of construction

GG263-14 : 808.3 #2-BAILEY594