

ANSI/RESNET/ICC 301-2014 Addendum G-2018, Solid State Lighting Approved Date February 28-2018

Modify the following Sections:

3.2 Definitions

Qualifying Light Fixture Locations – For the purposes of rating, those light fixtures located in kitchens, dining rooms, living rooms, family rooms/dens, bathrooms, hallways, stairways, entrances, bedrooms, garage, utility rooms, home offices, and all outdoor fixtures mounted on a building or pole. This excludes plug-in lamps, closets, unfinished basements, and landscape lighting.

Qualifying Tier I Light Fixture – A light fixture located in a Qualifying Light Fixture Location that contains fluorescent lamps/light bulbs.

Qualifying Tier II Light Fixture – A light fixture located in a Qualifying Light Fixture Location that contains LED lamps/light bulbs with an average luminous efficacy equal to or greater than 50 lumens/watt; an integrated LED fixture; or an outdoor light fixture that is controlled by a photocell; or an indoor fixture controlled by a motion sensor.

4.2 Energy Rating Reference Home and Rated Home Configuration

4.2.2.5.2.2. Interior Lighting. Interior lighting annual energy use in the Rated Home shall be determined in accordance with Equation 4.2-2:

$$\begin{aligned} \text{kWh/y} &= 0.8 * [(4 - 3 * qFF_{IL}) / 3.7] * (455 + 0.8 * CFA) \\ &\quad + 0.2 * (455 + 0.8 * CFA) \end{aligned} \tag{Eq 4.2-2}$$

$$\begin{aligned} \text{kWh/y} &= \frac{0.9 / 0.925 * (455 + 0.8 * CFA)}{\frac{*(1 - FF_{II,IL} - FF_{I,IL}) + FF_{I,IL} * 15/60 + FF_{II,IL} * 15/90}{+ 0.1 * (455 + 0.8 * CFA)}} \end{aligned} \tag{Eq 4.2-2}$$

where:

CFA = Conditioned Floor Area

qFF_{IL} = The ratio of the interior Tier I Qualifying Light Fixtures to all interior light fixtures in Qualifying Light Fixture Locations.

$FF_{II,IL}$ = The ratio of the interior Tier II Qualifying Light Fixtures to all interior light fixtures in Qualifying Light Fixture Locations.

For rating purposes, the Rated Home shall not have qFF_{IL} less than 0.10 (10%).¹⁷

For the purpose of adjusting the annual interior lighting energy consumption for calculating the rating, EUL_{LA} shall be adjusted by ΔEUL_{IL} , which shall be calculated as

the annual interior lighting energy use derived by the procedures in this section minus the annual interior lighting energy use derived for the Energy Rating Reference Home in Section 4.2.2.5.1, converted to MBtu/y, where $\text{MBtu/y} = (\text{kWh/y})/293$.

For interior lighting, internal gains in the Rated Home shall be modified by 100% of the interior lighting $\Delta\text{EUL}_{\text{IL}}$ converted to Btu/day as follows: $\Delta\text{EUL}_{\text{IL}} * 10^6 / 365$.

4.2.2.5.2.3. Exterior Lighting. Exterior lighting annual energy use in the Rated Home shall be determined in accordance with Equation 4.2-3:

$$\text{kWh/y} = \frac{(100 + 0.05 * \text{CFA}) * [(1 - \text{FFI}_{\text{EL}} - \text{FFII}_{\text{EL}}) + 0.2515/60 * (100 + 0.05 * \text{CFA}) * \text{FFI}_{\text{EL}} + 15/90 * (100 + 0.05 * \text{CFA}) * \text{FFII}_{\text{EL}}]}{\quad} \quad (\text{Eq 4.2-3})$$

where

CFA = Conditioned Floor Area

FFI_{EL} = Fraction of exterior fixtures that are Tier I Qualifying Light Fixtures

FFII_{EL} = Fraction of exterior fixtures that are Tier II Qualifying Light Fixtures

For the purpose of adjusting the annual exterior lighting energy consumption for calculating the rating, EUL_{LA} shall be adjusted by $\Delta\text{EUL}_{\text{EL}}$, which shall be calculated as the annual exterior lighting energy use derived by the procedures in this section minus the annual exterior lighting energy use derived for the Energy Rating Reference Home in Section 4.2.2.5.1, converted to MBtu/y, where $\text{MBtu/y} = (\text{kWh/y})/293$.

Internal gains in the Rated Home shall not be modified as a result of reductions in exterior lighting energy use.

4.2.2.5.2.4. Garage Lighting. For Rated Homes with garages, garage annual lighting energy use in the Rated Home shall be determined in accordance with Equation 4.2-4:

$$\text{kWh} = 100 * [(1 - \text{FFI}_{\text{GL}} - \text{FFII}_{\text{GL}}) + 2515/60 * \text{FFI}_{\text{GL}} + 15/90 * \text{FFII}_{\text{GL}}] \quad (\text{Eq 4.2-4})$$

where:

FFI_{GL} = Fraction of garage fixtures that are Tier I Qualifying Light Fixtures

FFII_{GL} = Fraction of garage fixtures that are Tier II Qualifying Light Fixtures

For the purpose of adjusting the annual garage lighting energy consumption for calculating the rating, EUL_{LA} shall be adjusted by $\Delta\text{EUL}_{\text{GL}}$, which shall be calculated as the annual garage lighting energy use derived by the procedures in this section minus the annual garage lighting energy use derived for the Energy Rating Reference Home in Section 4.2.2.5.1, 100 kWh/y, converted to MBtu/y, where $\text{MBtu/y} = (\text{kWh/y})/293$.

Internal gains in the Rated Home shall not be modified as a result of reductions in garage lighting energy use.

¹⁷(Informative note) When $\text{qFFI}_{\text{EL}} = 0.10$ (10%), the above equation reduces to the standard interior lighting equation of: $\text{kWh/y} = 455 + 0.8 * \text{CFA}$.