RESNET
RESIDENTIAL ENERGY SERVICES NETWORK

Setting the **Standards** for
Home Energy Efficiency

Interpretation: Heat Gains external to Conditioned Space Volume

Designation: IR 301-2019-048 and 301-2022-003

Approved: July 9, 2023, by RESNET SDC 300

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Reference:

Standard ANSI/RESNET/ICC 301-2019
ANSI/RESNET/ICC 301-2022 & Addendum C
Page Number(s):
Sections(s): All references to Internal Gains, including definition
Table(s):
Relating to: "Internal Gains" and heat gains in spaces beyond CSV

Request from:

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Background Statement: *Provided by person requesting the interpretation.*

From Std 301-2019, -2022:

> ***Internal Gains*** – The heat gains within a home attributable to lights, people, hot water tanks, equipment, appliances, and Miscellaneous Energy Loads internal to the Conditioned Space Volume.

From Std 301-2014, for historical context:

> ***Internal Gains*** – The heat gains within a home attributable to lights, people, and miscellaneous equipment.

It is unclear whether the clause "internal to the Conditioned Space Volume" was intended to apply to the entire modern definition, or only to the Miscellaneous Energy Loads (MELs).

The latter is conceivable since gains from MELs are a function of conditioned floor area. Moreover, the Standard repeatedly lists explicit space types in which Internal Gains shall not be modified, implying that Internal Gains is **not defined solely** in terms of Conditioned Space Volume (CSV).

However, if we assume that "internal to the Conditioned Space Volume" applies to the entire definition for Internal Gains, then section 4.2.2.7.2 Energy Rating Rated Homes **conflicts with the definition**; see the 2nd paragraph, quoted here:

> **Internal Gains that occur within spaces that are part of the Rated Home shall be included in the simulation of the appropriate space, whether that is CSV or a space within that home's Unconditioned Space Volume**. Rated Home CSV always contains Internal Gains for interior lighting and Miscellaneous Energy Loads, and any Appliances located therein. Where Appliances are located in Unrated Heated Space, Unrated Conditioned Space or outdoor environment, their Internal Gains shall not be simulated.

Contrary to the assumed definition, this section specifies that Internal Gains **shall** be included for sources that are **not** in CSV. This contradiction has long precedent; see **RESNET Interpretation Request 301-2014-03**, which explicitly allowed the simulation of heat sources and sinks in unconditioned space.

The interpretation proposed below seeks to:

1. Dodge (for now) the issue of clarifying the Internal Gains definition.
2. Ensure that the local heat gains from devices in a space are simulated within that space – if that space directly exchanges heat with Conditioned Space Volume.

Common examples:

- Water heater in an unconditioned basement or crawl space
- Clothes washer, clothes dryer, or refrigerator in an unconditioned basement

Proposed Interpretation: *Provided by person requesting the interpretation.*

Where a non-garage space is simulated as part of a Rated Home, and has direct heat transfer with Conditioned Space Volume, and contains hot water tanks, equipment, or appliances,

Then, heat gains caused by those items shall be modeled for that space. The hourly value of those heat gains shall be determined using the same equations and Tables as provided for Internal Gains.

Notes:

1. Garage spaces are excluded because their exterior walls, etc. are not inspected as Minimum Rated Features, and because not all simulation tools simulate them.
2. MELs are excluded since they are calculated based on CFA, which is entirely within the Conditioned Space Volume.
3. Lights are excluded since Qualifying Light Fixture Locations excludes unconditioned basements and crawl spaces.

SDC Response:

Is the proposed interpretation correct? __X___ Yes _____ No

SDC Comments: