**Comment/Explanation\*: (Page 18; Section NEW; Objection; Technical)***Include your justification for your proposed change to the draft standard below.*
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**Comment #6**: Add new Section 6.2.3 to address gross carbon savings attributed to building thermal envelope insulation products. Accounting for the future carbon emission savings of materials that are responsible for reducing energy use and associated operational carbon emission from buildings is little different in concept or predictive reliability than accounting for future carbon storage of materials that sequester atmospheric carbon (i.e., Section 6.2.2). This comment may also be considered as an alternative to my Comment 5 (which recommends moving Section 6.2.2 for gross carbon storage into optional embodied carbon calculations of Section 6.3). Alternatively, both this proposed new Section 6.2.3 for gross carbon savings and existing Section 6.2.2 for gross carbon storage could both be moved into Section 6.3 for optional calculations. This comment, if accepted, also would require modification of my Comments 1 and 2 addressing limitations of the Purpose and Scope (addressing at least one of the major omissions or limitations of the standard). NOTE: This comment provides a means to properly connect embodied and operational carbon performance when the two are inextricably linked as is the case with building thermal envelope insulation products of all types (just as biogenic materials and storage of atmospheric carbon are inextricably linked). Adding this new section would address my objection to its omission.

**Proposed Change to the Draft Standard\***
*Use “strikethrough” and “underline” formatting to indicate all proposed changes. Changes must be shown with “hard-formatting” strikethrough and underline, not “track changes”.*

*Use a color other than red to indicate proposed changes to the draft.*\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**6.2.3 Gross Carbon Savings for Insulation Materials [NEW]**

Gross carbon savings for each *Minimum Assessed Product* that is used as building thermal envelope insulation shall be calculated as follows:

**GCSinsulation = [AESproduct x EEI x SL x DF]*heating* + [AESproduct x EEI x SL x DF]*cooling***

 Where:

GCSinsulation = gross carbon savings or avoided emissions attributable to the inclusion of insulation material(s) in the building thermal envelope

AESproduct = the annual energy savings or avoided energy use attributable to the inclusion of insulation product(s) in the building thermal envelope based on accepted methods of building energy modeling, rating, or estimated annual energy use

EEI = Energy emissions intensity of the proposed sources of energy to heat and cool the building including all sources of emissions in energy extraction, generation, processing, distribution, and delivery to the building site [TABLE OF DEFAULT VALUES TBD]

SL = Service life of insulation in years, not to exceed the lesser of the building’s service life or 60 years

DF = discount factor to account for present value of future emissions savings and to account for uncertainty in future changes affecting the EEI of a given energy source [TABLE OF DEFAULT VALUES TBD]

### 6.2.4 ~~6.2.3~~ Net *embodied carbon* for products

Net *embodied carbon* emissions for each *Minimum Assessed Product* shall be calculated as follows:

**NECproduct = GEMproduct – GCSproduct – GCSinsulation**

Where:

NECproduct = Net *embodied carbon* for a project-specific quantity of a *building product* for life-cycle stages A1-A3 (kg CO2e)

GECproduct = GWP for a project-specific quantity of a *building product* for life-cycle stages A1-A3 (kg CO2e)

GCSproduct = Carbon storage for a project-specific quantity of a *building product* for life-cycle stages A1-A3 (kg CO2)

GCSinsulation = gross carbon savings or avoided emissions attributable to the inclusion of insulation material(s) in the building thermal envelope.

…

## 6.4 Total Embodied Carbon Emissions Results

Total emissions results shall include the gross *embodied carbon* emissions, gross carbon storage, gross carbon savings, and net *embodied carbon* for the *assessed home*.

…

6.4.3 Total gross carbon savings for assessed home

The total carbon savings attributed to all building thermal envelope insulation products of the *assessed home* shall be calculated as follows:

**TGCSinsulation =** **∑GCSinsulation**

Where:

TGCSinsulation = total gross carbon savings attributed to all building thermal envelope insulation products of the entire *assessed home* (kg CO2e)

GCSinsulation = gross carbon savings or avoided emissions attributable to the inclusion of insulation material(s) in the building thermal envelope

### 6.4.4 ~~6.4.3~~ Total net *embodied carbon* emissions for *assessed home*

The total net *embodied carbon* emissions for the *assessed home* shall be calculated as follows:

**TNECA1-A3 = TGECA1-A3 – TGCSA1-A3 – TGCSinsulation**

Where:

TNECA1-A3 = Total net *embodied carbon* emissions for the entire *assessed home*

TGCEA1-A3 = total gross *embodied carbon* emissions for the entire *assessed home* (kg CO2e)

TGCSA1-A3 = total gross carbon storage for the entire *assessed home* (kg CO2)

TGCSinsulation = total gross carbon savings attributed to all building thermal envelope insulation products of the entire *assessed home* (kg CO2e)

…

## 8.1 Project Information

A report shall include the following project details for the *assessed home*:

8.1.1 Property location, including the city, state, zip code and either the street address or the Community Name and Plan Name for the assessment or any unique building identifier accepted by the jurisdiction having authority.

8.1.2 The *building* typology, including *Detached Dwelling*, *Attached Dwelling* or other (with explanation).

8.1.3 The name of the *Certified Rater* conducting the assessment and the name of the *Approved Rating Provider* under whose auspices the *Certified Rater* is certified.

 8.1.4 The date the assessment was completed.

8.1.5 The name and version number of the *Approved Software Rating Tool* used to perform the assessment.

*8.1.6 Projected Assessment* reports shall contain the following text in no less than 14-point font at the top of the first page of the report: “*Projected Assessment* Based on Plans Only.”

8.1.7 Acknowledgement that the assessment covers life cycle modules A1-A3

8.1.8 For reports that include any Gross and Net Carbon storage, the following wording shall accompany these results: “Note that carbon stored in LCA stages A1-A3 is not permanently sequestered and will be subject to some degree of carbon release at the end of the product and/or building’s life cycle which is not captured in this analysis.”

8.1.9 For reports that include Gross and Net Carbon savings of building thermal envelope insulation products, the following wording shall accompany these results: “Note that the carbon savings associated with inclusion of insulation materials in the building thermal envelope will be subject to some degree of uncertainty in actual realized future carbon savings.”