**Comment/Explanation\*:***Include your justification for your proposed change to the draft standard below.*  
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In the provided definition for *Embodied Carbon*, the first sentences claims the terms applies to the “life cycle” of building products, which implies the analysis covers all of life cycle stages. The term is then qualified to include selected life cycle stages only. This is not consistent with industry standards. Life cycle assessments are typically Cradle to Gate or Cradle to Grave. The document currently cherry picks information to be included and excluded from the analysis, which creates a misleading assessment and punishes some building products (not giving credit for operational carbon savings) while saving others (not including known future replacements). Further, by only including A1 through A3, the “carbon up-front costs”, we are benefiting the builders while possibly harming, over a very long term, the owners, operators, and inhabitant because we are excluding the benefits of a reduction in the operational carbon savings. The definition does not include “carbon storage” yet it is included in the assessment.

The primary role of thermal insulation is to increase the energy efficiency of a building that reduces the operational carbon for the lifetime of the building. When compared to a building with zero insulation, the energy saved, and the operational carbon saved is a direct result of its primary role of thermal insulation and should be included in the analysis. Though small, this savings should also benefit other products like Drywall, wood sheathing, and some claddings as they are included in the envelope thermal envelope. In the paper, The Effect of Varying Levels of Insulation on Total Carbon, [KPMB Architects](https://www.kpmb.com/wp-content/uploads/2021/04/KPMB-LAB_Embodied-Carbon-in-Insulation.pdf), May 2021 shows that most insulation has a carbon payback, in a Natural Gas Heating Scenario, of less than two years.

If a product improves or reduces the lifetime operational carbon either account for the carbon savings or do not account for those products in the up-front carbon estimate. If carbon saving is not accounted for, eliminate carbon storage as well. if this document can account for “carbon storage” it can account for operation carbon savings.

The document as currently drafted has other shortcomings in terms of assessing the life cycle impacts of buildings and designs. For example, products that have a projected service life that is less than the building service life will need to be replaced. Therefore, the analysis shall include the estimated quantity of replacements or a factor based on the number of times the equipment is expected. If not included, the carbon costs are then heaved upon the owner or operator of the building.

Overall, the accuracy of the document would be improved if it moved in the direction of whole building life cycle assessment and required the consideration of Cradle-to-Grave impacts for included materials.

**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.*\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

3 Definitions

Modified Embodied Carbon – The greenhouse gas emissions associated with the life cycle of limited building products. For the purposes of this Standard, Embodied Carbon refers to Cradle-to-Grave whole-building life cycle analysis with the *system boundary* exclusions. ~~only to emissions from life cycle stages A1-A3, covering extraction, transportation of raw materials and production of building products.~~