



SE 2050 Beta Database LCA Methodology Alignment

This document serves as a transparency document for the collection of data by the beta version of the SE 2050 Database (“database”) in alignment with whole building life cycle assessment (LCA) methodology in accordance with ASTM E2921: *Standard Practice for Minimum Criteria for Comparing Whole Building Life Cycle Assessments for Use with Building Codes, Standards, and Rating Systems* (ASTM E2921).

As part of the SE 2050 Commitment Initiative, the goal is to establish industry targets or benchmarks for global warming potential (GWP), also known as “embodied carbon” data. It is intended that these targets and/or benchmarks will be developed by an industry organization external to the Structural Engineering Institute (SEI)/ SE 2050 using the aggregated embodied carbon data collected by the database. Because the comparison of project-specific embodied carbon data against an industry target is a form of comparative LCA, such comparisons will follow the requirements for performing comparisons as defined in ASTM E2921.

The database collects embodied carbon data for structural materials only, but it is assumed that the data inputs are a subset of those developed from an ISO 14044 and ISO 14040-compliant whole-building LCA on a project-level basis.

The following sections describe how the data collection performed by the beta version of the database will meet the requirements outlined in ASTM E2921.

Project Descriptors

Users will provide data describing the project associated with the reported GWP data. Project descriptors include location, use type, height, number of stories, typical grid, and structural design criteria such as snow load, wind speed, seismic design category, and allowable soil bearing pressure. This will allow for data from projects of similar characteristics to be compared. Users will also be asked to include the construction year and the phase of the project at which the GWP was calculated.

Study Boundaries

Users will input GWP data associated only with structural components into the database. For the purpose of the beta version of the database, structural materials include footings and foundations, walls, columns, beams, slabs, and floor lateral system, and roof structures. Users will denote which structural components were included in the LCA by component category. This will allow for comparisons between functionally equivalent systems to be determined.

“Structural material” means a building material or component that supports gravity loads, lateral loads, or both, as the primary structure of the building or buildings including, but not limited to, the foundations, bearing walls, shear walls, columns, beams, slabs, and lateral bracing required

to maintain the stability of the final structure as a whole. Structural materials and components include both below grade and elevated above grade structures.

LCA Tool

Users will be asked to input the LCA tool used and the version number of that tool. This will allow for only GWP data from the same LCA tool and tool version to be compared.

Building Service Life

Users will be asked to enter the building service life as part of the project description. If this is not input by the user, a default building life of 75 years will be assumed as required per ASTM E2921.

Life Cycle Stages

Users inputting data into the database will be required to identify which life cycle stages were included in the LCA to allow for comparisons to be made between GWP data associated with the same life cycle boundary. Life cycle stages are defined in ISO 21930-17: *Sustainability in buildings and civil engineering works — Core rules for environmental product declarations of construction products and services*. For the beta version of the database, users will need to provide GWP data for stages A1-A3 at a minimum.

Users will need to indicate which of the following life cycle stages were included in the GWP measurement: A1-A3, A4-A5, B1-B5, C1-C4. Users should exclude impacts associated with module D data at this time. Users will not be asked to report each module separately for the beta version of the database.

Biogenic Carbon

Users will be required to indicate whether or not biogenic carbon sequestration was accounted for in the LCA results. For the beta version of the database, users will not be asked to report this number separately. Users should exclude biogenic carbon data at this time, if made possible by the LCA tool used to collect the GWP data.