

The EcoCalculator User's Guide

Background

The ATHENA® EcoCalculator for Assemblies provides instant LCA results for commonly used building structure and envelope assemblies. The results presented in the EcoCalculator are based on detailed assessments conducted using the ATHENA® Impact Estimator. Assemblies are complete systems, such as a wall or roof system, composed of individual products and/or pre-assembled building components. The EcoCalculator can be used for new construction projects, retrofits and major renovations, and for industrial, institutional, office or residential designs, either to compare specific assemblies or to assess all of the assemblies in a structure.

Please note that the EcoCalculator is presently in a Beta release state; while the results are reliable, certain assemblies highlighted in red are still being worked on, and others may be changed somewhat in the near future in terms of their specific definitions. As data for other assemblies becomes available, they will be added to the EcoCalculator.

After Downloading the EcoCalculator

To freely download and use the EcoCalculator, you will first need to pick the most appropriate climatic region and the relevant version for the height of your building. Both of these choices affect the specific assembly definitions. Detailed assembly definitions, assumptions and related information are provided in a separate Definitions and Assumptions document that can also be downloaded.

Once you have downloaded the appropriate version of the spreadsheet, the first step is to select an assembly sheet from one of the following categories:

- * Exterior walls
- * Roofs
- * Intermediate floors
- * Interior walls
- * Windows
- * Columns and beams

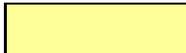
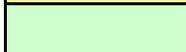
The number of assemblies in each category varies widely depending on the possible combinations of layers and materials. Within the exterior wall category, for example, there are eight basic wall types, seven

cladding types, three sheathing types, five insulation types and two interior finish options. The number of assemblies for exterior walls represents all viable combinations of these options, which means a lengthy list. To make that list easier to navigate it has been collapsed by basic type; collapsed lists can be expanded or closed using the + or – signs in the far left column of the spreadsheet.

Selecting Assemblies and Generating Building Scale Results

Assemblies are assessed in terms of a range of performance measures, including global warming potential, embodied primary energy (fossil fuel depletion), pollution to air and water and weighted resource use. The measures are explained in more detail in the Definitions and Assumptions document.

Each sheet contains the following key to the color coding in the cells.

	Yellow highlighted areas show required inputs
	Green highlighted areas show constant information
	Blue highlighted areas show outputs calculated by the spreadsheet
	Magenta highlighted areas show LCA totals

The user need only enter information in yellow colored cells in order to generate results.

Having selected a major assembly category, the user enters the total square footage accounted for by that category in the total building design (i.e., the square footage of roof, intermediate floors, etc.). If you then indicate the percentage of the total for that category accounted for by a specific group of assemblies, the assembly results will be automatically and instantly multiplied by the total square footage to give a building total. You can multiple assemblies within a category by indicating that each reflects a “percent of total”, in which case the score will indicate their combined environmental impact. There are no limits to the number of assemblies permitted, but the “percent of total” must add up to 100 within a category.

The smaller set of blue and magenta cells toward the top of the sheet keep a running total for the building as a whole.

Comparing to Averages

At the top of the column of green cells for each measure (e.g., for global warming potential), there is a cell that shows the average performance for that assembly category (e.g., for all low rise exterior walls in a warmer climate zone). This allows different assemblies to

be compared to the average at a glance, with results lower than the average preferred.