

# Athena Institute Releases New Version of the Acclaimed Impact Estimator for Buildings Software

Latest version features increased functionality and flexibility for design teams, new regions, and more indicators of a building's impact on the environment.

**OTTAWA, Canada — Dec. 8, 2008** — The Athena Sustainable Materials Institute and its collaborator in software development, Morrison Hershfield, today released the ATHENA<sup>®</sup> Impact Estimator for Buildings 4, the newest version of the acclaimed building assessment software. Numerous enhancements make the only North American software for the Life Cycle Assessment (LCA) of buildings an even more valuable tool. Key features of Version 4 are its greatly increased capacity to handle data flows, allowing inclusion of more impact measures, and enhanced functionality and flexibility for design teams in specifying building assembly components.

The Impact Estimator is a whole building, environmental life cycle based decision support tool for use by building designers, product specifiers and policy analysts at the conceptual design stage of a project, when key decisions are made about the shape and material make-up of a building's structure and envelope. The software makes comprehensive Life Cycle Inventory (LCI) information easily accessible to the building community, fostering more holistic and informed environmental decisions. The Impact Estimator is capable of simulating over 1,200 different assembly combinations and is applicable to about 95% of the building stock in North America.

The Impact Estimator is a decision support tool, not a scoring or rating system. The software indicates the environmental implications of different material mixes or design choices; users can then consider the trade-offs among the various environmental effects. The essence of the software's decision support role is its ability to compare up to five design scenarios across a set of selected environmental impact measures. Users may have two or more building designs in mind or they may start with a baseline design and then look at various ways of improving that design.

The Impact Estimator provides a cradle-to-grave LCI profile for a whole building over its expected life. The inventory results comprise a long list of flows from and to nature in the form of energy and raw material flows as well as emissions to air, water and land.

As the user inputs basic design information, a component bill of materials is determined, at which point the software applies the Institute's LCI databases for product extraction and manufacturing, transportation, on-site construction and ongoing maintenance and replacement. It also takes into account structural system demolition and transport to landfill where appropriate.

Depending upon user-supplied information, the software is able to perform a variety of calculations. For instance, when the project's location is selected from a list of supported regions, the software turns on appropriate electricity grids, transportation modes and distances and even product manufacturing technologies applicable to the product mix for the selected region. The choice of expected service life, type of building and, where relevant, whether the building is owner occupied or rental, turns on effects specific to the maintenance, repair and replacement for envelope materials such as roofing, cladding and window systems.

The Impact Estimator also allows the user the option to input the building's annual operating energy by fuel type. It is then able to calculate primary operating energy, including pre-combustion energy (the energy used to extract, refine and deliver energy) and the related emissions to air, water and land over the life cycle of the building. The software can subsequently compare and contrast the life cycle operating and embodied energy and other environmental effects of the building design, allowing the user to better understand the inherent trade-offs associated with adding more envelope materials (eg., insulation) with reductions in operating energy use.

## Highlights of Version 4.0

*The Impact Estimator's greatly increased functionality and flexibility allows design teams to:*

- **Define complete envelope systems.** Version 4 users can define complete envelope systems, save them, and then reuse them on any project.
- **Choose multiple envelope materials.** With the introduction of the Custom Wall Assembly, Version 4 users can now specify multiple structural (e.g., double stud wall) and envelope materials (e.g., two or more types of insulation plus other envelope components) for each individual wall that makes up a building.
- **Specify columns and beams.** In Version 4, you now specify the number of columns and the number of beams in a grid system. The grid can either be a complete column and beam system employing non-load bearing infill walls, or a modified grid using an exterior load bearing wall with interior columns and beams.
- **Select exterior and interior doors.** The Impact Estimator now includes wood, steel and aluminum exterior and interior doors, offering seven different configurations in all, both with and without glazing.
- **Choose new regions.** The Impact Estimator now supports New York City as a selectable location\*. Seattle and Los Angeles will be added in early 2009.
- **Export to Excel.** The output tables can now be directly exported to Excel or PDF instead of having to first export as a text file and then import into Excel.

*Other important features of Version 4:*

- **More impact measures.** The Impact Estimator generates both a detailed life cycle inventory for an entered design and a set of summary impact indicator reports in either graphical or tabular form. The software supports the following characterization measures based on mid-point impact estimation methods developed by the US EPA and reported in their Tool for the Reduction and Assessment of Chemical and Other Environmental Impacts (TRACI, 2007 version):

- primary energy
- acidification potential
- eutrophication potential
- global warming potential
- human health respiratory effects potential
- ozone depletion potential
- weighted raw resource use\*\*
- photochemical smog potential

- **Enhanced graphics.** The new Impact Estimator will feel familiar to current users, but its colour scheme, graphics, input boxes, text styles, and graphing have been enhanced. We have also added a new toolbar that provides users with a short list of commands to further improve functionality.
- **Updated LCI data.** A number of the underlying LCI profiles for common fuels, electricity and transportation energy have been updated using the more detailed USLCI Database Project data.
- **New flexible layering feature.** In preparation for future exporting of envelope data to energy simulation tools, a new feature has been added that allows for flexible layering of envelope components to meet the needs of energy simulation tools that may have different results depending on the specific envelope component layering order.

## Ordering information for the Impact Estimator Version 4

Distributed by Morrison Hershfield, the ATHENA<sup>®</sup> Impact Estimator for buildings is available for purchase through [www.morrisonhershfield.com](http://www.morrisonhershfield.com). Periodic updates to the software, its databases and supporting documentation will be provided online.

*For almost two decades, the Athena Sustainable Materials Institute has been helping architects, engineers and others to evaluate the environmental impacts of new and existing buildings. Through offices in Canada and the United States, the non-profit Athena Institute furthers the use and science of LCA through the development of groundbreaking software, comprehensive, comparable databases, and by working collaboratively with the international research community. [www.athenaSMI.org](http://www.athenaSMI.org)*

*Morrison Hershfield is an employee-owned firm providing integrated multidisciplinary engineering and related expertise. The firm delivers innovative, cost effective and technically sophisticated engineering projects. Morrison Hershfield is committed to developing sustainable solutions that help clients achieve their goals. Founded in 1946, Morrison Hershfield has systematically grown to over 700 staff with offices located throughout Canada and the United States. [www.morrisonhershfield.com](http://www.morrisonhershfield.com)*

For further information please contact Mr. Wayne Trusty, President of the Athena Institute, at 613.269.3795.

\*The Athena Institute would like to acknowledge the support of the New York State Energy Research and Development Authority (NYSERDA) in the development of LCI data for the New York City region.

\*\*The weights reflect a valuation of ecological carrying capacity effects.