

About Environmental Building Declarations

An Athena Institute Briefing Note

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The Athena Sustainable Materials Institute advocates for LCA performance measurement and transparent reporting for new construction. To support that cause, we are pioneering the idea of environmental building declarations. This document briefly explains EBDs.

An environmental building declaration (EBD) is a summary report of comprehensive environmental impact data for a building, declaring life cycle impacts according to a standardized format. This statement of performance is typically publicly disclosed, as with environmental product declarations (EPDs). The intent of environmental declarations is to present results as transparently and concisely as possible. We believe EBDs are the future for how green buildings are talked about and validated.

EBDs follow a standard

We strongly support greater adoption of standard methods for performing and reporting whole-building life cycle assessment (LCA). Our EBDs are compliant with EN 15978, a whole-building LCA standard that is intended to support decision-making and documentation around the assessment of environmental performance of buildings. Since one of the stated purposes of the standard is to guide “environmental declarations,” we have adopted the name “environmental building declaration” for this kind of report. While many people are using EN 15978 in their practice and reporting of whole-building LCA, the Athena Institute may be the first to formalize the documentation and apply the term “EBD.”

EN 15978 is the most advanced consensus standard for whole-building LCA. It includes provisions on how to calculate results for a uniform set of environmental indicators, and how to report the results transparently. The standard has filled a critical gap in building LCA practice and taken the guesswork out of what constitutes a good assessment. EN 15978 is now the most widely-used standard for building LCA studies and is referenced by various green building rating systems worldwide. Athena Institute EBDs aim to advance the emerging consensus on whole-building LCA practice.

An EBD is a summary LCA report

The scope of the LCA is a cradle-to-grave analysis of the material effects of structure plus envelope, and sometimes additional components like interior partition assemblies. If available, operating energy and water use are included. The time frame is the assumed life span of the building (we typically use 60 years).

An EBD reports cradle-to-grave life cycle assessment (LCA) data for the whole building. The results reflect the impact of resource extraction and materials manufacturing, transportation to the building site, construction, building operation, and building end-of-life activities. It includes typical LCA environmental indicators like global warming potential, eutrophication, acidification and smog potential. It also reports quantities of resource consumption (materials, energy and water) and waste creation.

Interpreting the data in an EBD

As with EPDs, the LCA data in an EBD may not yet be understandable or actionable to most viewers. It will take time to learn the language of LCA and to establish some context for interpreting results.

Many viewers will ask the question: are these “good” results? Note that EBDs (like EPDs) only report the facts and do not convey any sort of value judgement about the building’s sustainability. An EBD is not a certification and does not replace the comprehensiveness nor the judgement intrinsic to rating programs like LEED.

Currently, EBDs (and EPDs) are primarily most useful for awareness-building. These are advocacy vehicles for the value of measurement, transparency and accountability achievable through the use of LCA. They help educate on the need for performance data when making environmentally-conscious decisions and sustainability claims.

In addition, an EBD is useful internally to the design team and the owner, in the same way that an EPD is most useful to the product manufacturer (rather than the consumer), because creating these documents requires the incorporation of LCA into design or manufacturing practice. In other words, the real value is in the LCA process itself, and not so much in the reporting of the LCA results – and least for now. A team using LCA during building design will almost certainly end up with a building that has a lighter footprint than otherwise. The EBD reports the final result – it is the record, not the tool.

The data in an EBD does contain some lessons of potential value to future projects by any design team. For example, architects and engineers can look at the detailed results tables to better understand what is driving the building impacts and can use those lessons in guiding their own material and design decisions on other projects. They could also use the EBD results as a benchmark for their own next project (as a target to beat) – with limitations (see next paragraph), and perhaps will be inspired to produce an EBD themselves.

Be cautious about comparing EBDs

While tempting, EBDs are not comparable except in specific circumstances. High numbers for one building compared to low numbers in another seemingly similar building do not indicate one building is better than the other. It more likely indicates one building is in a very different climate and/or on a very different energy grid.

Other common factors disrupting comparability are boundary (did both buildings include the same scope of building elements), time frame (did they have the same study period), and LCA fundamentals like method, tool and underlying data. These factors are also the reason that EPDs for similar products are not easily comparable.

EBDs may become more comparable as standards and practices evolve, but comparability is not the point. The value of an EBD is in measurement, disclosure, and future application of lessons learned.

EBDs significantly evolve transparency for green buildings

A market call for transparency is putting pressure on manufacturers to measure and publish environmental performance data on their products. The result is a rapidly increasing number of environmental product declarations (EPDs). We believe it is time for similar disclosures to be made for entire buildings.

The sustainable design community is likely to progressively move past self-declaration of deemed performance based on prescriptive measures. Instead, an EBD represents quantified performance

assessment and standardized transparent reporting of results. EBDs are helping raise awareness about the value of LCA in bringing a data-driven perspective to sustainable design, and the need for performance accountability.

An additional purpose of environmental building declarations is to support standardization in the practice and reporting of whole-building life cycle assessment. Every published EBD helps advocate for consistent and transparent reporting of whole-building LCA results, something that is currently lacking in the practice of whole-building LCA.

Advancing Green Design with EBDs

EBDs help motivate the use of LCA in design practice, which advances sustainable design by providing data to guide decisions with measurably better outcomes for environmental impact. Compare that approach to the more common practice today, where prescriptive measures are put in place with a guess but no guarantee or accountability for performance outcome.

Perhaps most importantly, LCA addresses embodied impacts of construction. Embodied impacts are too often ignored in favor of operating impacts, although this will change as operating energy in buildings is reduced and as energy grids become less reliant on fossil fuel.

EBDs motivate effective sustainability decisions because actual performance data is available to the public. In other words, building owners and their designers are accountable for the claims they make about their building. The reported data is also useful for future design projects. Athena's EBDs include contribution analyses (identification of "hot spots"), which help to identify what decisions are really working and where to look for reductions next time.

EBDs can also help grow the pool of rigorous and standardized data on whole-building LCA. When large enough, this pool of collective data will provide performance benchmarks. At the Athena Institute, we are actively working on a database and protocol to enable true comparability and benchmarking for whole-building LCA.

Building owners who do EBDs are setting a great example for other owners and designers. Publishing an EBD is a voluntary action that expresses advocacy for data measurement and performance accountability in sustainable design, a step that goes far beyond the prescriptive checklists of green rating programs.

The Athena Institute has published six EBDs to date:

- *Brock Commons Tallwood House, University of British Columbia, Canada*
- *Ponderosa Commons Cedar House, University of British Columbia, Canada*
- *Design Building, University of Massachusetts at Amherst, USA*
- *Wood Innovation Design Centre, Prince George, BC, Canada*
- *Lafarge Innovation Hub, Edmonton, AB, Canada*
- *Enermodal office building, Kitchener, ON, Canada*

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