

Ecodesign Standard V1.0

ECODESIGN CERTIFICATION FOR CONSTRUCTION
AND RENOVATION PROJECTS

Marie Bellemare
TAÏGA INITIATIVE MONTREAL, CANADA

Taïga Initiative[∞]

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Inquiries regarding its use can be addressed to:

Taïga Initiative for the attention of: Marie Bellemare

438.345.0200

info@taigainitiative.com

Additional information is also available on the Taïga Initiative website at

www.taigainitiative.com

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Contents

- 1.0 Purpose, Structure and Intended Uses4**
 - 1.1 Purpose4
 - 1.2 Structure of this Standard4
 - 1.3 Intended users4
- 2.0 Scope, objectives and limits4**
 - 2.1 Scope.....4
 - 2.2 Objectives5
 - 2.3 Study boundaries and life cycle stages5
- 3.0 Terms and definitions9**
- 4.0 Referenced documents 10**
 - 4.1 Normative references 10
 - 4.2 Other reference 10
- 5.0 Requirements11**
 - 5.1 LCA calculation methodology 11
 - 5.2 Qualification and quantification requirements..... 11
 - 5.2.1 Qualification of the LCA report..... 11
 - 5.2.2 Quantification of impacts 11
- 6.0 Requirements assessment 12**
 - 6.1 Documentation review 12
 - 6.2 Verification findings 12
 - 6.2.1 Non-compliance report..... 12
 - 6.2.2 New information request..... 12
 - 6.2.3 Opportunity for improvement..... 12
- 7.0 Guidelines for Certification Mark Customers 12**
 - 7.1 Certification mark customers 12
 - 7.1.1 Conditions of use of the certification logo 12
 - 7.1.2 Application and fees..... 13
- 8.0 Certification and continuous compliance 13**
 - 8.1 Certification..... 13
 - 8.2 Continuous compliance 13

8.3	Notice of change	13
9.0	Labelling requirements	13
9.1	National requirements.....	13
9.2	Taïga Initiative requirements.....	13
9.2.1	Guidelines.....	13
10.0	Complaints and appeals	14
10.1	Complaints	14
ANNEX A:	ECODESIGN CERTIFICATION PROCEDURE.....	15

1.0 Purpose, Structure and Intended Uses

1.1 Purpose

This document presents the general rules of procedure of the Taïga Initiative applicable to the ecodesign certification program for projects of either construction or renovation of buildings or infrastructure.

The purpose of this certification is to assure consumers that the construction or renovation has been eco-designed on the basis of a scientific method and according to internationally recognized standard (ISO 14040-44).

The purpose of this Standard is to describe the requirements for making claims that construction or renovation is eco-designed.

1.2 Structure of this Standard

The Standard provides:

- Steps of the ecodesign certification process leading to the issuance of a certificate;
- Guidelines for users of the Taïga Initiative certification marks; and
- Provisions relating to all construction or renovation projects certified by Taïga Initiative.

1.3 Intended users

The intended users of this Standard are any type of business or organization as well as anyone interested in the purchase or rental of buildings or in public sector ecodesign efforts in infrastructure projects in meeting the requirements of this Standard. This Standard also provides guidelines for users of the Taïga Initiative certification mark.

Once the company or organization has selected the certification (s) it is interested in, it must then choose the project it wants to have certified.

Subsequently, the company or organization should contact Taïga Initiative in order to obtain a service contract (*Services Agreement* of Taïga Initiative) and begin the certification process.

2.0 Scope, objectives and limits

2.1 Scope

This Standard applies to all projects for the construction or renovation of buildings or infrastructure. This Standard allows building construction or renovation or infrastructure projects to be qualified and quantified for the purpose of making a ecodesign certification claim.

The claim for the ecodesign of the construction or renovation project should be based on the fact that the comparative life cycle assessment (LCA) according to ISO 14040-44 has been used as an ecodesign tool.

2.2 Objectives

The objectives of this Standard are:

1. To assess and provide third party ecodesign certification for projects whether construction or renovation of buildings or infrastructure.
2. Ensure that projects bearing the Taïga Initiative logo, meeting the requirements of this Standard, are credible in the ecodesign declaration.

2.3 Study boundaries and life cycle stages

As a first step, a first LCA must be carried out for a construction or a reference renovation. Secondly, a second LCA must be performed for a proposed construction or renovation, same number of floors planned, same orientation, function, gross area and operational energy consumption according to the final design. In addition, the baseline construction or renovation and the proposed construction or renovation must meet the minimum energy efficiency prerequisites of either ASHRAE 90.1-2007 or CNEB 2011.

The useful life of the benchmark constructions or renovations and the proposed constructions or renovations must be the same and at least 60 years to take full account of maintenance and replacement. In addition, the limit of the system must be a cradle-to-grave study. Tables 1 and 2, indicate the stages of the life cycle considered and not considered.

Table 1. Life cycle stages considered and not considered.

LIFE CYCLE STAGES CONSIDERED	DETAILS
Materials manufacturing	<ul style="list-style-type: none"> • Including: • Resource extraction and recycled content, • Transportation, • Production, • And everything applicable from the extraction of raw materials to the finished product for construction materials (cradle-to-gate).
Transportation of material to the construction or renovation site	
Transport of workers to the site	

LIFE CYCLE STAGES CONSIDERED	DETAILS
Construction or renovation / installation process	Energy use by construction equipment as well as production, transport and disposal of residues during construction.
Maintenance and replacement	Production and transport of replaced material and transport and disposal of replaced material.
Regional variation in construction energy consumption	Energy extraction, transport, distribution and combustion / use of energy.
Type of construction and expected lifespan	Expected lifespan of 60 years.
Deconstruction / Demolition	Energy used by demolition / deconstruction equipment.
Transport: Transport of demolition / deconstruction residues	

Table 2. Life cycle stages not considered.

LIFE CYCLE STAGES NOT CONSIDERED	DETAILS
Use of building or infrastructure	Material emissions during use of the building or infrastructure.
Repair and renovation	Production and transport of replaced material and transport and disposal of replaced material.
Treatment of construction / demolition residues	Energy used for handling and processing until the end of the waste.

The materials that must be included in the LCA studies (if applicable), both for the proposed construction or renovation and for the baseline construction or renovation, are shown in Table 3.

Table 3. Materials included and excluded in LCA studies.

THE MATERIALS THAT ARE CONSIDERED	MATERIALS THAT ARE NOT CONSIDERED
Footings and foundations	Excavation and other site improvements
Parking structures	
Basement walls	Building services (electricity, mechanics, fire detection, alarm systems, elevators, etc.).
Floor construction	Operation energy
Roof construction	Water exploitation
Exterior walls (from cladding to interior finishes)	Partitions / partitions*
Exterior windows	Interior doors*
Exterior doors	The finishes for the stairs*
Roof covering	Finishes for non-structural walls*
Roof openings	Finishes for floors*
Staircase constructions	Finishes for ceilings*

* Could be considered for a LCA of building, but optionally.

Moreover, the environmental impacts of the stages of the life cycle listed in Table 4 must be taken into account in the LCAs of the baseline construction or renovation and of the proposed construction or renovation.

Table 3. Potential impacts analyzed in the LCA.

MEASURED IMPACTS	UNITS
Global warming potential	Kg CO2 equivalent
Ozone Layer Depletion Potential	Kg CFC-11 equivalent
Acidification potential	Kg SO2 equivalent
Eutrophication potential	Kg N equivalent
Photochemical ozone formation potential (smog)	Kg NOx equivalent
Depletion of non-renewable energy resources	MJ

Also, the same life cycle assessment software tools and data sets to assess baseline construction or renovation and proposed construction or renovation, should be used.

It is strongly suggested to use the LCA software of Athena Impact Estimator (IEB), to calculate the inventory and assess the potential environmental impacts of a building or a house. Or Athena Institute's Pavement LCA software for paving projects. But all other recognized software will be accepted, such as: SimaPro, GaBi and OpenLCA.

The accepted environmental impact assessment methods:

- TRACI, v2.1: For North American construction projects, LCI data should be of North American origin and LCIA method should be TRACI.
- CML, v2001.
- ReCiPe, v1.07.

Data sets must conform to ISO 14044 in the report. As required by the ISO 14044 standard, the life LCAs will include the iterative phases of:

- Definition of objectives and LCA scope of application,
- Life cycle inventory,
- Life cycle impact assessment,
- And life cycle interpretation.

The databases used to study construction or renovation must comply with ISO 14044. Here are the most used databases:

- Encoinvent: database widely used by LCA experts.
- US LCI: database mainly for regional data in transport.
- Athena: the database comes by default with the impact assessment tool.

The project must be worked in ecodesign, that is to say by using the modeling of the potential impacts in the LCA software in an iterative way. For example, the Athena Sustainable Material Institute's EcoCalculator can also be used in some cases to get a quick overview of the footprint of a building or a house. The EcoCalculator is a tool equipped with predefined sets of buildings that have already been assessed in the IEB, to compare different design alternatives.

From the LCA results of the baseline construction or renovation, hot spots should be identified with a view to achieving a reduction in potential impacts in the design of the proposed construction or renovation. Continuous iterations of design may be necessary in order to find solutions that reduce impacts and are desirable for the design team.

To do this, a first meeting with the design team is necessary to explain the LCA approach, discuss impact reduction strategies, coordinate the procedure, define roles and responsibilities and determine a schedule for collecting data from mainly from the nomenclature of the project. A first preliminary LCA report must be delivered according to the preliminary plans and specifications. A final report must be made with the deliverable of the final plans and specifications, in order to integrate the final results of the LCA of the baseline construction or renovation and of the proposed construction or renovation.

The LCA of the proposed construction or renovation must demonstrate the achievement of the minimum 5% reduction in construction or renovation compared to a baseline construction or renovation in at least three of the six categories, one of which must be in

intrinsic carbon (global warming potential) and not be more than 5% above a reference construction or renovation. This report should be updated as necessary at later stages.

3.0 Terms and definitions

Specific terms and definitions are provided below.

Acidification Potential: Acidification refers to the processes that increase the acidity of soils which often manifests as acid rain.

Activity: Specific activity, grouping of activities or event of a company or organization carried out in a given or planned time.

- *Alternative design:* An LCA of design options could be part of the decision-making process when choosing the final construction design.
- *Alternative design:* An LCA of design options could be part of the decision-making process when choosing the final design for the renovation.
- *An archetype of a construction:* The reference construction could be a construction project, but not erected.
- *An archetype of a renovation:* the benchmark renovation could be a renovation project, but not built.
- *An existing construction:* The reference construction can be a built-up construction where sufficient documentation is made available to the project team to allow an accurate material assessment.

Certified project: Project for which a company or organization has demonstrated full compliance with the requirements of this Standard and for which a company or organization is authorized to apply the Taïga Initiative certification logo, as proof that the project complies with the conditions of the program.

Construction: According to the Larousse dictionary, *What is built, house, building or monument.*

Depletion of non-renewable energy resources: The main sources of non-renewable energy are fossil fuels such as coal, gas and oil.

Ecodesign: According to ISO 14006, it is the *integration of environmental aspects in product design and development with the objective of reducing negative environmental impacts throughout the life cycle of a product.*

Eutrophication potential: Environmental impact due to excessive discharges into water of phosphorus (P) and nitrogen (N).

- *Existing infrastructure:* The baseline renovation can be a constructed renovation where sufficient documentation is made available to the project team to allow an accurate material assessment.

Global warming potential: Environmental impact due to the accumulation of greenhouse gases such as Carbon dioxide CO₂, Methane (CH₄) and Nitrous oxide (N₂O).

Infrastructure: According to the Larousse dictionary, *Set of works constituting the foundation and installation on the ground of a construction or set of installations (for example roads, railways, airports) or Set of installations, equipment needed by a community.*

Life Cycle Assessment (LCA): LCA is an approach that takes into account potential environmental impacts in the design and development of a product, service or building. This approach takes into account these potential impacts throughout its life cycle: from resource extraction to end of life.

Nomenclature (BOM): List of components from a specific supplier and quantities of each necessary for the manufacture of a final product or for the conduct of a specific activity.

Ozone Depletion Potential: Environmental impact due to the release of depleting substances such as chlorofluorocarbons (CFCs).

Potential for smog formation: Photochemical smog results from the chemical reaction in the atmosphere between sunlight, nitrogen oxides (NOx) and volatile organic compounds.

Process: A process is a *set of interrelated or interactive activities that transforms entrants into exits*. (ISO 9000: 2005, definition 3.4.1)

Product: A product is defined as *any good or service. Services can represent tangible and intangible elements*. (ISO 14044: 2006, definition 3.9)

Proposed construction: The choice of the final design of a construction.

Proposed renovation: the choice of the final design of the renovation.

Reference construction: a reference construction is either:

Reference renovation: a reference infrastructure is either:

Renovation: According to the Larousse dictionary, *Action to refurbish by deep transformations*.

Standard: Carbon neutral standard from the Taïga Initiative.

4.0 Referenced documents

4.1 Normative references

The following normative documents contain provisions which, by reference in this text, constitute modalities of this Standard.

1. ISO 14040: 2006 "Environmental management - Life cycle assessment - Principles and framework. "
2. ISO 14044: 2006, "Environmental management - Life cycle assessment - Requirements and guidelines. "

4.2 Other reference

1. Athena Institute (March 2014) Athena Guide to Whole-Building LCA in Green Building Programs. Accessed March 13, 2021:
https://calculatelca.com/wp-content/uploads/2014/03/Athena_Guide_to_Whole-Building_LCA_in_Green_Building_Programs_March-2014.pdf
2. Athena Institute: Athena Pavement LCA is a free LCA-based software package that measures environmental impact of Canadian and US roadway designs. Accessed March 13, 2021:

<http://www.athenasmi.org/our-software-data/pavement-lca/>

3. ISO 14006: 2011, "Environmental management systems - Guidelines for incorporating eco-design. "
4. ISO 14020: 2000, "Environmental labels and declarations - General principles. "
5. ISO 14021: 2016, "Environmental labeling and declarations - Self-declared environmental claims (Type II labeling). "
6. ISO 14024: 2018 "Environmental labels and declarations - Issuance of the type I environmental label - Principles and procedures. "
7. ISO 9001: 2000, "Quality management systems - Requirements. "
8. ISO / IEC Guide 17065: 2012, "Conformity assessment - Requirements for bodies certifying products, processes and services. "
9. Larousse Dictionary "Dictionnaire Larousse":
<https://www.larousse.fr/dictionnaires/francais/>. Accessed March 19, 2021.

5.0 Requirements

This section of the Standard describes the compliance requirements for companies or organizations as applicable. See also the graphic representing the certification process in detail in *Annex A-Ecodesign Certification Procedure*.

5.1 LCA calculation methodology

The company or organization should provide a description of the construction or renovation project and demonstrate how the LCA calculations were performed in the report. In addition, he must explain which tools or means that have been used.

5.2 Qualification and quantification requirements

5.2.1 Qualification of the LCA report

The company or organization must provide a project LCA report based on ISO 14040-44 and as indicated in section 2.3.

5.2.2 Quantification of impacts

The company or organization must demonstrate that there has been a reduction in potential impacts according to the three possible levels of certification in ecodesign.

The first level, **bronze**, is awarded if the LCA demonstrates a 5% reduction in construction or renovation compared to a benchmark construction or renovation in at least three of the six categories, one of which must be the intrinsic carbon (global warming potential).

The second level, **Silver**, as above with at least 10% off.

The third level, **Gold**, is awarded if the LCA demonstrates a reduction of 20% in incorporated carbon and 10% in two other categories.

Levels one to three require that no category can increase by more than 5% in the building from the baseline construction or renovation.

6.0 Requirements assessment

6.1 Documentation review

For verification, the company or organization must submit all documents and data necessary for the Initiative. The verifier will review the submitted documents and assess the business or organization's compliance with the requirements of the Standard (see section 5.0 Requirements).

6.2 Verification findings

After the completion of the documentation review, the verifier may have three types of findings regarding the degree of compliance of the company or organization with the requirements of this Standard: non-compliance report, new request for information and opportunity for improvement.

6.2.1 Non-compliance report

A nonconformity report is defined as non-compliance with a requirement specified in this Standard. As the case may be, corrective or preventive action or actions must be taken before certification can be granted, within an established timeframe.

6.2.2 New information request

A new information request is for mandatory information that may be needed to determine compliance. As the case may be, corrective or preventive action or actions must be taken before certification can be granted, within an established timeframe.

6.2.3 Opportunity for improvement

An opportunity for improvement is defined as an opportunity to exceed minimum requirements. Certification does not depend on the realization of an improvement opportunity. For this reason, corrective or preventive action or actions are not necessary, but are suggested.

7.0 Guidelines for Certification Mark Customers

7.1 Certification mark customers

Customers of the certification mark are permitted to use the Taïga Initiative certification logo only as a certified claim of conformity, as defined in the *Annex B: Taïga Initiative — Brand & Identity Guideline* of the *Services Agreement*.

7.1.1 Conditions of use of the certification logo

Customers of the certification mark are not permitted to make any changes to the final product before it is sold, or to embellish or assign unsubstantiated environmental claims to the project or business.

7.1.2 Application and fees

These customers must obtain permission to use the Taïga Initiative certification logo by completing an application (*Logo Request Form (Annex C of the Services Agreement)*) and by submitting to rules and administrative fees for its use.

8.0 Certification and continuous compliance

8.1 Certification

Once a product or activity is qualified for certification, based on its compliance with the Standard, a Taïga Initiative Ecodesign Certificate of Compliance is issued. Certificates are valid for one year, provided the company or organization complies with the requirements.

8.2 Continuous compliance

Annual verification to demonstrate continued compliance with the Standard is required if the company or organization wishes to continue to make a Taïga Initiative certified statement.

8.3 Notice of change

If the company or organization makes any changes to its project that affect its compliance with the requirements of the Standard, it shall notify Taïga Initiative of these changes using the *Change Notification* form (*Annex D of the Services Agreement*).

9.0 Labelling requirements

9.1 National requirements

All uses of the Taïga Initiative certification logo or references to the certification on the project and in advertising of the project, company or organization must be made in accordance with applicable laws.

9.2 Taïga Initiative requirements

9.2.1 Guidelines

The company or organization must comply at all times with the requirements of the *Annex B: Taïga Initiative — Brand & Identity Guideline* of the *Services Agreement*.¹ A certified and non-certified project cannot have the same trade name or the same brand designation.

¹ Provided as a supplement to the *Taïga Initiative Services Agreement*. This document is also available on request.

10.0 Complaints and appeals

10.1 Complaints

All complaints and appeals are handled in accordance with the *Complaints and Appeal Procedure of Taïga Initiative (Annex E of the Services Agreement)*.²

² Provided as a supplement to the *Taïga Initiative Services Agreement*. This document is also available on the Taïga Initiative website at: www.taigainitiative.com and on request.

ANNEX A: ECODESIGN CERTIFICATION PROCEDURE

