

PRODUCT CATEGORY RULES (PCR)
For preparing an Environmental Product Declaration (EPD)

For

North American Structural and Architectural Wood Products

UN CPC 31
NAICS 321

November 8, 2011
Version 1



www.fpinnovations.ca

Based on

- NPCR 015 September 2009, The Norwegian EPD Foundation
- PCR Wood Materials November 2009, Institut Bauen und Umwelt e.V. (IBU)

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Version History

Version number	Amendments	Date issued
Pilot	--	April 2011
1	Refinement of biogenic CO ₂ emission reporting in global warming potential (GWP)	November 8, 2011

1. General Information

This product category rules (PCR) document is intended for companies preparing an environmental product declaration (EPD) for North American structural and architectural wood products (see section 6.2 for definition of product category). The users of this PCR will be manufacturers of North American structural and architectural wood products and other interested parties. This PCR has been developed under the general program instructions for the FPInnovations EPD Program on wood building products, prepared by FPInnovations, December 1, 2010. The PCR presents a structure that is intended to ensure a harmonious approach is taken to derive, verify and present EPDs for solid wood building products in North America.

This PCR is consistent with and complies with the mandatory requirements contained within the following ISO standards:

- ISO 21930: 2007, Building construction – Sustainability in building construction – Environmental declaration of building products.
- ISO 14025: 2006, Environmental labeling and declarations – Type III environmental declarations – Principles and procedures.
- ISO 14044: 2006, Environmental management — Life cycle assessment — Requirements and guidelines
- ISO 14040: 2006, Environmental management – Life cycle assessment – Principles and framework.

This PCR is based on the Norwegian EPD Foundation PCR NPCR 015 (September 2009) and the German Institute for Construction and Environment (IBU) wood materials PCR (November 2009), modified as follows:

- terminology changes to be consistent with North American language;
- more rigorous cut-off rules in recent North American life cycle assessments (LCAs) on which this PCR is based;
- practice regarding allocation in recent North American LCAs on which this PCR is based;
- use of the Tools for the Reduction and Assessment of Chemical and other environmental Impacts (TRACI) system for characterization factors for North American LCA;
- a modified list of wood building products relevant to this PCR document; and
- clarity regarding approach to biogenic carbon emissions accounting in the global warming potential (GWP) impact category.

This PCR is also based on LCAs of solid wood products conducted by various organizations in North America over the past ten years.

Program operator: FPInnovations, a not-for-profit organization that works towards optimizing the forest sector value chain and develops new products and market opportunities within a framework of environmental sustainability. As program operator, FPInnovations intends to recognize regional and regulatory differences of American and Canadian wood production where appropriate.

The PCR has been prepared by FPInnovations with guidance from the Athena Sustainable Materials Institute and from a cross-section of experts in the US and Canadian forest products industry in addition to the PCR panel.

Members of the PCR Review Panel:

- Wayne B. Trusty, Athena Sustainable Materials Institute, Past President (Panel Chair).
- Kenneth Bland, American Wood Council, Vice President Codes and Regulations.
- Getachew Assefa Wondimagegnehu, University of Calgary Faculty of Environmental Design, Associate Professor and Athena Life Cycle Assessment Chair.
- Rodney McPhee, Canadian Wood Council, Director Codes and Standards.

2. Scope

The intended application of this product category rules (PCR) document is to give a set of specific rules, requirements and guidelines for developing environmental product declarations for solid wood building products and to specify the underlying requirements of the LCA. This PCR is valid for solid wood building products and provides requirements for both Business-to-Business (BtoB) EPDs as well as Business-to-Consumer (BtoC) EPDs.

3. Terms and definitions

For the purposes of this document, the definitions given in ISO 6707-1, ISO 14025, ISO 14044, ISO 14050, ISO 15686-1, ISO 21930 and the following apply.

Allocation

Partitioning the environmental flows (input and output flows) of a process or a product system between the product system under study and one or more other product systems (adapted from ISO 14044).

Ancillary material

Material input that is used by the unit process producing the product or during the construction or use stage, but does not constitute part of the product (adapted from ISO 14044).

Building product

Product used during the life cycle of a building or other type of construction works (adapted from ISO 6707-1 and ISO 14021).

Characterization factor

Factor derived from a characterization model which is applied to convert an assigned life-cycle inventory analysis (LCI) result to the common unit of the impact category indicator (adapted from ISO 14044).

Cut-off criteria

Specification of the amount of material or energy flow or the level of environmental significance associated with unit processes of a product system to be excluded from a LCA study (adapted from ISO 14044).

Declared unit

Quantity of a wood building product for use as a reference unit, e.g. mass (kilogram), volume (cubic metre), for the expression of environmental information needed in information modules.

Note: The declared unit is used in instances where the function and the reference scenario for the whole life cycle of a wood building product cannot be stated (adapted from ISO 21930).

Environmental declaration/label

A claim that indicates the environmental aspects of a wood product (adapted from ISO 14020:2000).

Feedstock energy

Heat of combustion of a material input that is not used as an energy source to a product system, expressed in terms of higher heating value (HHV) (adapted from ISO 14044).

Function

Purpose for which a building product is designed, used or required to be used (adapted from ISO 15686-10).

Functional unit (FU)

Quantified performance of a product system for a wood building product for use as a reference unit (adapted from ISO 14044).

Impact category

A class representing environmental issues of concern to which life cycle inventory analysis results may be assigned (ISO 14044).

Impact category indicator

A quantifiable representation of an impact category (ISO 14044).

Information module

Compilation of data to be used as a basis for an EPD covering a unit process or a combination of unit processes that are part of the life cycle of a product (ISO 21930)).

Interested party

An individual or group concerned with or affected by the environmental performance of a product system, or by the results of the life cycle assessment (ISO 14044).

Life cycle

Consecutive and interlinked stages of a product system, from raw material acquisition or generation from natural resources to final disposal (ISO 14044).

Life cycle assessment (LCA)

Assessment aimed at compiling and evaluating the inputs, outputs and the potential environmental impacts of a product system throughout the life cycle of a product (adapted from ISO 14044).

Life cycle inventory analysis (LCI)

Phase of LCA involving the compilation and quantification of environmental input and output flows for a product throughout its life cycle (ISO 14044).

Life cycle impact assessment (LCIA)

Phase of LCA aimed at understanding and evaluating the magnitude and significance of the potential environmental impacts for a product system throughout the life cycle of the product (ISO 14044).

Product category

Group of wood building products that can fulfill equivalent functions (adapted from ISO 14025).

Product category rules (PCR)

Set of specific rules, requirements and guidelines for the development of type III environmental declarations for one or more product categories (ISO 14025).

PCR review

Verification of PCR by a third party (adapted from ISO 21930).

Product system

Collection of unit processes with elementary and product flows (i.e., smallest element considered in the life cycle inventory analysis), performing one or more defined functions, and which models the life cycle of a product (adapted from ISO 14044).

System boundary

A set of criteria that specifies which unit processes are part of a product system (adapted from ISO 14044).

Type III environmental declaration/Environmental product declaration (EPD)

Environmental declaration that provides quantified environmental data of a product, using predetermined parameters and, where relevant, additional environmental information (adapted from ISO 14025).

4. Period of validity of the document

This document is valid until November 8, 2014 (3 years).

5. Informed comparison

EPDs enable comparison between products but do not themselves compare products. It shall be stated in EPDs created using this PCR that cradle-to-grave LCA results in a relevant EPD can be used for comparison between different EPDs provided the building products and systems have been assessed on the basis of the same function and reference service life, quantified by the same functional unit in the form of their reference flows. The basis of a comparison shall include the whole building performance in accordance with ISO 21931-1. EPDs based on cradle-to-gate information modules using a declared unit shall not be used for comparisons.

6. Company/organization, product and product category

6.1. Description of company/organization

The name of the company/organization as well as the place(s) of production shall be provided. General information about the company/organization can be included in the EPD, i.e., the existence of quality systems or environmental management system according to ISO 14001 or any other environmental management system in place.

6.2. Definition of product category

This PCR document addresses the primary building products shown in Table 1 and secondary building products made from those products. This PCR is not valid for furniture or case goods. This PCR is not valid for wood products processed or treated with preservatives or fire retardants.

Table 1 *Products covered by this PCR*

Building product	Reference standard for definition
Lumber (timber)	ASTM D9-09ae1
Glued-laminated timber (glulam)	ASTM D9-09ae1
Laminated veneer lumber (LVL)	ASTM D9-09ae1
Finger-jointed lumber	ASTM D9-09ae1
Structural composite lumber	ASTM D9-09ae1
Battens	ASTM D9-09ae1
Molding	ASTM D9-09ae1
Pre-fabricated wood I-joist	ASTM D9-09ae1
Shakes	ASTM D9-09ae1
Shingles	ASTM D9-09ae1
Plywood	ASTM D1038-83(2005)
Oriented strand board (OSB)	ASTM D1554-10
Medium-density fiberboard (MDF)	ASTM D1554-10
Particleboard	ASTM D1554-10
Veneer	ASTM D1038-83(2005)

6.3. Description of product

The description of the product shall enable the user to identify the product unambiguously.

The characterization includes:

- product identification by name and other relevant identifiers as appropriate, and a simple visual representation of the building product for which the EPD is developed;
- intended use of the building product; and
- flow diagram of main production processes according to the scope of the EPD; and materials and substances to be declared.

Material contents of the finished building product, including packaging shall be declared in terms of the main components. Substances officially classified as hazardous according to national and international regulations such as Controlled Products Regulations (SOR/88-66) shall be stated. Product specific data that is confidential, because of competitive business environment, intellectual property rights or similar legal restrictions need not be declared.

7. Requirements for the underlying life cycle assessment

The underlying life cycle assessment (LCA) shall be conducted in accordance with the ISO 14040 and ISO 14044 series of standards.

7.1. Functional and declared unit

This PCR is valid for all wood building products listed in Table 1 that are manufactured or processed for incorporation in a building or other type of construction works (i.e., building materials, building products, building components, or building elements), among other uses. The functional unit or declared unit of a product provides the quantitative normalization for comparing building products of equivalent function or equivalent specification. For EPDs covering the complete life cycle, a functional unit is defined. For EPDs not covering the complete life cycle, e.g. leaving out the use stage and/or the end of life stage, a declared unit is defined. If the intended use of the EPD is for comparison purposes between different building products, the entire life cycle including the use and end-of-life stages shall be included. In such situations the functional unit shall be used as the reference unit, not the declared unit.

The declared unit shall be one cubic meter of wood materials. The functional unit shall be one of the following as appropriate: cubic meters of installed building product, square meters of installed building product (with a stated product thickness), square meters of constructed area using the building product, or other unit as appropriate. Explanation of the selected functional unit shall be stated clearly, including the service life.

7.2. System boundaries

Cradle-to-Gate or “Information Module” (BtoB EPDs): The life cycle activities and related processes shall include the production stage as defined below.

Cradle-to-Grave (mandatory for BtoC EPDs): A complete cradle-to-grave LCA shall be developed for the building product. The life cycle activities and related processes shall include resource extraction through use of the building product for a specified function and service life, inclusive of maintenance and replacement and end-of-life effects. The system boundary for a cradle-to-grave LCA will include the average transportation of major inputs to (and within) each life cycle stage including the shipment of building products to building site locations by common modes as well as average transportation to a landfill or other disposition at the end of the service life for each application.

Any site-generated energy and purchased electricity is included in the system boundary. The extraction, processing and delivery of purchased primary fuels, e.g., natural gas and primary fuels used to generate purchased electricity, must also be included within the boundaries of the system. Purchased electricity consumed at various site locations should be modeled to come from a specified North American grid.

The production stage includes:

- extraction(removal) of raw materials;
- average or specific transportation of raw materials (including recycled materials) from extraction site or source to manufacturing site (including any recovered materials from source to be recycled in the process);
- manufacturing of the wood building product;
- packaging;
- average or specific transportation from manufacturing site to recycling/reuse/landfill (preconsumer wastes and unutilized by-products from manufacturing); and
- recycling/reuse/energy recovery (pre-consumer wastes and by-products from production).

The construction stage includes:

- average or specific transportation of building products from manufacturing site to building site;
- installation on the building site; and
- waste on the building site.

The use stage is treated as a typical scenario, which shall be described in detail:

- the reference service life of the building shall be declared and the maintenance regime and number of replacements of the wood building product shall be declared accordingly (note that a 60-year reference service life is an accepted time period to use for structural products being used in “permanent building”);
- includes any maintenance/replacement of the wood building product required to attain the expected reference service life of the building; and
- maintenance/replacements are to be modeled according to manufacturers’ guidelines regarding the estimated service life of the product.

The end-of-life stage is treated as a typical scenario, which shall be described in detail:

- dismantling/demolition;
- transport from building site to recycling/reuse/landfill; and
- recycling/reuse/energy recovery/decomposition.

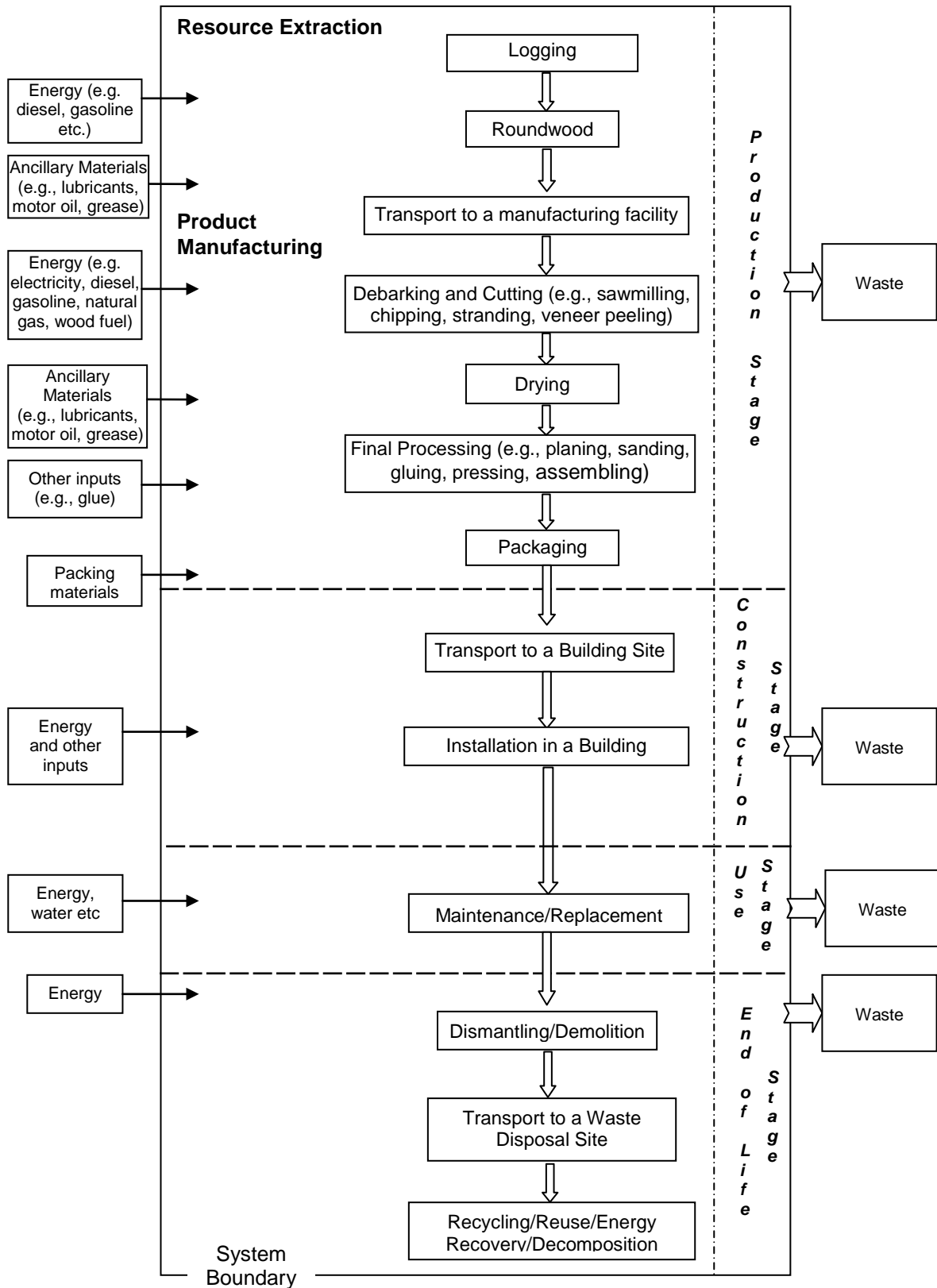
All end-of-life assumptions shall be described in detail.

Manufacturing, installation, use and end-of-life stages shall be declared separately.

Any transportation data other than identified above shall be indicated. If transportation information is included in other stages than indicated, or if no transportation information exists and assumptions are made, this should be noted.

The life cycle stages for solid wood building products are shown in Figure 1 on the following page.

Figure 1 Life cycle stages for wood building products



7.3. Description of data

The use of specific or generic background data shall be documented. As a rule the following distribution will be applied:

- extraction and/or production of raw materials (specific and/or average background);
- manufacturing of the product (specific);
- the mix of electricity (calculation procedure) shall be documented; and
- hazardous waste shall be specified according to regulations such as Federal Hazardous Waste Regulations and the Canadian Environmental Protection Act, 1999.

For generic data, national databases shall be used to the extent that they are applicable (e.g., U.S Life Cycle Inventory Database www.nrel.gov/lci).

All data sources shall be specified, including database and year of publication (reference). Sources of data for transport models (including transport form, distances and quantities to be transported) and thermal energy production shall be documented.

7.4. Cut-off rules

The cut-off criteria for flows to be considered within each system boundary are as follows:

- Mass – if a flow is less than **1%** of the cumulative mass of the model flows it may be excluded, provided its environmental relevance is minor.
- Energy – if a flow is less than **1%** of the cumulative energy of the system model it may be excluded, provided its environmental relevance is minor.
- Environmental relevance – if a flow meets the above two criteria, but is determined (via secondary data analysis) to contribute **2%** or more to the selected impact categories of the products underlying the EPD, based on a sensitivity analysis, it is included within the system boundary.

At least 95% of the mass flow shall be included and the life cycle impact data shall contain at least 95% of all elementary flows that contribute to each of the declared category indicators.

A list of hazardous and toxic materials and substances shall be included in the inventory and the cut-off rules do not apply to such substances.

7.5. Data quality requirements

Any secondary data source used in the underlying life cycle inventory shall be complete and representative of the applicable North American region in terms of its geographic and technological coverage and be of a recent vintage, typically less than ten years old. Any deviations from these initial data quality requirements for secondary data shall be documented.

7.6. Units

SI units shall be used with conversions as shown in the table below as necessary, and preferred power and energy units are as follows:

- kWh (MJ) for electric energy
- kW (MW) for power

Table 2 Conversion factors to be used if reporting in IP units (Imperial)

Convert from	To	Multiply by
Square meter (m ²)	Square foot (ft ²)	1.076391E+01
Kilogram (kg)	Pound (lb)	2.204622E+00
Mega joule (MJ)	British Thermal Unit (BTU)	9.478170E+02
Degree Celsius (°C)	Degree Fahrenheit (°F)	t/°C = (t/°F - 32)/1.8
Cubic meter (m ³)	Cubic foot (ft ³)	3.531466E+01
Meter (m)	Foot (ft)	3.281E+00
m ² K/W	ft ² Fhr/Btu	5.6783E+00

Source: NIST: <http://physics.nist.gov/Pubs/SP811/appenB9.html>

8. Life cycle inventory analysis

8.1. Data collection

The data shall be representative according to temporal, geographical and technological requirements.

- **Temporal:** The obtained information from the manufacturing process should be annual approximate values and updated, i.e., from the previous twelve-month period. Average background data shall not be older than ten years unless accompanied by a statement attesting to the validity of older data.
- **Geographical:** The geographic region of the relevant life cycle stages included in the calculation of representative data shall be documented.
- **Technological:** Data shall represent technology in use.

8.2. Calculation rules

In the case of BtoC EPDs, the amount of material used as input to enable wood building products to meet the functional unit requirements shall include related accessories and other materials (e.g., fasteners), unless the reason for the omission of these is explained.

8.3. Allocation rules

In a production process where more than one type of product is generated, it is necessary to allocate the environmental flows (inputs and outputs) from the process to the different products in order to get product-based inventory data. In principle allocation rules should reflect the goal of the production process.

Allocation shall follow the requirements and guidance of ISO 14044:2006, clause 4.3.4, and the following.

- Allocation of multi-output processes shall be based on mass. However, if economic value difference is at least ten times greater between products from a multi-output process, a suitable revenue based allocation principle shall be applied and these deviations shall be substantiated and readily available for review.
- Allocation of multi-input processes shall be based on the physical composition of the inputs and stoichiometry of the reaction. If allocation based on the physical composition and stoichiometry of the inputs is not possible, another allocation principle based on physical and chemical properties shall be applied and declared.
- Allocation for recycling processes shall be based on the current plant (industry)-specific situation inclusive of the system limits of collected recycled materials, or on another supportable physical or economic value basis.

Raw material energy should be allocated to material resources (kg), while process energy shall be allocated to energy resources (MJ).

Allocation related to transport should be based on the weight [ton(ne) km] of transported product.

When the building product’s original function is no longer needed or possible, the product can be processed further in a waste management system, e.g. it can be recycled, reused or energy recovered. The emissions from downstream combustion will be allocated to the new downstream products, i.e. heat and electricity, according to the allocation procedure for open loop recycling. In the case of incineration of wood residues or wastes for energy production at the primary production site, the emissions from the combustion shall, however, be allocated to the building product, unless the energy is exported.

Recycling processes should be treated as closed loop recycling, as long as no change occurs in the inherent properties of the recycled material. In such cases, the need for allocation is avoided since the use of secondary material displaces the use of virgin (primary) materials.

If different allocation options are relevant and a deviation of greater than 20% is a foreseen outcome, a sensitivity analysis should be initiated. These different allocation approaches and data sets shall be documented and declared.

9. Impact categories and characterization factors

9.1. Impact category indicators, characterization factors and parameters to be reported

Environmental impacts and life cycle inventory parameters shall be taken from Table 3 below:

Table 3 Declaration of environmental impacts, use of resources and generation of waste

Category	Unit
Global Warming Potential (GWP)	kg CO ₂ equiv
Acidification Potential	moles H ⁺ equiv
Eutrophication Potential	kg N equiv
Smog Creation Potential	kg NO _x equiv
Ozone Depletion Potential	kg CFC-11 equiv
Total primary energy consumption	
Non-renewable fossil ¹	MJ
Non-renewable nuclear	MJ
Renewable (solar, wind, hydroelectric and geothermal)	MJ
Renewable (biomass)	MJ
Material resources consumption	
Non-renewable materials	kg
Renewable materials	kg
Fresh water	l
Waste generated	kg

¹ Fossil fuel use is considered an impact category in accordance with TRACI 2.0 (Bare, J. 2011. TRACI 2: The Tool for the Reduction and Assessment of Chemical and Other Environmental Impacts 2.0. Clean Technologies and Environmental Policy, Vol. 13 No 5, pp 687-696.).

Notes for Table 3:

- See section 9.2 for rules regarding biogenic CO₂ accounting in the GWP impact indicator.
- Environmental impact categories to be reported per US EPA TRACI 2.0 (Tool for the Reduction and Assessment of Chemical and Other Environmental Impacts) for characterization factors adjusted to reflect CO₂ from air captured in the forest and retained in the product (see section 9.2).
- Life cycle inventory parameters to be reported shall conform to ISO 21930:2007, section 8.2 and ISO 14044:2006.
- The heating value of the wood building product itself (feedstock energy, renewable) should be reported separately from other renewable primary energy on a higher heating value (HHV) basis.
- Waste should be declared as either hazardous or non-hazardous.

9.2. Treatment of biogenic carbon

The method used to account for biogenic carbon in calculating biogenic carbon dioxide (CO₂) contribution to the GWP impact indicator should be based on accepted guidance for attributional life cycle impact assessments as provided in international standards and accepted in regulations of various countries. The accounting method used for the GWP impact indicator should also be as consistent as possible with accounting used for this impact indicator in EPDs developed for wood building products in other countries to allow for the possibility of comparing EPDs.

The accounting methods for attributional life cycle impact assessments for estimating the GWP in wood products from biogenic and fossil fuel GHG emissions are described in ISO/TR 14047:2003², as quoted below:

“6.4.3.9.5 Characterization model for biomass fuels – Net-zero C (carbon)

The characterization model that describes the net-zero C emitted when burning biomass fuel is typically a recycling model, in which CO₂ from the atmosphere (and its C expression) are sequestered by the photosynthesis process described in the Calvin-Benson model. Neglecting C¹² and C¹³ emissions from the combustion are considered equal to those already sequestered and those that will be subsequently sequestered. This is different from the CO₂ emissions of fossil fuel that results from the use of C from long-term carbon sinks rather than from the atmosphere. The characterization factor used is 0.”

The following accounting practice is used for the *Norwegian Solid wood product*³ PCR's (section 5.4):

“CO₂ emissions due to the combustion of wood fuels are considered equal to the CO₂ uptake in the forestry growth (neutral CO₂ balance)⁴. For this reason, the inventory which the EPD is based on will not include emissions/uptake of CO₂ in relation to wood fuels.”

² ISO/TR 14047:2003

³ NPCR 015 September 2009, The Norwegian EPD Foundation

⁴ Aasestad, K.2008. The Norwegian Emission Inventory 2008. Documentation of methodologies for estimating emissions of greenhouse gases and long-range transboundary air pollutants. Statistisk sentralbyrå. Reports 2008/48: 252 pp.

Any emissions from wood burning in the form of methane or nitrous oxides do contribute to and shall be included in the GWP impact indicator.

The accounting practice does not include adding or subtracting changes in soil carbon during forest growth up through harvest.

It is not possible for an individual producer of wood products to be responsible for maintaining forest carbon stocks in a region but they should be responsible for practices that support sustaining forest carbon. Therefore, in order for biogenic CO₂ emissions to be excluded from the GWP impact indicator the producer needs to report fiber sourcing according to ASTM D7612⁵ (see section10).

Treatment of carbon stored in wood building products (in use and in landfills) in calculating the GWP indicator shall be addressed as follows. The amount of carbon stored in wood building products in use and in wood building products in the landfill are considered GHG removals and expressed in CO₂ equivalents. The quantities calculated from these two removal models are then subtracted from GHG emissions (from fossil fuels, etc. and the CH₄ and N₂O of the biomass combustion emissions). The net quantity is used in the calculation of the GWP impact indicator. For carbon stored in building products in use, the discounted method explained in ISO 14047:2003, example three and adopted by the International Council of Forest and Paper Associations ICFPA, is used. For landfills, the US EPA method ⁶ provides estimation of the carbon stored.

10. Additional environmental information

A Type III environmental declaration shall include, where relevant, additional information related to environmental issues, other than the environmental information derived from LCA, LCI or information modules. This information shall be separated from the information described in ISO 14025, 7.2.2. Identification of the significant environmental aspects should, as a minimum, take into consideration the following:

- Information on environmental issues, such as
 - impact(s) and potential impact(s) on biodiversity,
 - toxicity related to human health and/or the environment, and
 - geographical aspects relating to any stages of the life cycle (e.g. a discussion on the relation between the potential environmental impact(s) and the location of the product system);
- Data on product performance, if environmentally significant;
- The organization's adherence to any environmental management system, with a statement on where an interested party may find details of the system;
- Any other environmental certification program applied to the product and a statement on where an interested party may find details of the certification program;
- Other environmental activities of the organization, such as participation in recycling or recovery programs, provided details of these programs are readily available to the purchaser or user and contact information is provided;
- Information that is derived from LCA but not communicated in the typical LCI or LCIA based formats;
- Instructions and limits for efficient use;
- Hazard and risk assessment on human health and the environment;

⁵ ASTM D7612:2010

⁶ “Solid Waste Management and Greenhouse Gases. “A Life cycle Assessment of Emissions and Sinks” U.S. EPA second edition EPA 532 R-02-006, May 2002

- Information on absence or level of presence of a material in the product that is considered of environmental significance in certain areas [see ISO 14021:1999, 5.4 and 5.7 r)];
- Preferred waste management option for used wood building products;
- Potential for incidents that can have impact(s) on the environment; and
- Categorization of sources of wood fiber according to their forest management or certification systems, in accordance with ASTM D7612-10.

Additional environmental information shall only be related to environmental issues. Information and instructions on product safety unrelated to the environmental performance of the building product shall not be part of a Type III environmental declaration.

11. Environmental product declaration supporting data

Information shall be made available to verifier in order to demonstrate that the requirements of ISO 21930 “Environmental declaration of building products” have been met. This includes documentation on:

- The input and output environmental data of the unit processes that are used for the LCA calculations;
- The documentation (measurements, calculations, estimates, sources, correspondence, traceable references to origin, etc) that provides the basis from which the process data for the LCA is formulated;
- The specification used to create the manufacturer's products;
- Energy consumption figures;
- Emission data to air, water and soil;
- Waste production;
- Data that demonstrates that the information is complete. In specific cases, reference can be made to, for instance, standards or quality regulations;
- Referenced literature and databases from which data have been extracted;
- Documentation that demonstrates that the building products can fulfill the desired function(s) and performance;
- Documentation that demonstrates that the chosen processes and scenarios in the flow chart satisfy the requirements set in ISO 21930;
- Documentation that substantiates the chosen life cycle of the building products;
- The documentation and substantiation of the percentages or figures used for the calculations in the waste scenario;
- Documentation and substantiation of the percentages and figures (number of cycles, prices, etc.) used for the calculations in the allocation procedure;
- Information showing how averages of different reporting locations have been calculated in order to obtain generic data;
- Documentation used to substantiate any qualitative information in the additional environmental information;
- Procedures used to carry out the data collection (questionnaires, instructions, informative material, confidentiality agreements, etc.);
- The characterization factors, and normalization factors used;
- The criteria and substantiation used to determine the system limits and the selection of input and output flows; and
- Documentation used to substantiate the other choices and assumptions.

12. Content of the EPD

The following Demonstration of Verification shall be completed and included with the EPD. Note that third-party verification is optional for Business to Business EPDs, but mandatory for Business to Consumer EPDs.

Demonstration of Verification

PCR Review was conducted by:	
Wayne Trusty, Athena Sustainable Materials Institute Wayne.trusty@athenasmi.org	
Independent verification of the declaration and data, according to ISO 14025 (please circle or check):	
Internal	External
If required, third party verifier:	

All Type III environmental declarations in a product category shall follow the format and include the parameters as identified in this PCR. The following general information shall be declared in the EPD:

- the name and address of the manufacturer(s);
- product identification by name (including e.g. production code) and a simple visual representation of the building product;
- the description of the building product's use and the functional or declared unit of the product to which the data relates;
- the description of the application (installation) of the building product where relevant;
- a detailed list of the substances, by weight, that make up the building product;
- additional environmental information;
- a statement of whether the EPD is cradle to gate or cradle to grave;
- a statement that EPDs from different programs may not be comparable;
- a statement that the EPD represents an average performance, in such cases where an EPD declares an average performance for a number of products. In addition the standard deviation of the products' performance with respect to the average is stated;
- information on where explanatory material may be obtained;
- a diagram of the life cycle stages included in the LCA subdivided into production, construction, use and end-of-life stages, and system boundaries;
- where the EPD includes the use stage, a description of the nature of the processes and ancillary materials that are required for installing the building product in the building or other type of construction works and their replacement and maintenance according to the cut-off criteria;
- name of the program and the program operator's address and, if relevant, the logo and website URL;
- identification of the PCR document on which the EPD is based;
- the date the EPD was issued and period of validity;
- the site(s), manufacturer or group of manufacturers or those representing them for whom the results of the LCA are representative;

- name of PCR review panel Chair;
- whether the independent review of the EPD and data was conducted by an internal or external verifier (3rd party verification is mandatory for BtoC EPDs);
- name, address, phone number, fax number, e-mail of the third party verifier and logo of the verification body, if applicable; and
- ISO 14025:2006, 9.2.2 states that, “Type III environmental product declarations intended for business-to-consumer communication shall be available to the consumer at the point of purchase”.