

# Product Environmental Profile Methodology

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## INTRODUCTION

Weyerhaeuser Product Environmental Profiles (PEP) provide important environmental information about our products. The profiles are readily available for customers and other interested parties, to inform and answer their questions about specific environmental attributes. We are committed to open, transparent and accurate communication. In addition to these profiles, customers may access more information about our company and products in our sustainability report available at [www.weyerhaeuser.com/sustainability](http://www.weyerhaeuser.com/sustainability).

This document provides a brief explanation of the topic areas and measures reported in our Product Environmental Profiles. For each topic area, we provide a description along with information on why the parameters are important and how we measure them.

## CARBON FOOTPRINT

Weyerhaeuser is committed to reducing our greenhouse gas emissions 40 percent by 2020 using a 2000 baseline. To learn more about our commitment to reducing our impact on climate change, visit our sustainability report at <http://www.weyerhaeuser.com/Sustainability/Planet/ClimateChange>.

**Total Greenhouse Gas Emissions (Cellulose Fibers):** Total GHG emissions include direct and indirect emissions associated with the manufacturing of the product as well as an estimation of upstream transportation, harvesting, and additives. The unit of measurement is kg CO<sub>2</sub>e/air dried metric ton (admt) product. This metric does not include transportation to customers, use, or end-of-life.

**Total Greenhouse Gas Emissions (Wood Products):** Weyerhaeuser defines total GHG emissions as a balance sheet of the greenhouse gas emissions and removals associated with the production of a product. Emissions include carbon dioxide equivalents of carbon dioxide, methane and nitrous oxide as well as HFCs, PFCs and SF<sub>6</sub>, where they apply. Removals refer to the amount of carbon dioxide kept out of the atmosphere long-term by carbon storage of the associated wood product (see product sequestration for more information). The GHG emissions and removals cover specific information for the processes over which Weyerhaeuser has control (e.g., manufacturing facilities) and estimated factors for key upstream stages (e.g., transportation, harvesting, and additives). Weyerhaeuser's system boundary ends with product manufacturing and does not include transportation to customers, use, or end-of-life, except for product sequestration which includes only the estimate of long-term storage in products in use.

## GHG Emissions

**Direct GHG Emissions:** Direct GHG emissions are emissions from sources that are owned and operated by Weyerhaeuser.

**Purchased Electricity:** Electricity purchased from utilities that provide power to the manufacturing facilities.

**Harvesting and Transportation Emissions:** Estimation of GHG emissions associated with harvesting and transporting wood from forest to mill (and primary mill to secondary mill for some engineered products). The harvesting estimate is based on industry-wide data representing fuel use per 100 cubic feet of harvested material.

**Additive Emissions:** Estimation of GHG emissions associated with manufacturing the resins and wax included in some wood products and pulping chemicals included in pulp production. These emissions are estimated based on an industry standard as a complete GHG profile is not available for many of the specific compounds included in Weyerhaeuser products.

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**Product Sequestration:** Wood products store carbon during their useful life, limiting the amount of carbon dioxide in the atmosphere. Weyerhaeuser uses a third-party 100-year-decay method for quantifying long-term forest-product carbon storage. This method is outlined in the Forestry Appendix of the 1605b) Technical guidelines and also published in USFS GTR NE-343. This method uses U.S. statistics to calculate a decay rate based on the half-life of different types of housing and other wood product end-uses and the distribution of different kinds of wood products across these end-use categories. The portion of product that remains “in-use” after 100 years can be considered long-term carbon storage, as described in the “100-Year Method.” The unit of measurement is kg CO<sub>2</sub>e (100-yr proportion)/air dried metric ton of product.

## ENERGY

Weyerhaeuser meets nearly three-quarters of our operations’ energy needs through the use of renewable and carbon-neutral biomass fuels such as wood residuals and other organic byproducts. We’re committed to improving energy efficiency and reducing our energy intensity. Additional information is available at <http://www.weyerhaeuser.com/Sustainability/Planet/ManufacturingFootprint/EnergyUse>.

We measure energy use in British Thermal Units (Btu) per air dried ton of production. We are systematically evaluating energy use within our operating facilities to identify opportunities for efficiencies and savings.

**Biomass:** Wood residuals and other organic byproducts.

**Fossil Fuel:** Oil, coal and natural gas that originates from decayed plants and animals.

**Purchased Electricity:** Electricity purchased from utilities that provide power to the manufacturing facilities.

**Electrical Energy Self-sufficiency:** Percent of total electrical energy used at the site that is generated on the site.

## CERTIFICATION

We are committed to independent certification of our forest management. We support labeling our products to help educate customers that the products they are purchasing come from sustainably managed sources. Nearly all of our North American-made forest products are certified to sustainable forestry standards. These standards include the Sustainable Forestry Initiative (SFI), Forest Stewardship Council (FSC), and Programme for the Endorsement of Forest Certification schemes (PEFC). Learn more about certification at <http://www.weyerhaeuser.com/Sustainability/Planet/Certification>.

**Certified Supply Chain:** Confirms that our products originate from legal and responsible sources of wood fiber as demonstrated by our SFI Certified Sourcing certification.

**Certified Content in Raw Material:** Identifies the percent of raw material originating from third-party, certified sources (e.g., SFI, CSA, PEFC, FSC).

**Fiber Sourcing Area:** Identifies the country and state or province where the fiber originated.

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## AIR

Our strategy for reducing air emissions evaluates cost effective options including process changes, efficiency improvements, and, when necessary, add-on pollution control equipment. Our approach is to determine the most effective means to meet regulatory requirements and improve performance while minimizing greenhouse gas and conventional air pollutant emissions.

Weyerhaeuser has a goal to reduce our air emissions 10 percent by 2020, compared to a 2010 baseline. Learn more at <http://www.weyerhaeuser.com/Sustainability/Planet/ManufacturingFootprint/AirQuality>.

Air emissions from Weyerhaeuser facilities come primarily from stationary combustion sources. These include:

- power boilers that produce electricity and steam,
- recovery boilers that produce steam and electrical power, as well as recover chemicals used during the pulping process,
- lime kilns that help to reprocess the pulping chemicals.

We measure air quality by tracking substances in kilograms emitted per air dried metric ton of production.

**Nitrogen Oxide (NO<sub>x</sub>):** A family of air pollutants that trigger photochemical reactions that can cause photochemical smog. These compounds can also contribute to the formation of ozone in the troposphere and to acid deposition. This is a product of combustion, primarily from transportation and stationary combustion sources.

**Particulate Matter:** Fine liquid or solid particles such as dust, smoke, mist, fumes or smog found in air or emissions. Inhalable PM includes both fine and coarse particles. These particles can accumulate in the respiratory system and are associated with numerous health effects.

**Sulfur Dioxide (SO<sub>2</sub>):** A gaseous molecule made of sulfur and oxygen. High concentrations of SO<sub>2</sub> can result in temporary breathing impairment for asthmatic children and adults who are active outdoors.

**Total Reduced Sulfur (TRS) Compounds (Cellulose Fibers):** TRS compounds include hydrogen sulfide, methyl mercaptan, dimethyl sulfide, and dimethyl disulfide. TRS compounds can cause nuisance odors, including the “rotten egg” smell often associated with kraft pulp mills.

**Volatile Organic Compounds (VOCs):** VOC's are a family of carbon compounds that contribute to photochemical smog. These compounds do not include carbon monoxide, carbon dioxide and carbonic acid.

## WATER

We continually work to improve wastewater quality, in particular by reducing biodegradable organic materials in wastewater. When left untreated, biodegradable organic materials can contribute to low dissolved oxygen levels in receiving waters, which may harm some aquatic organisms. High levels of untreated solids, measured as total suspended solids, can reduce river clarity, inhibit photosynthesis, and damage fish and aquatic insect habitat.

More information about our performance toward improving water quality is available at <http://www.weyerhaeuser.com/Sustainability/Planet/ManufacturingFootprint/WaterQuality>.

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Our cellulose fibers mills practice a high degree of internal water recycling to minimize energy, chemical, and water use, cascading freshwater from highest to lowest quality process uses before treating and returning to receiving waters. We have a goal to reduce water use at our cellulose fibers mills 20 percent by 2012, from a 2007 baseline. Learn more about our progress towards this goal at <http://www.weyerhaeuser.com/Sustainability/Planet/ManufacturingFootprint/WaterUse>.

We measure water quality by discharge of selected pollutants in pounds per ton of production such as:

**Total Suspended Solids (TSS):** A measure of the suspended solids in wastewater, effluent, or water bodies, determined by tests for "total suspended non-filterable solids."

**Biological Oxygen Demand (BOD):** A measure of the amount of oxygen consumed in the biological processes that break down organic matter in water.

**Total Nitrogen (N<sub>tot</sub>) and Total Dissolved Phosphorous (P<sub>tot</sub>):** Wastewater containing nutrients such as nitrogen and phosphorous can cause eutrophication, the excessive growth of plant and/or algae blooms in lakes, streams and rivers.

- Total Nitrogen: One measure of nitrogen in wastewater is Kjeldahl nitrogen (TKN), which is the combination of ammonia and organic nitrogen.
- Total Phosphorous: The total phosphorous content of all material that will pass through a filter, which is determined as orthophosphate without prior digestion or hydrolysis (also called soluble P. or ortho P.).

**Adsorbable Organic Halides (AOX):** A measurement of the amount of chlorinated organic compounds in effluents.

**Wastewater Discharge:** We use the measured wastewater discharged, expressed in cubic meters per admt, as a surrogate for water usage.

## RESIDUALS MANAGEMENT

Although we use 99% of the logs and wood chips that enter our mills, residuals or solid waste is produced as a result of manufacturing Weyerhaeuser products. We measure solid waste in kilograms of residuals per air dried metric ton of production and we report how these residuals are used.

Weyerhaeuser mills and manufacturing facilities are required to develop strategies and implement programs to manage, reduce or eliminate residual or solid waste, such as wood and bark residuals, ash and sludge. The company has a goal to reduce solid waste to landfill by 10% by 2020, compared to a 2010 baseline. Learn more about our residuals and solid waste management efforts at <http://www.weyerhaeuser.com/Sustainability/Planet/ManufacturingFootprint/ResidualsAndSolidWaste>.

**Burned for Energy:** includes predominantly wood waste and some waste treatment plant dried wastewater treatment system sludge.

**Landfilled, Incinerated, Hazardous Waste:** includes boiler ash, dregs & grits, lime mud, wastewater treatment plant dried sludge, construction debris, etc. Hazardous waste disposal follows all regulatory requirements.

**Beneficially Reused:** includes boiler ash, lime mud, recyclable materials (paper, metal, used oil, plastics, cardboard, batteries, tires, light bulbs), etc.