

## Green Building with Vinyl Siding, Polymer Siding and Trim

### What is Sustainable Design?

Sustainable design is defined by the design and construction processes that significantly reduce or eliminate the negative impact of buildings on the environment and their occupants. It encompasses how the site is planned, the effective use of water and energy, conservation of materials and resources, and indoor air quality.

CertainTeed contributes to sustainable design by manufacturing CertainTeed vinyl siding, polymer siding, and exterior cellular PVC trim in a way that is responsible to our **environment**, **economical** for building professionals and homeowners, and beneficial to our **communities**.

### Benefits to the Environment

At CertainTeed we believe choosing siding and trim for your home is as much about their impact on the environment as it is about performance and aesthetics. When you consider the facts, you'll see that CertainTeed vinyl siding, polymer siding, and exterior cellular PVC trim are inherently sustainable.

- The manufacturing process used by vinyl and polymer producers is less energy and resource intensive than that used by other cladding choices such as brick and stucco.
- Products such as CertainTeed's CedarBoards™ insulated siding and Triple 3-1/3 InvisiVent® ventilated soffit can help increase a project's energy efficiency.
- Almost 100% of raw material inputs are used in the manufacturing process of Cedar Impressions® Polymer Shake and Shingles, CedarBoards insulated siding, vinyl siding and Restoration Millwork® product lines, practically eliminating landfill waste from manufacturing these products.
- CedarBoards D6 insulated siding contains a minimum 60% pre- and post-consumer recycled vinyl (53% for the entire assembly), and is an NAHB Research Center Green Approved Product.
- Life cycle analysis tools such as BEES show vinyl siding to have a lower environmental impact than a majority of cladding options.
- Installing Cedar Impressions Polymer Shake and Shingles, CedarBoards insulated siding, vinyl siding, and Restoration Millwork eliminates the need for paint and caulk, decreasing maintenance and the projects' environmental impact.

- The majority of raw materials used to manufacture our vinyl and polymer products are shipped by rail, decreasing emissions and the need for over-the-road transportation.
- Unlike a majority of cladding choices, Cedar Impressions Polymer Shake and Shingles, CedarBoards insulated siding, vinyl siding, and Restoration Millwork are recyclable as part of our product stewardship program. CertainTeed is leading an initiative to take back post-consumer siding from builders and manufactured housing plants, creating a "cradle to cradle" system that will close the manufacturing loop.

### Commitment to Environmental and Operational Excellence

Our Certavin resin plant is the only PVC manufacturing facility to use the bulk polymerization process. This patented process uses significantly less energy and water than the suspension process used by other PVC manufacturers. Additionally, our proximity to our vendors and to rail spurs allows us to transport raw materials and finished products by pipeline and rail, reducing the environmental impact and risks of transporting material by truck.

### Economic Benefits

Our plant programs not only reduce waste and energy use, but they also provide cost-savings that we apply toward research and development of new, innovative products. As a result, we offer some of the most economic siding and trim options in the industry, while providing the lowest maintenance costs of any other cladding.

### Benefits to the Community

Our commitment to sustainability extends beyond our products and manufacturing practices to the communities where we work and live. We're committed to the well-being of our employees and surrounding communities.

### Responsible Choices

CertainTeed is an active member of the U.S. Green Building Council and the National Association of Home Builders. We have developed sustainability and product stewardship programs to continually improve our processes to reduce energy and water consumption, carbon emissions, and landfill waste. So when you recommend CertainTeed siding and trim, you can be confident that the choices you make today will extend positively into the future.

## What Is LEED Certification?

The U.S. Green Building Council developed the Leadership in Energy and Environmental Design (LEED) Green Building Rating System as a nationally recognized standard that promotes the design and construction of high-performance “green” buildings. LEED Certification recognizes and rewards builders for meeting the highest performance standards, and LEED-Certified buildings are environmentally responsible, healthy places to live and work. As a member of the U.S. Green Building Council (USGBC), CertainTeed supports the LEED design and construction program.

## LEED for Homes

LEED for Homes is a standard for the design and construction of high performance “green” homes. A green home uses less energy, water, and natural resources; creates less waste; and is healthier and more comfortable for the occupants. The benefits of a LEED home include lower energy and water bills; reduced greenhouse gas emissions; and less exposure to mold, mildew and other indoor toxins. In addition, a LEED rating can give homeowners confidence that their homes are durable, healthy, and environmentally friendly.

Before a home can be LEED Certified, it must meet the standards set by the USGBC. Individual products are not LEED Certified, but choosing environmentally responsible products can contribute to the overall LEED points gained on a project.

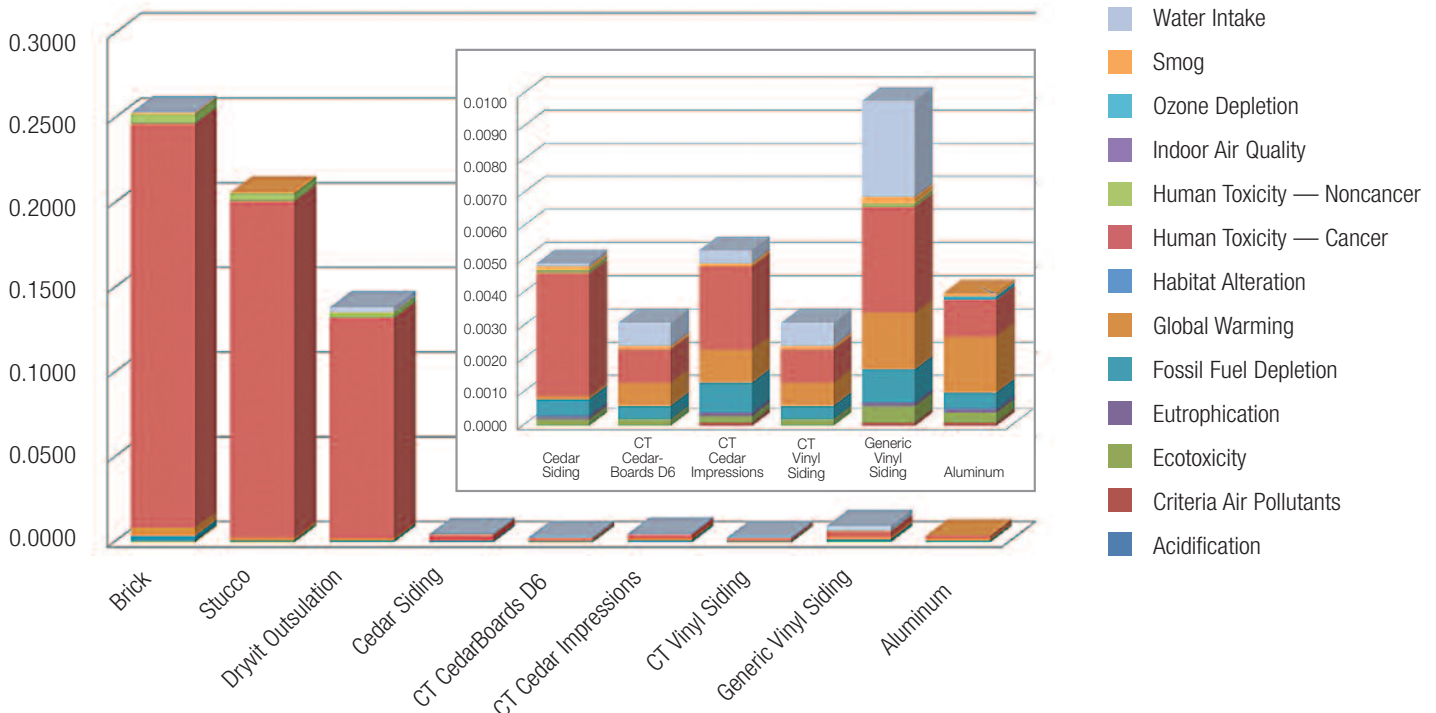
## Vinyl and Polymer Building Products

How can vinyl and polymer building products contribute to earning LEED points?

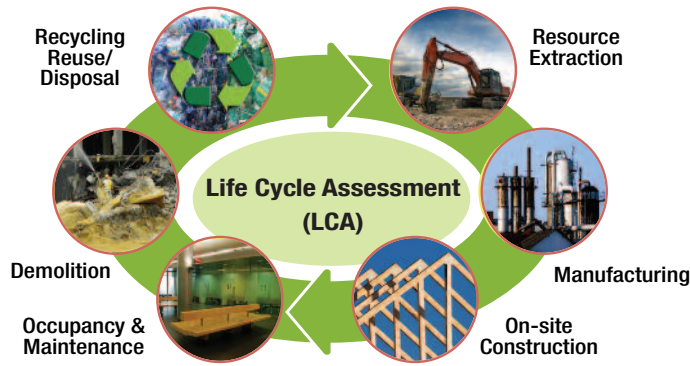
Environmentally Preferable—Vinyl and polymer building products are preferable to alternative products because they have less effect on human health and the environment when compared to wood, stucco, and brick. Life Cycle Assessment (LCA) is the method for identifying the environmental impacts of a product, process, or activity over its environmental life span. LCA is a valuable tool for evaluating products to understand all impacts associated with the product. The BEES program (Building for Environmental and Economic Sustainability) evaluates the life cycle of the products from raw materials to manufacturing, use, recycling, and waste management.

Unlike brick, stucco and many other building products, vinyl and polymer products can be recycled at the end of their life to create new products. CertainTeed and over 175 distributor branch locations are leading an initiative to take back post-consumer siding from builders and manufactured housing plants to be recycled into new siding. We are working to develop an efficient process to close the loop and develop a cradle-to-cradle system that will reduce landfill waste, save resources, and reduce the overall carbon footprint of our operations and products.

## Cladding Lifecycle Assessment (LCA) Overall Environmental Performance\*



\*Source: <http://ws680.nist.gov/BEES>

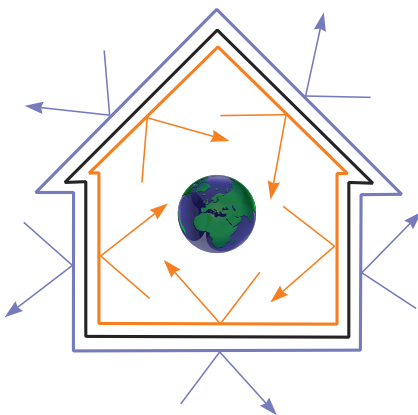


There currently is an LCA pilot credit in the LEED NC standard. LCA credits are expected to be integrated in further standards.

Siding and trim products can contribute to achieving points as environmentally preferable products in the LEED for Homes (H) and LEED for New Construction (NC) standards for recycled content and local materials.

For more information on the life cycle of CertainTeed products, please visit <http://ws680.nist.gov/Bees> or [www.certainteed.com/resources/Green\\_Corporate-Green-Brochure.pdf](http://www.certainteed.com/resources/Green_Corporate-Green-Brochure.pdf)

- **Recycled Content**—Using materials that contain recycled materials can earn up to 2 points under LEED 2009 and 0.5 points per product for LEED H. CertainTeed vinyl siding, polymer siding, and trim are typically made using some recycled content. CedarBoards D6 insulated siding contains a minimum 60% pre- and post-consumer recycled vinyl (53% for entire assembly). Using recycled material protects our environment by finding a use for material that would otherwise be landfilled.



- **Energy Efficiency**—When installed properly, CedarBoards insulated siding creates an efficient building envelope that does not conduct heat or cold. CedarBoards insulated siding can actually increase the R-value of the building envelope, which reduces energy consumption and related CO<sub>2</sub> emissions and can contribute to LEED and ENERGY STAR certification of your building.

- **Durability**—Exterior walls, window frames, soffit, and trim that will not rot, peel, or warp can contribute to achieving points for Quality Management of Durability requirements for LEED H. Unlike wood, vinyl siding, polymer siding, and trim do not absorb water and are not subject to insect damage; they do not pit, rust, or corrode, and they never need painting. Most of our vinyl and polymer siding is warranted for the lifetime of the original owner, with the warranty transferable to a new homeowner for as long as 50 years from the date of installation. Vinyl siding, polymer siding, and PVC trim require less maintenance than wood and fiber cement, which reduces the life cycle impacts of the product.

In fact, unlike wood and fiber cement, you can clean vinyl siding, polymer siding, and trim with a mild soap and water, thus eliminating the environmental impact associated with some paints and cleaning products.

- **Local Sources**—Using materials that have been extracted, processed, and manufactured within 500 miles of a home or commercial building can earn up to 2 points for LEED 2009 and 0.5 points for LEED H. Our Restoration Millwork products are shipped from our manufacturing facility in Georgia. Depending on site location, projects within 500 miles of this facility may earn points contributing to LEED certification.



*Installing Restoration Millwork Trim on projects located within 500 miles of our Social Circle, GA, plant can earn LEED points for regional and local materials.*

## What is the NAHB National Green Building Standard?

The National Association of Home Builders (NAHB) released its Model Green Home Building Guidelines in 2005 and received ANSI approval for the ICC 700-2008 National Green Building Standard™ (NGBS) in January of 2009. It is the only green building standard approved by the American National Standards Institute (ANSI).

Much like LEED criteria, these standards incorporate environmental considerations into every phase of the building process. According to the NAHB, "That means that during the design, construction, and operation of a home, energy and water efficiency, lot development, resource-efficient building design and materials, indoor environmental air quality, homeowner maintenance, and the home's overall impact on the environment are all taken into account."

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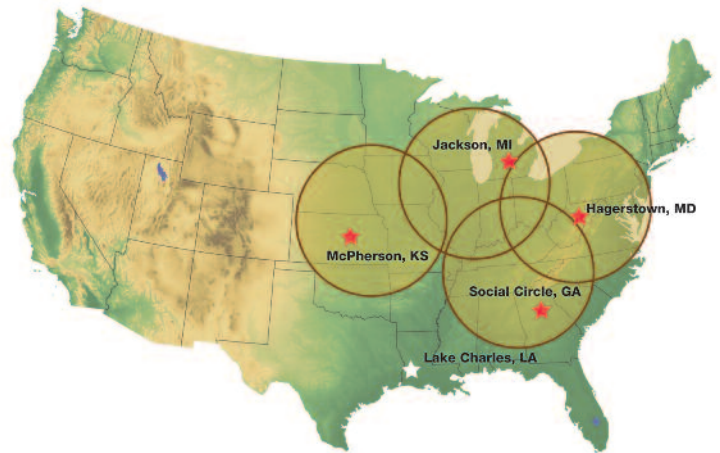
Builders who follow the NAHB National Green Building Standard can earn points much as in the same way as the LEED point system. Qualifying buildings can earn four different NGBS ratings: Bronze (222 points), Silver (406 points), Gold (558 points), Emerald (697 points). See page 6 for a list of CertainTeed products that can earn NAHB NGBS points.

Builders who use CertainTeed siding and trim may qualify for Green Building points in four categories

- **Resource Efficiency**—Our vinyl and polymer products are typically made using some recycled products. CedarBoards D6 insulated siding contains a minimum 60% pre- and post-consumer recycled vinyl (53% for entire assembly). Using recycled material protects our environment by finding a use for material that would otherwise be landfilled. In addition, our manufacturing plants grind and recycle products that do not meet our rigid manufacturing specifications. This grind is then incorporated into the manufacturing process. In fact, one of our plants has achieved nearly 100% recycling of all plant waste.

CertainTeed siding and trim require no on-site finishing, which minimizes the environmental impact of painting or staining siding materials and reduces installation costs for the builder. CertainTeed siding and trim never need scraping and painting and can be cleaned with a mild soap and water.

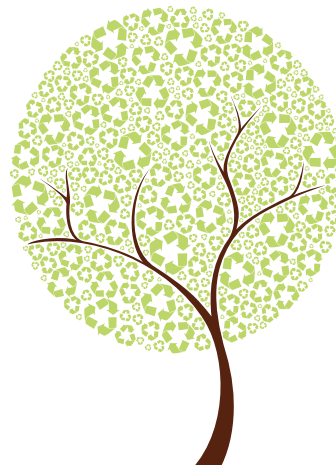
- **Energy Efficiency**—When installed properly, CedarBoards insulated siding creates an efficient building envelope that does not conduct heat or cold. Also, Triple 3-1/3" InvisiVent ventilated soffit delivers the ASHRAE-prescribed amount of ventilation to attic areas.
- **Locally Available Indigenous Materials**—CertainTeed's vinyl and polymer building products are shipped from one of four manufacturing facilities, ensuring that you are rarely more than 500 miles from a factory location. In addition, we ship the majority of the raw materials used to manufacture vinyl and polymer products by rail. This reduces the carbon footprint for transportation of our raw materials compared to materials shipped exclusively by truck.



*CertainTeed vinyl and polymer building products that are manufactured within 500 miles of the jobsite can earn National Green Building Standard points for your project. The areas indicated on this map qualify for NAHB points under locally available, indigenous materials.*

- **Life Cycle Assessment (LCA)**—The LCA data submitted to BEES can be used to select siding products to determine the product with the lowest environmental impacts. The NAHB's NGBS provides points for using LCA to select building products.

For more information on the life cycle of CertainTeed products, please visit <http://ws680.nist.gov/Bees> or [www.certainteed.com/resources/Green\\_Corporate-Green-Brochure.pdf](http://www.certainteed.com/resources/Green_Corporate-Green-Brochure.pdf)



Listed below is a sampling of CertainTeed siding and trim products that can contribute to achieving LEED points. These recommendations highlight the U.S. Green Building Council LEED Green Building Rating System. They should not be construed as comprehensive recommendations for LEED design and construction. For complete details on the LEED certification process, consult a LEED professional or contact the U.S. Green Building Council.

LEED Criteria		Requirement	Possible Points	CertainTeed Products
<b>LEED H Version 1.11a</b>				
EA 1	ENERGY STAR Labeled Home	Improve the overall energy performance of the home. Points are earned by exceeding a base HERS Index (85 for Southern States, 80 for Northern States).	1-34	CedarBoards insulated siding
MR 2	Environmentally Preferable Products	Use environmentally preferable products (EPP).	0.5	CedarBoards D6 insulated siding, minimum 60% pre- and post-consumer recycled vinyl (53% for entire assembly)
		Use materials that have been extracted, processed, and manufactured within 500 miles of the home (local).	0.5	Social Circle plant: Restoration Millwork

### LEED for New Construction (NC), LEED for Core and Shell (CS), and LEED for Schools 2009

EA 1	Optimize Energy Performance	Increase levels of energy performance beyond the prerequisite standard to reduce environmental and economic impacts associated with excessive energy use.	1–19 (NC and schools)  3–21 (CS Only)	CedarBoards insulated siding
MR 4.1 MR 4.2	10%–20% Recycled Content	Use materials with recycled content such that the sum of post-consumer recycled content plus one-half of the pre-consumer content constitutes at least 10% (1 point) or 20% (2 points) of the cost of the total value of the materials in the project.	1-2	CedarBoards D6 insulated siding, minimum 60% pre- and post-consumer recycled vinyl (53% for entire assembly)
MR 5.1 MR 5.2	10%–20% Regional Materials	Use building materials or products that have been extracted, harvested or recovered, as well as manufactured, within 500 miles of the project site for a minimum of 10% (1 point) or 20% (2 points) of the cost of the total materials value.	1-2	Social Circle plant: Restoration Millwork

Note: An LCA pilot credit exists in the LEED NC standard. For access to CertainTeed's vinyl siding and Cedar Impressions LCA, please go to [www.certainteed.com](http://www.certainteed.com) or BEES.

Listed below is a summary of NGBS practices and a sampling of CertainTeed siding and trim products that can earn NAHB National Green Building Standard points.

NAHB Standard	Requirement	Possible Points	CertainTeed Products
<b>Resource Efficiency</b>			
601.7	No site-applied finishing materials	2-5	All siding and trim NAHB Research Center Green Approved Product
602.8	Termite-resistant materials	2-6	All siding and trim NAHB Research Center Green Approved Product
604.1	Recycled content materials	2-4	CedarBoards D6 insulated siding, minimum 60% pre- and post-consumer recycled vinyl (53% for entire assembly) NAHB Research Center Green Approved Product
605.3	Construction materials recycled offsite	3	Vinyl siding and soffit, Restoration Millwork Trim
608.1	Locally available, indigenous materials	2	All siding and trim
609.1	Use LCA to determine most environmentally preferable material	3	Vinyl siding, CedarBoards insulated siding, and Cedar Impressions  Please see <a href="http://ws680.nist.gov/Bees/">http://ws680.nist.gov/Bees/</a> or <a href="http://www.certainteed.com/resources/Green_Corporate-Green-Brochure.pdf">www.certainteed.com/resources/Green_Corporate-Green-Brochure.pdf</a> for analysis

### Energy Efficiency

702.2	Energy/cost performance	30-120	CedarBoards insulated siding
703.1.1	Building envelope	10-36	CedarBoards insulated siding

### For More Information

For complete details on the LEED rating system and certification process, contact your LEED professional or visit [www.usgbc.org/LEED](http://www.usgbc.org/LEED). For more information on the NAHB Model Green Home Building Standard, call 800-368-5242 x8290 or visit [www.nahb.org/gbg](http://www.nahb.org/gbg). For information about earning LEED and NAHB points with specific CertainTeed products, call our Sales Support Group at 800-233-8990.

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