



The Solutions Network

Rochester, New York

Sustainable Products

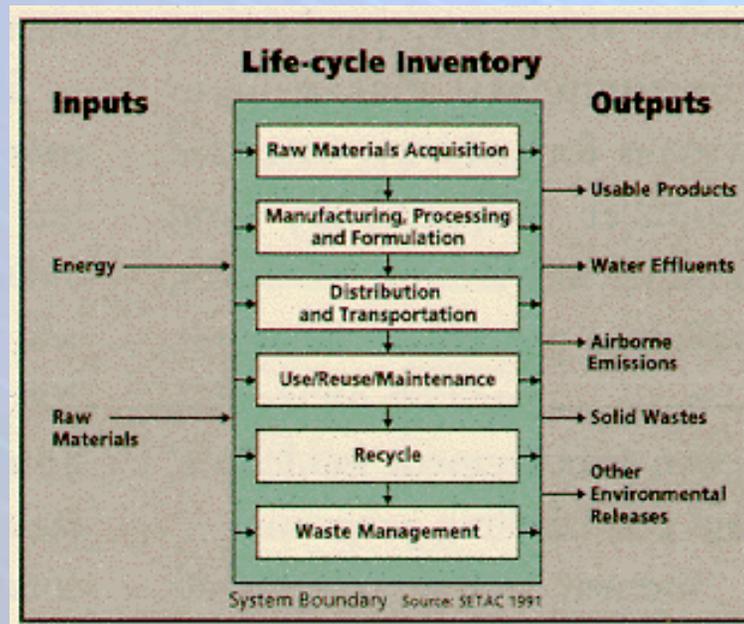
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LEED™ 2.0 Accredited Professional

Kling, Washington DC

Sustainable Products

❖ What makes a building product sustainable?





Evaluating Products

- ❖ Life Cycle Impact Analysis (LCIA)
 - BEES (Building Environmental and Economic Sustainability) Version 3.0
 - Athena Environmental Impact Estimator Version 2.0
- ❖ Single Impact Analysis
 - Recycled Content
 - IAQ Performance
 - Etc.
- ❖ Multiple Impact Analysis



LCIA Programs

❖ **Building for Environmental and Economic Sustainability**

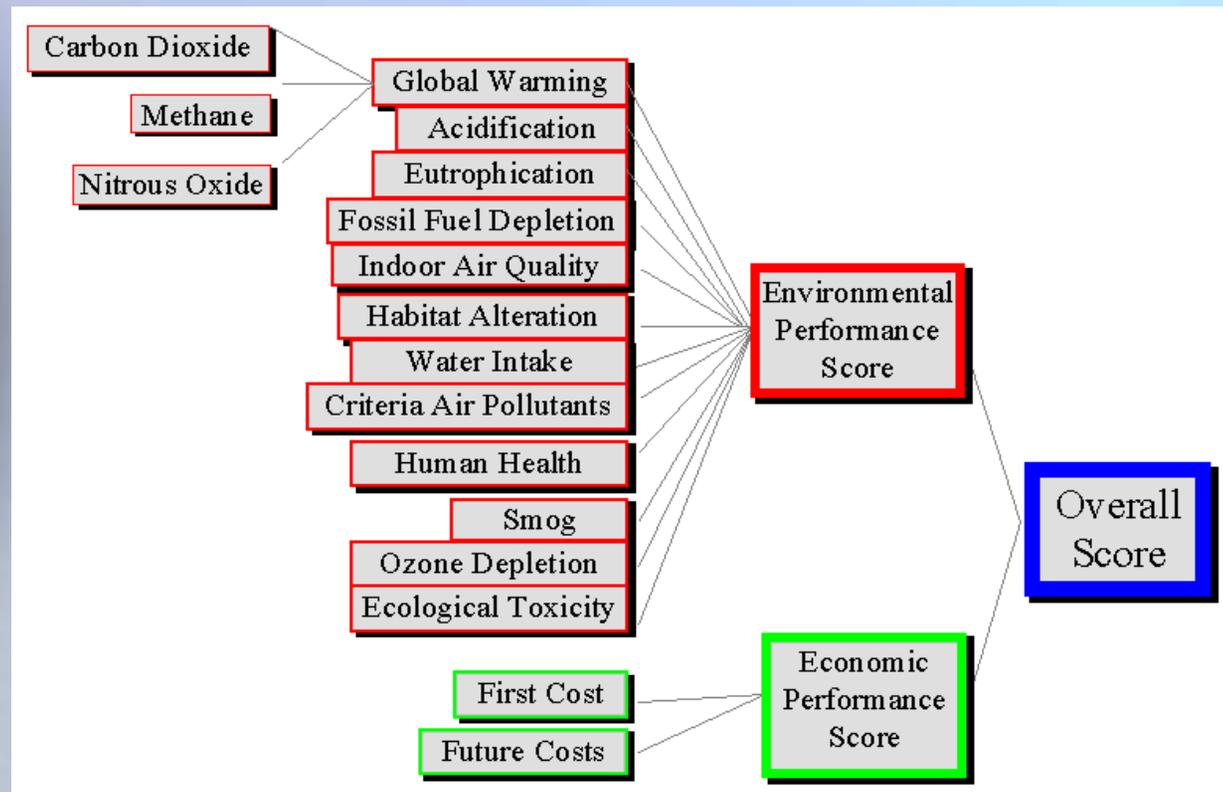
– Version 3.0

- Developed by National Institute of Standards and Technology (NIST)
- 23 Different Building Elements



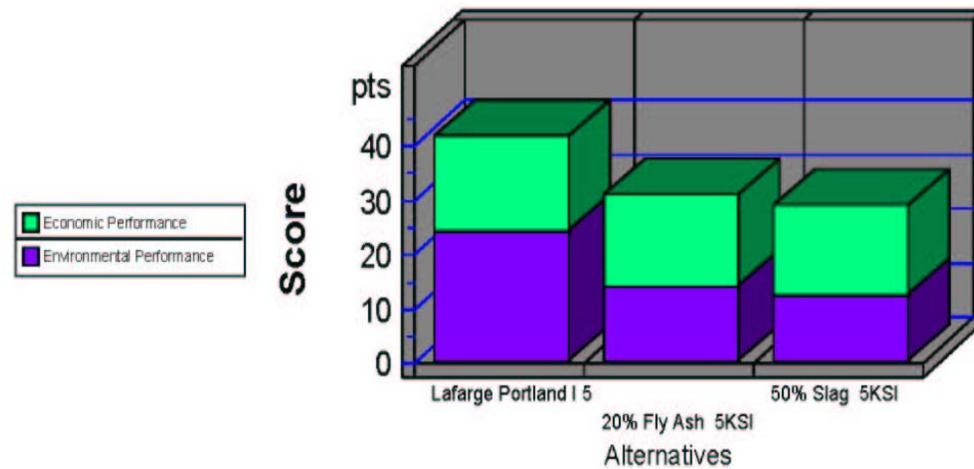
❖ <http://www.bfrel.nist.gov/dae/software/bees.html>

LCIA Programs



LCIA Programs

Overall Performance



Note: Lower values are better

Category	Lafarge I	20Ash5KSI	50Slag5KSI
Economic Perform.-50%	17.2	16.4	16.4
Environ. Perform.-50 %	24.0	14.0	12.1
Sum	41.2	30.4	28.5



Evaluating Products

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Single Impact Analysis

❖ Sustainable Manufacturing

- Recycled Content (LEED-NC MR-4.1 & 4.2)
 - Post-Consumer
 - Post-Industrial
- Local/Regional (LEED-NC MR-5.1 & 5.2)
- Rapidly Renewable (LEED-NC MR-6)
- Environmentally Harvested (LEED-NC MR-7)
- Less-Toxic Materials
- Green Manufacturing Process



Single Impact Analysis

❖ High Performance Sustainable Materials

➤ Low-Emitting Materials

- Adhesives and Sealants (LEED-NC EQ-4.1)
- Paints and Coatings (LEED-NC EQ-4.2)
- Carpet (LEED-NC EQ-4.3)
- Composite Wood (LEED-NC EQ-4.4)

➤ Low-Energy

- Cool Roofs (LEED-NC SS-7.2 & EA-1)
- High Efficiency HVAC Products (LEED-NC EA-1)



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Certifications

- ❖ Environmentally Preferable Products
 - Executive Order 13101, *Greening the Government through waste prevention, recycling, and federal acquisition*
 - EPA - Environmentally Preferable Products
 - USDA - Bio-Based products
 - “Best Available” Technology



Certifications

❖ **Comprehensive Procurement Guidelines (CPG) - EPA**

- **Recovery Materials Advisory Notices (RMANs)**
 - % Post-Consumer Recovered Content
 - % Total Recovered Content
- **Building Materials included:**
 - Roofing Materials
 - Carpet/Carpet Cushions
 - Cement and Concrete
 - Paint
 - Floor Tiles
 - Building Insulation





Certifications

❖ **Scientific Certification Systems**

- Independent "third-party"
- Certifies Manufacturing
 - IAQ Performance (LEED EQ-4.1 thru 4.3)
 - Recycled Content (LEED MR-4)
 - No Formaldehyde (LEED EQ-4.4)
 - No Ozone depleting chemicals
 - Biodegradeable
 - Salvaged Wood (LEED MR-3.1)
 - FSC Product Compliance (LEED MR-7)





Certifications

❖ **Scientific Certification Systems – EPP Certification**

- Sustainable Building Products
 - Carpets
 - Carpet Fibers
 - Flooring Management Systems
- Standards:
 - EO 13101 - EPA EPP Purchasing Guidelines
 - ISO 14024 - Environmental Labeling





Certifications

❖ **Composite Panel Association - EPP Certification**



- Sustainable Building Products
 - Particleboard
 - Medium Density Fiberboard (MDF)
- Standards:
 - EO 13101 – EPA EPP Purchasing Guidelines
 - ANSI A208.1 & 2 – Formaldehyde Emissions



Certifications

❖ **Green Seal**

➤ Sustainable Building Products:

- Paints (LEED-NC EQ-4.2)
- Adhesives (LEED-NC EQ-4.1, proposed)
- Windows/Doors
- Chillers
- Residential A/C and Heat Pump Units

➤ Standards:

- ISO 14024 - Environmental Labeling
- EO 13101 - EPA EPP Purchasing Guidelines





Certifications

❖ *Forest Stewardship Council Certification*

- Forest Certification
 - Over 100 in United States
- Chain of Custody
 - Over 400 in United States

❖ Required for LEED-NC MR-7





Certifications

❖ **GreenGuard Certification**

❖ IAQ Performance Based:

- Hard Surface Flooring
- Insulation
- Wall Coverings
- Paints/Coatings

❖ Independent Testing:

- Formaldehyde, VOCs, Ozone, CO, CO₂, NO₂, Particles

❖ On-line Printable Certificates





Certifications

- ❖ ***CRI Green Label Plus***
- ❖ IAQ Performance Based:
 - Carpet
 - Cushion
 - Adhesives
- ❖ Required for LEED-NC EQ-4.3





Certifications

❖ **EnergyStar Certification**

❖ Energy Performance Based

❖ Products Certified:

- Roof Systems (LEED-NC SS-7.2)
- HVAC Equipment
- Lighting
- Windows
- Doors
- Skylights



August 8-11, 2004

www.energy2004.ee.doe.gov



Certifications

❖ **CRRC Label**

- Energy Performance Based
 - Solar Reflectance
 - Thermal Emittance



	ASHRAE 90.1	Title 24	Energy Star	LEED
Solar Reflectance	0.70	0.70	0.65	0.65
Thermal Emittance	0.75	0.75	NA	0.90



Who Selects?

❖ Architect

- Project Architect – Roof/Walls/Doors/Windows
- Structural Engineer – Structural System
- Interiors – Interior Finishes
- MEP Engineers – System Components

❖ Specification Writer

❖ Owner

- Company Standards

❖ Contractor/Subcontractor/Product Manufacturer



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Product Resources

- ❖ Whole Building Design Guide (WBDG)
 - <http://www.wbdg.org>
- ❖ Oikos Green Building Source
 - <http://www.oikos.com>
- ❖ Center for Resourceful Building Technology
 - <http://www.crbt.org>
- ❖ GreenSpec Directory
 - <http://www.buildinggreen.com>
 - One week access - \$12.95
 - One year access - \$199



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