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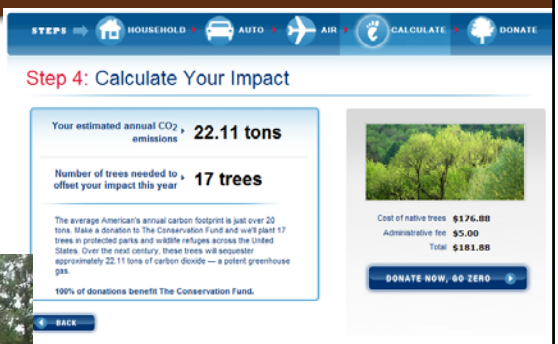
GREENWASHING



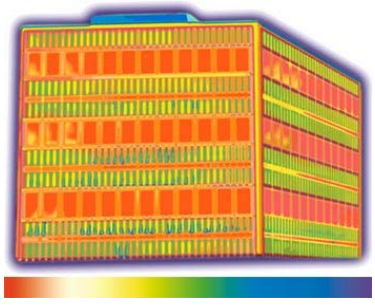
BUY AN SUV
EVEN BETTER
LETS MAKE IT A
HUMMER SUV

Discussion Topics

1. Building's Environmental Attributes
2. Trees – The state of our forests
   1. How have our forests changed?
   2. Certified Forests – What are we doing?

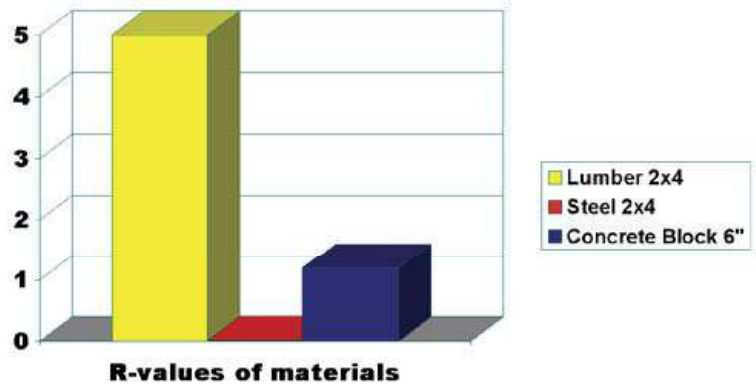
Desirable Attributes?

- Energy Efficiency
- Re-use & Reduction
- Low impact on the environment
  - Air pollution
  - Water pollution
  - Carbon emissions
- Aesthetics



ENERGY EFFICIENCY

Wood is a better insulator and is less conductive than steel or concrete.



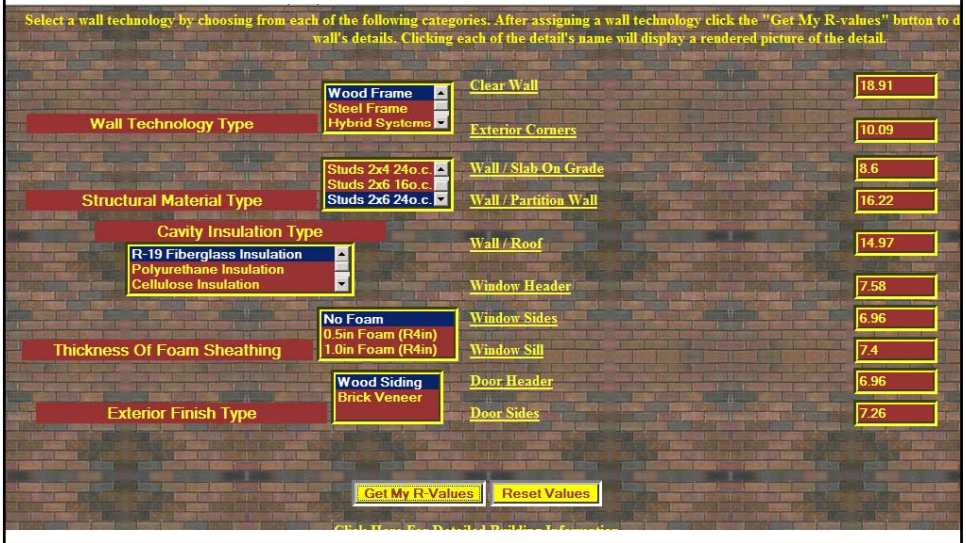
Wood Framed vs. Steel R

- Hot Box Tests of 8’ x 8’ wall conducted to determine whole assembly R

Table 2: Hot Box Test Results

	Wood Stud Wall	Steel Stud Wall	Steel Stud Wall 0.75 in. XPS
Clear Wall R	9.65	5.78	9.37
Center of Cavity R	13.95	13.95	17.95
R measured as (h*ft^2*^{O}F)/Btu			

How the Same Wall Can Have Several Different R-Values: Relations Between Amount of Framing and Overall Thermal Performance in Wood and Steel-Framed Walls by Kosny et. Al

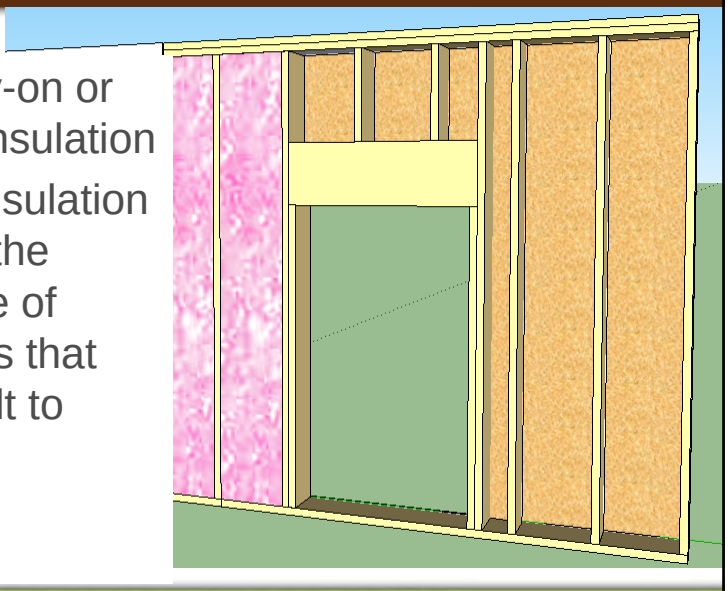


Wood Framed Wall - Energy

- Insulation Types
  - Batt
  - Blown-in
  - SIP
- R-Value
  - Assumed vs. True
- Maximizing Insulation

Minimizing Poor Insulation Installation

- Use spray-on or loose fill insulation
- For batt insulation minimize the magnitude of small gaps that are difficult to insulate.



Wood and the Environment: 3 R's of Green

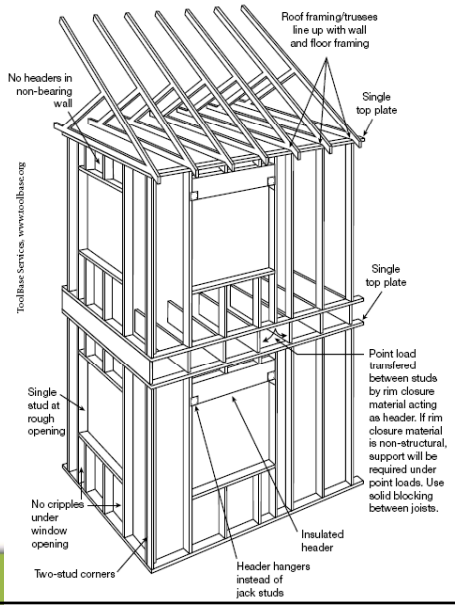
How does wood contribute to the 3 R's of Green?

Wood and the Environment: 3 R's of Green

REDUCE

- ✓ Industry is using technology to REDUCE
  - Sawmilling improvements optimize yield from logs
  - Kiln-drying optimization reduces energy needed to produce dry lumber
  - Engineered wood products enable manufacturers to use more of the tree
  - Using manufacturing bi-products as bio-fuel reduces fossil fuel consumption and eliminates wood waste
- ✓ Specifiers can REDUCE by optimizing design

Wood and the Environment: 3 R's of Green

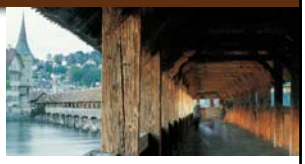


REDUCE

- Optimally align window and door openings
- Reduce unnecessary framing elements
- Don't oversize framing members
- Design in 4' increments

Wood and the Environment: 3 R's of Green

RE-USE



- Specifiers can help the RE-USE effort
  - Stronger market demand for salvaged material will create more cost-effective recovery
  - USDA Forest Products Lab website has directory of Wood-framed Building Deconstruction and Re-used Building Materials Companies

    http://www.fpl.fs.fed.us/documnts/fplgtr/fpl_gtr150.pdf

Sustainable Design

- BIP office building by architect Alberto Mozó
- http://www.treehugger.com/files/2008/05/design-for-deconstruction.php

Santiago, Chile

Laminated Wood Members

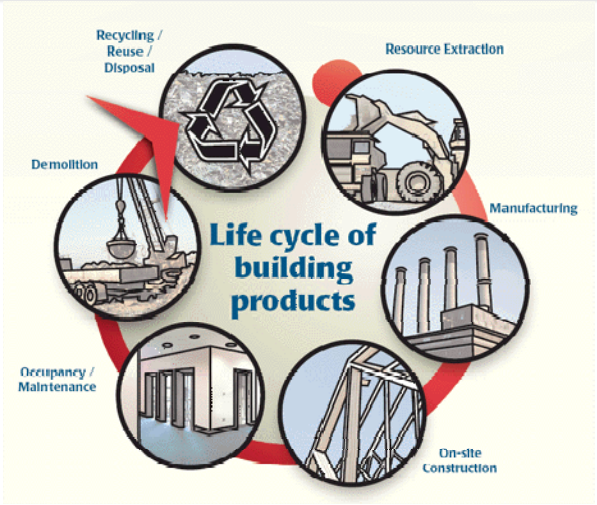
- BIP office building by architect Alberto Mozó, constructed in Santiago, Chile.

Re-Use of Wood

Wood and the Environment: 3 R's of Green

RECYCLE

- ✓ **25%** of building debris is RECYCLED, **75%** is combusted or put in landfill
  - Rapid growth in number of recovered wood companies
  - Wood waste is manufactured into high-value composite products and low-grade non-lumber products
  - Wood product manufacturers capture 94% of wood waste

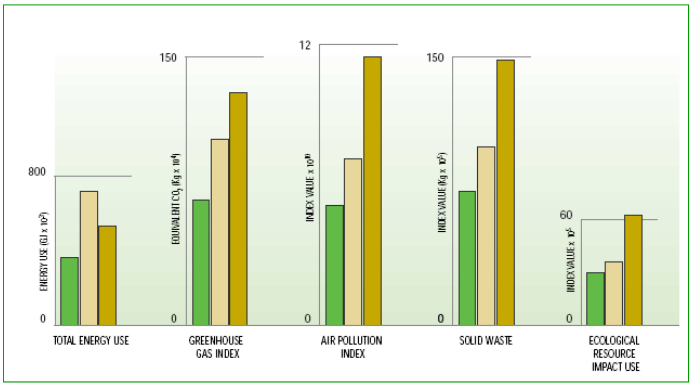


Life Cycle Assessment

Athena Institute

LCA: How does wood measure up?

ATHENA OFFICE BUILDING CASE STUDY



- 50,000 sq. ft. Office Building
- Full LCA software used to compare steel, concrete and wood

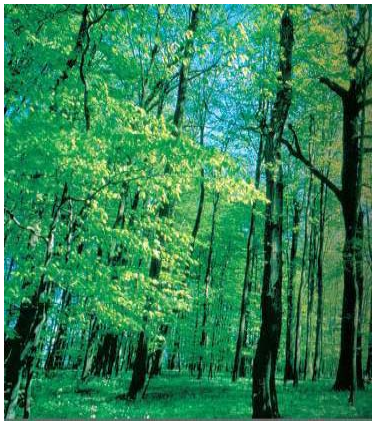
Life Cycle Assessment

- **Interior Wall Comparison**

ATHENA® EcoCalculator for assemblies

		ASSEMBLY TYPE	Primary Energy per SF (MMBtu)	GWP per SF (lbs)	Weighted Resource Use per SF (lbs)	Air Pollution Index per SF	H2O Pollution Index per SF
13	Average:		0.06	7.12	18.62	0.85	0.0012
14	1	Wood stud (16" OC) gypsum board + latex paint each side	0.03	2.44	13.66	0.40	0.0001
15	2	Wood stud (24" OC) gypsum board + latex paint each side	0.03	2.38	12.35	0.40	0.0001
16	3	Wood stud (24" OC) gypsum board x2 + latex paint each side	0.05	4.05	19.02	0.69	0.0001
17	4	Steel stud (16" OC) gypsum board + latex paint each side	0.03	3.51	10.79	0.46	0.0034
18	5	Steel stud (24" OC) gypsum board + latex paint each side	0.03	3.18	10.07	0.44	0.0026
19	6	Steel stud (24" OC) gypsum board x2 + latex paint each side	0.05	4.85	16.75	0.73	0.0026
20	7	6" Concrete block; gypsum board + latex paint each side	0.11	15.92	32.31	1.53	0.0015
21	8	6" Concrete block; latex paint each side	0.09	14.25	25.63	1.24	0.0000
22	9	Clay brick (4") unpainted	0.11	13.48	26.97	1.76	0.0001

COMMON QUESTIONS?



1. Do we have more trees today than 100 years ago?
2. Does specifying wood products contribute to **deforestation?**
3. Is wood a **renewable resource?**

State of our Forests?

1900 – 769 million acres (est.)
1953 – 755 million acres
2006 – 750 million acres
Acreage varied from 738 to 761 million acres from 1953-2006

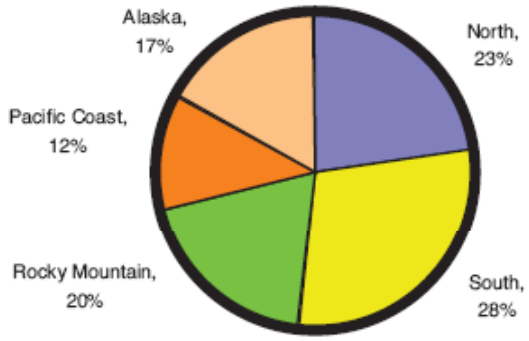
Trends in US forestland area (million acres) by region, 1630–2006

Region	1630	1760	1800	1850	1900	1953	1963	1977	1987	1997	2006
North	298	294	285	227	144	161	166	164	165	170	171
South	354	352	346	329	252	226	228	217	212	214	214
Rocky Mountain	154	154	154	149	149	148	146	144	145	149	150
Pacific Coast	104	104	99	104	97	93	92	91	87	87	88
Alaska	128	128	128	128	128	128	128	128	128	127	127
Total	1,038	1,032	1,013	936	769	755	761	745	738	748	750

Note: Historic data are reconciled and corrected to reflect new forestland definition; accordingly, previously published figures may differ. Figures may not add to totals because of rounding. Source: Forest Service statistics based on data from Forest Inventory Analysis data and reports (1950–); Forest Service report estimates prior to field inventories (1900–1949); Bureau of the Census land clearing statistics (1850–1899); clearing estimates proportional to population growth (1760–1849).

Where are the trees at?

Forestland distribution in the United States, 2005



Source: USDA Forest Service, Forest Inventory Analysis Program. 2006.

Is wood a renewable resource?

What does renewable mean?

1) Capable of being replaced by natural ecological cycles or sound management practices – Webster's dictionary

2) A natural resource is a renewable resource if it is replaced by natural processes at a rate comparable or faster than its rate of consumption by humans - Wikipedia

Is wood a renewable resource?

Volumes of wood in the US have remained relatively constant for 100+ years

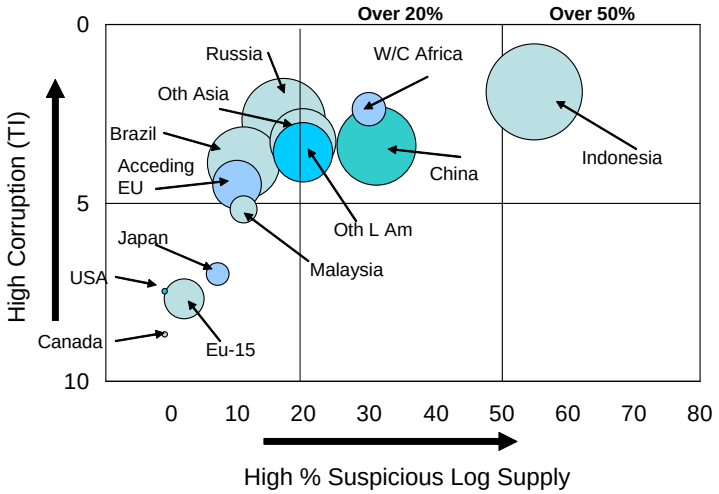
At the same time we have experienced two housing booms

Are trees the same?

Today's forests are frequently managed resulting in faster growing trees which may have larger growth rings.

1) Innovations in engineered wood and grading technology
2) Inventory of sawtimber (>9" diameter) has increased 25% from 1963-1992.

Corruption & Illegal Forest Activity



Note: Size of bubbles represents volume of suspect roundwood, including imports.
Sources: Transparency International; WRI/SCA estimates of illegal logging

What if we stopped forestry?

- On May 18, 1980 at 8:32am St. Helens began erupting for 9 hours.

Photos by Weyerhaeuser

Mt. St. Helens

•230 square miles of forest was blown down or buried beneath volcanic deposits.

•Inside the blast zone 110,000 acres are a National Volcanic Monument left to respond naturally to the disturbance.

Photos by Weyerhaeuser

Mt. St. Helens

•Outside the blast zone private industry began replanting.

Mt. St. Helens

•25 years later replanting has brought life back to Mt. St. Helens

Photos by Weyerhaeuser

Mt. St Helens

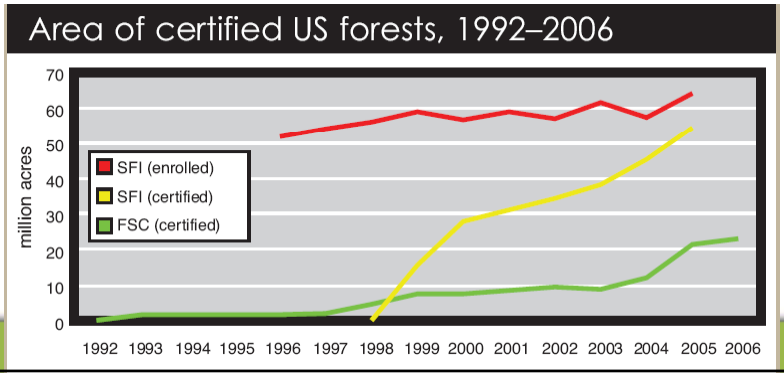
•Not only have the trees come back but so has the wildlife.

Photos by Weyerhaeuser

CERTIFIED WOOD

What are the options?

- Roughly 90% of world's forests are uncertified.
- 20% of US forests are certified
- Three of four programs started in the mid 90's. ATFS is older program



Rating Systems: Comparison

Canada's National Sustainable Forest Management Standard- Takes public land ownership into consideration and therefore requires a rigorous public participation process	Sustainable Forestry Initiative - Takes private land ownership into consideration and addresses associated issues of training, outreach and procurement for private land suppliers	Forest Stewardship Council – Addresses social issues having international reach into countries where there is not a legal and institutional framework in place for important social rights and values	American Tree Farm System **AFS** – oldest voluntary, third party certification program in the world. Address issues primarily to educate and support non-industrial forest landowners.

SFI and FSC – 2010 Dovetail Report

Table 6. Summary of SFI and FSC Approaches to Considerations within the Standards

Consideration	SFI Approach	FSC Approach
Clearcutting and Opening Size Limits	Single requirement	Regional variation and plantation management requirement
Green-up Requirements	Single requirement	Regional variation and plantation management requirement
Land Use Conversion	Performance based requirement	Prescriptive requirement
Calculation of Harvest Levels	Periodic updating required; no specific time period for calculations	10 year time period required
Management Plan Updates	Annual documentation; no specific time period for planning updates	10 year time period required
Old Growth	Regional variation	Single requirement with variation for American Indian lands
Training	Prescriptive requirement	Performance based requirement
Genetically Modified Organisms (GMOs)	Required to comply with applicable laws and policies addressing GMO research	Not allowed
Indigenous Peoples' Rights	Required for audits of public lands	Required for audits of all lands

Audits to Sustainable Forest Management (SFM) Standards

• 2 certification bodies accredited to carry out SFM audits against all three of the SFM standard used in Canada (CSA, FSC, SFI):
- KPMG
- QMI – SAI Global

• 4 certification bodies accredited to carry out SFM audits against two of the SFM standards, as follows:
- Bureau de normalisation du Quebec (BNQ) – CSA, SFI
- Bureau Veritas (BV) – FSC, SFI
- PricewaterhouseCoopers LLP – CSA, SFI
- SGS - FSC, SFI

LEED Projects And Wood

CASE STUDY

At Chesapeake Bay, Form Follows Function

Project Summary

PROJECT
Philip Merrill Environmental Center

LOCATION
Annapolis, Maryland

OWNER
Chesapeake Bay Foundation

SmithGroup was interested in sustainable design long before it became popular. "We were committed to sustainable designs since the 1970s energy crisis," remembers Greg Mella, AIA, LEED AP, principal of SmithGroup. "When the 1980s came around, a lot of people didn't focus on energy-efficient buildings, so the lessons learned in the 1970s were forgotten. But we stuck with it, because we felt it was a good thing to do – good for the environment and good for building."

Consequently, when the Chesapeake Bay Foundation, a nonprofit organization devoted to protecting Maryland's Chesapeake Bay, looked to build a new, sustainable headquarters in 1997, SmithGroup was among only a handful of firms that shared their passion for sustainable design and won the job. As the team moved forward, every decision was based on whether it would result in a sustainable building that did not have a direct impact on the surrounding habitats.

"Our philosophy is that the greenest building is the least amount of building we truly need, built with the fewest number of materials," says William Baker, president and CEO of the Chesapeake Bay Foundation.

As a result, the construction materials of choice for the new headquarters were engineered wood products (EWP), says Mella. "Wood requires one-tenth the energy required to make a steel beam of the same strength. That's because to make the latter you must first collect scrap steel, transport it to the mill and

Reaching the apex of sustainable design, the Philip Merrill Environmental Center achieved LEED® Platinum status through inspired use of engineered wood products.

APA THE ENGINEERED WOOD ASSOCIATION

Recap

1. Building's Environmental Attributes
2. Trees – The state of our forests
    1. How have our forests changed?
    2. Certified Forests – What are we doing?

IS IT OK TO CUT DOWN TREES FOR OUR BUILDINGS?

Wood Frame Structures offer:

- Lower Cost
- Supports Local Economy
- Better Thermal Efficiency
- Use of the ONLY 3rd party certified renewable building material
- Reduced Carbon Footprint

Course Evaluations

In order to maintain high-quality learning experiences, please access the evaluation for this course by logging into CES Discovery and clicking on the Course Evaluation link on the left side of the page.

Questions?

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The Wood Products Council

Contact Information