

NCARB-SDTF Committee Meeting, October 6-7, Seattle, WA



Sustainable Design: Health, Welfare, & Safety

Food for Thought

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Sustainability:

"...We are all here together, at once, at the service and mercy of nature and each other." Paul Hawken, *Ecology of Commerce*

- Means meeting the needs of the present without compromising the ability of future generations to meet their needs. WCED 1987
- ...Must not narrow the choices of future generations but...expand them by passing on an environment and an accumulation of resources that will allow its children to live at least as well as, and preferably better than, people today. NCOE, 1993
- Does not undermine either (the earth's) physical and social systems of support Meadows, Meadows and Rander, 1992



Sustainability's Three E's:

- Environmental quality
- Economic vitality
- Equity/Social benefit

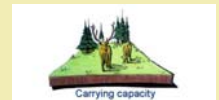


Graphic: Mathis Wackernagel, LEAD Presentation, March, 2000



The Earth Provides:

- Resource Supply
- Waste Assimilation



Graphic: Mathis Wackernagel, LEAD Presentation, March, 2000



Ecological Footprint:



Graphic: Phil Testamale, Redefining Progress, LEAD Presentation, March, 2000

- North American "Big Foots"
 - 1.9 hectares per person available (globally)
 - 9.6 global ha/person consumed in US
 - 6.9 global ha/person consumed in CA
 - .8 global ha/person consumed in India
- Housing type and location chief determinants

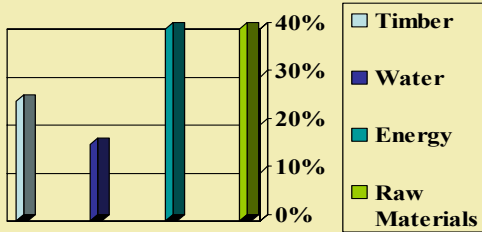


The Environmental Problem:

- Resource Depletion
- Environmental Pollution



Modern Buildings Spend Natural Capital...(Resource Depletion)



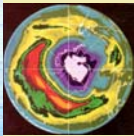
...With Significant Consequences (Environmental Pollution)

- Use of Virgin Materials
 - Landscape destruction
 - Toxic runoff from mines
 - Deforestation
 - Air and Water Pollution



...With Significant Consequences (Environmental Pollution)

- Use of Energy Resources
 - Air pollution
 - Global warming and climate change
 - Potential Degradation of Pristine Preserves



...With Significant Consequences (Environmental Pollution)

- Production of waste
 - Landfill problems
 - Leaching of heavy metals
 - Water pollution
- Unhealthy indoor air
 - Illness, Health complaints
 - Reduced productivity absenteeism



...So Who Will Pay the Price of Spending our Natural Capital?

- Higher energy costs
- Higher water rates
- Higher costs for raw materials
- Higher costs for environmental "fixes"
- Higher costs for labor/illness, absenteeism
- Higher costs to maintain an un-sustainable quality of life



Green Building: On The Path to Sustainability

Conventional



Sustainable



Green Building helps communities proactively address local and regional environmental concerns, such as...

- Global Warming
- Habitat Degradation
- Species Endangerment
- Hydrological Malfunction
- Wasted Resources
- Ozone Depletion
- Smog

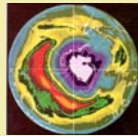
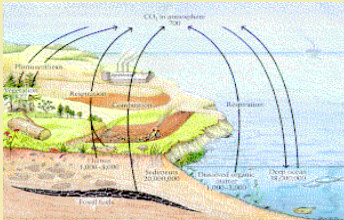


Regional Issues Relevant to Objectives – An Example

- Indoor Environmental Quality
 - Asthma Rates, Quality of Life, Health
- Resource Conservation
 - Rising Utility Fees (energy & water), Salmon Habitat Protection (ESA listing), Global Warming
- Ecosystem Protection
 - Salmon Habitat Protection (ESA listing), Global Warming



Making a Difference: Building Green works to reduce risk of global warming:



Green Building promotes reduced use of fossil fuel...

- Fossil fuel combustion is a major contributor to global warming. Energy efficiency is a significant area of emphasis in Green Building Programs.
- Example: Energy use is directly linked to production of CO2, the biggest culprit in global warming. "Half of the CO2 emissions present 10 years from now will result from the purchasing decisions made regarding appliances and equipment starting right now. If we switched to Energy Star choices, we could put this country on an entirely different path." -Kathleen Hogan, Director of E-Star, EPA



Other green practices reduce risk of global warming:

- Upgraded Envelope:** Reduces fossil fuel use, which is a source of all five types of greenhouse gases.
- CDL Waste Reduction:** Reduces landfill production of methane, a very potent greenhouse gas.
- Tree Preservation:** Trees sequester carbon dioxide, which accounts for 50% of global warming.
- CFC & HCFC-free Insulation** Eliminates a very "efficient" greenhouse gas.



Another Example: Endangered Salmon



Best Practices

- Amend soil with compost** Compost improves absorption & storage by up to 100%. Reduces runoff significantly.
- Efficient Framing Techniques** Efficient framing can reduce wood use by up to 20% reducing stress on forest habitat.
- Pervious Paving** Can increase infiltration significantly, depending on the product used.



Green Building Promotes Human Health & Safety

- Indoor air quality is a significant emphasis in green building programs.
- GB: Addresses major sources of health risk due to poor indoor air quality: VOC-emitting materials, dust, and molds.
- King County has three times the national average of asthma in school-aged children. 1 in 4 suffer from asthmatic symptoms.
- Example: Dust and Mold: "Dust and mold are the culprits in 80% of the buildings we investigate" – Dan Morris, ME, Healthy Buildings, Inc. (Seattle)



Best Practices means less dust-related problems:

- Medium-efficiency filters or better
- Central vacuum with outside exhaust
- Duct-free HVAC system
- No or reduced carpet



Best Practices to control moisture means less Mold problems:

- Effective grading
- Proper air sealing
- Proper venting
- Proper roof design & good flashing
- Wall designed to allow drying

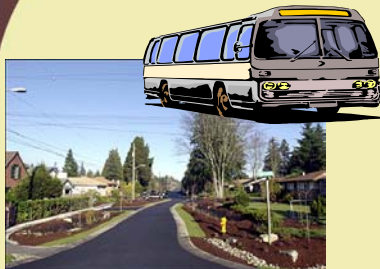


Green Community Design Promotes Human Health & Safety

- Getting residents out of their cars and onto their feet, bikes, and buses is a significant emphasis in Green Community Design.
- Addresses major reasons people use their cars: unsafe walking conditions, inconvenience
- Example: Lack of pedestrian safety. Measuring the Health Effects of Sprawl: In this national study (U.S.), health researchers found "people who live in counties marked by sprawl-style development tend to weigh more, are more likely to be obese, and are more likely to suffer from high blood pressure."
<http://www.smartgrowthamerica.org/healthreport.html>



Best Practices promote safer neighborhoods & a healthier lifestyle



Green Building Promotes Affordability – How? Broadening the meaning of welfare....

- Reduced Operating Costs
 - Energy Efficiency
 - Building & Appliances
 - Water Conservation
 - Low maintenance emphasis
 - Durable products require less frequent replacement
- Better neighborhood transportation planning
 - Better access to free or inexpensive transportation
- Healthier environment means fewer medical bills too!

