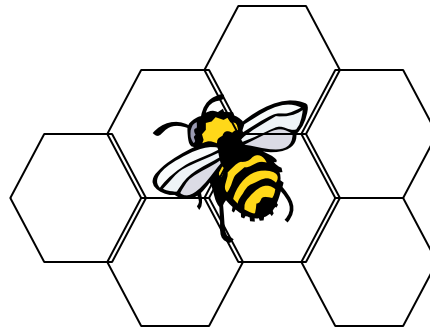
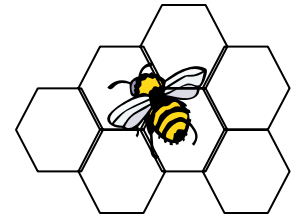


Counting Carbon for BioPreferred™



Barbara C. Lippiatt
U.S. Department of Commerce
National Institute of Standards and Technology

USDA BioPreferred Program



biobased content

functional

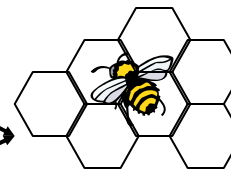
performance

cost performance

environmental

performance

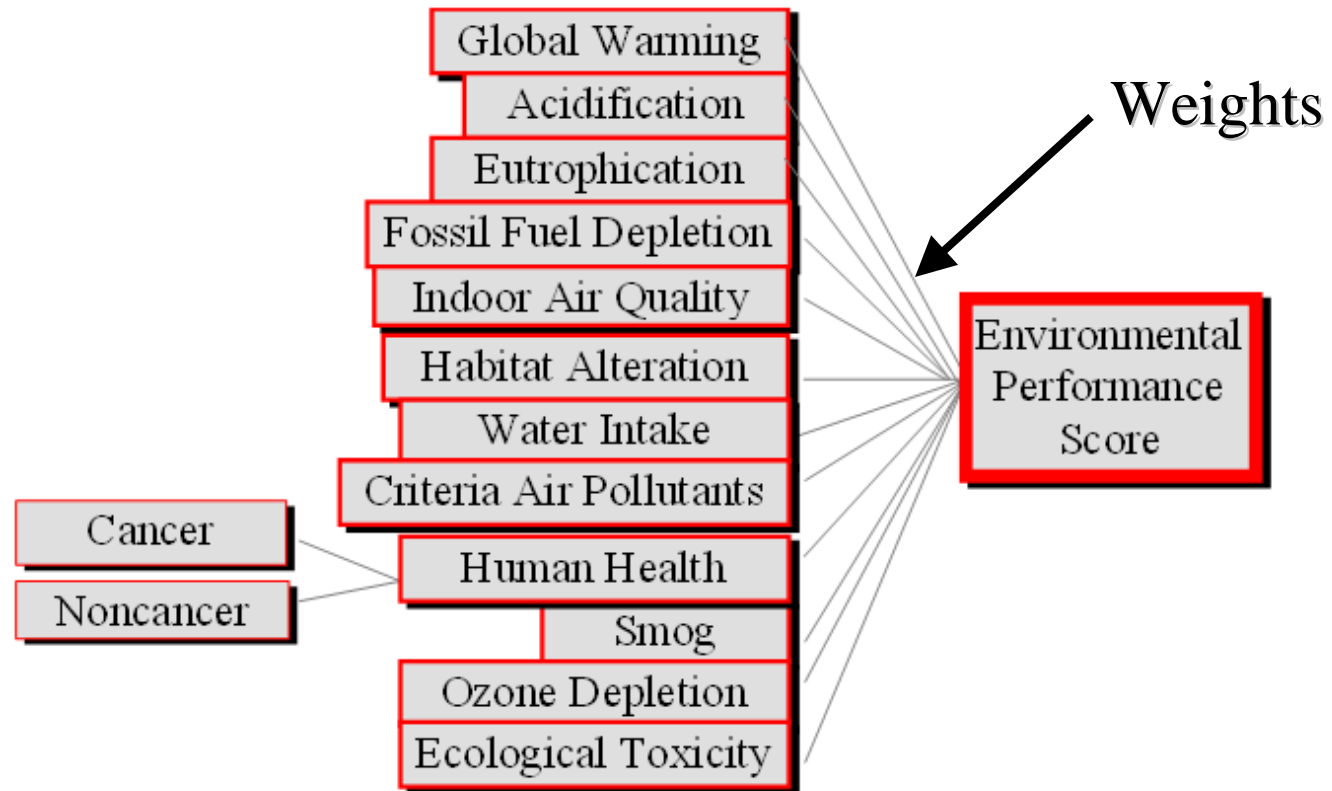
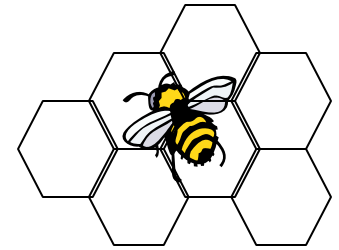
availability



BEES

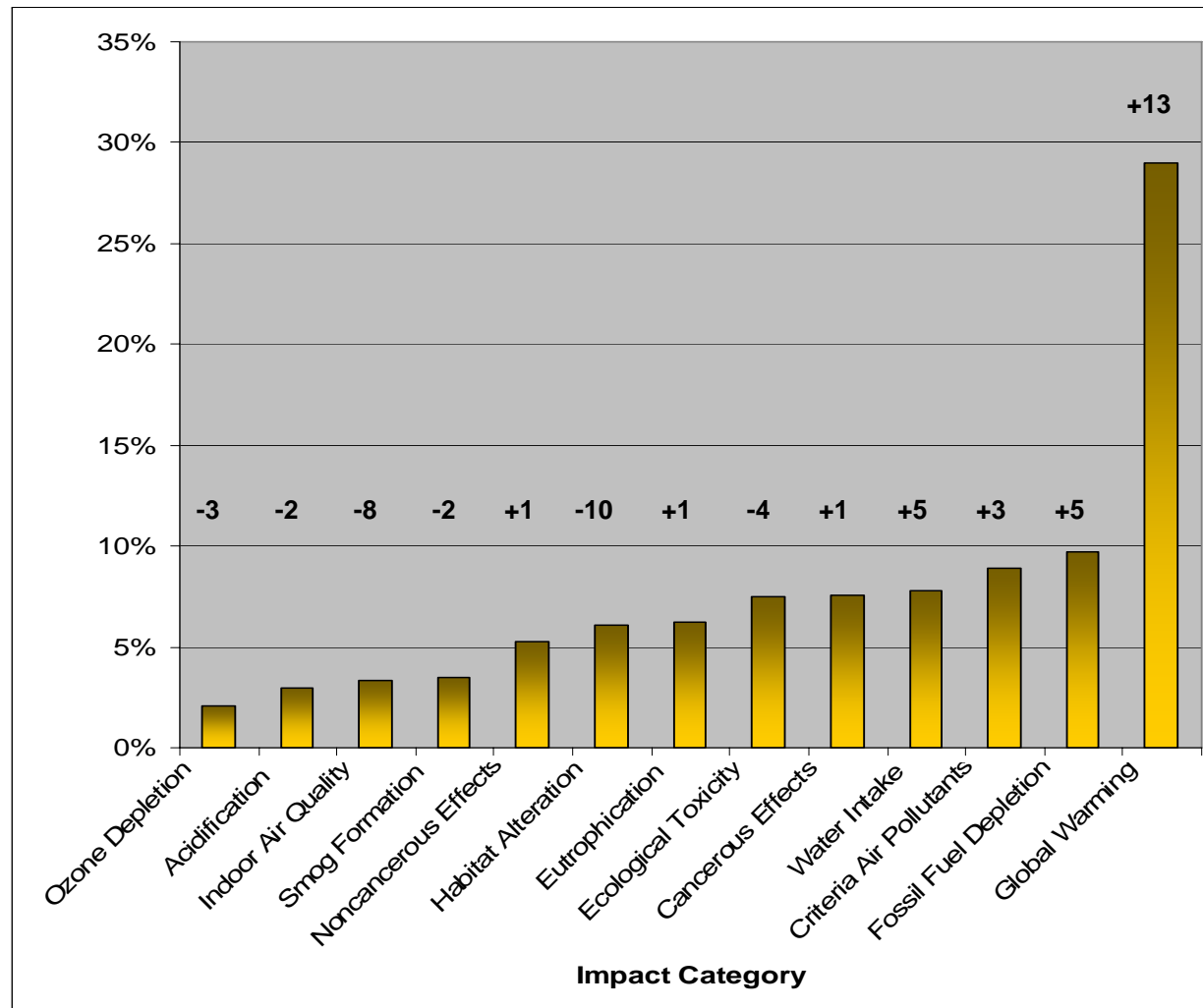
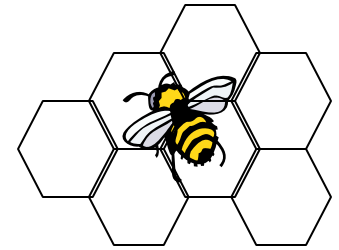
*Item
Designation*

BEES Environmental Performance Scoring

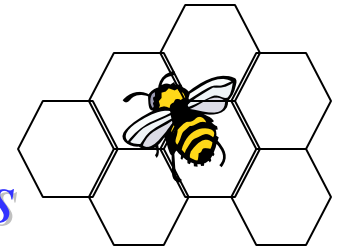


BEES

Stakeholder Panel Weights



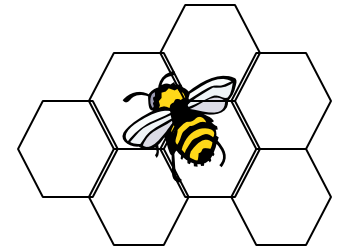
Global Warming Scoring: Biobased vs. Petroleum-based Products



Two “Before” and “After” Examples

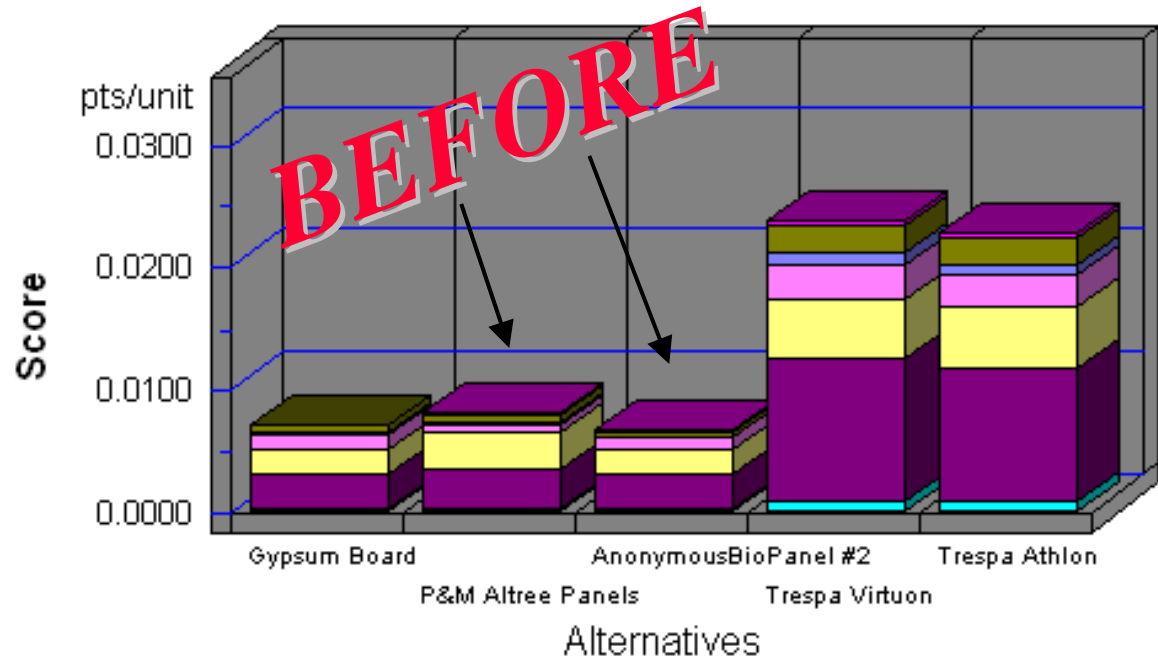
- **Before** accounting for recently sequestered carbon
- **After** accounting for recently sequestered carbon

Implications Example A: Significant Drop in Score

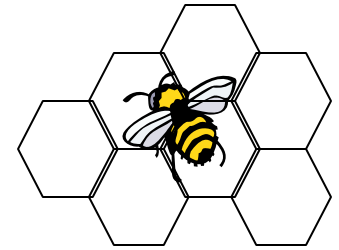


Environmental Performance

Acidification
Crit. Air Pollutants
Ecological Toxicity
Eutrophication
Fossil Fuel Depletion
Global Warming
Habitat Alteration
Human Health
Indoor Air
Ozone Depletion
Smog
Water Intake

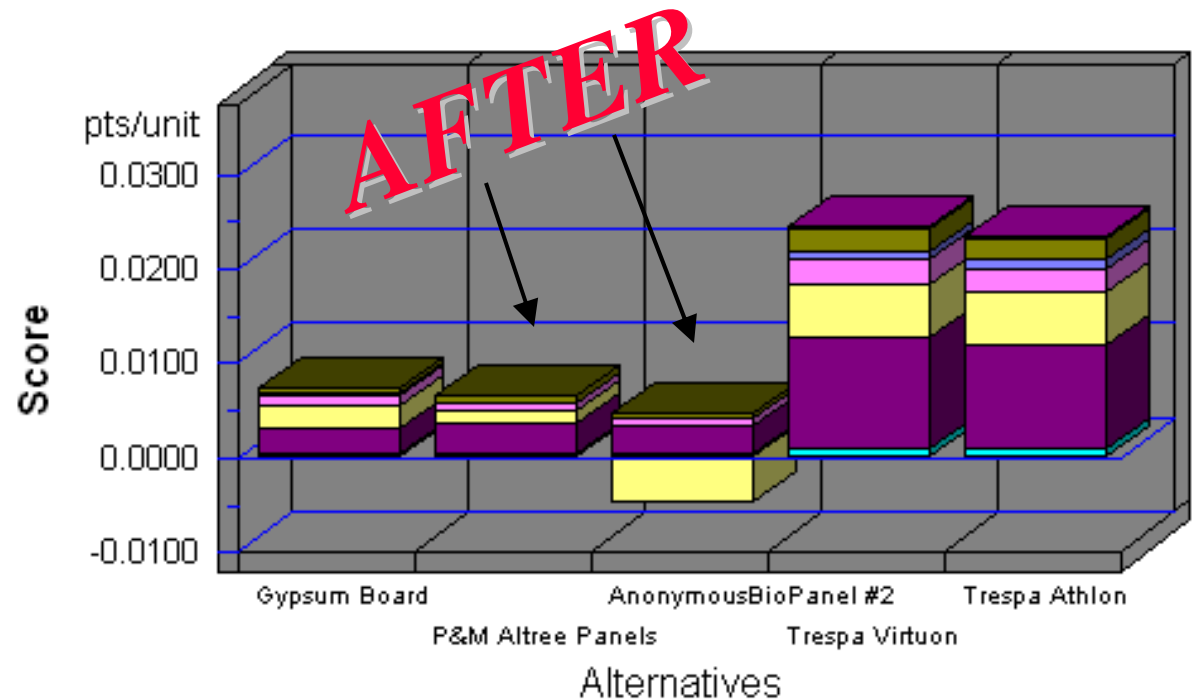


Implications Example A: Significant Drop in Score

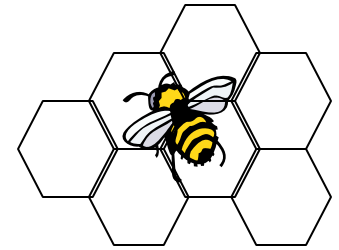


Environmental Performance

Acidification
Crit. Air Pollutants
Ecological Toxicity
Eutrophication
Fossil Fuel Depletion
Global Warming
Habitat Alteration
Human Health
Indoor Air
Ozone Depletion
Smog
Water Intake

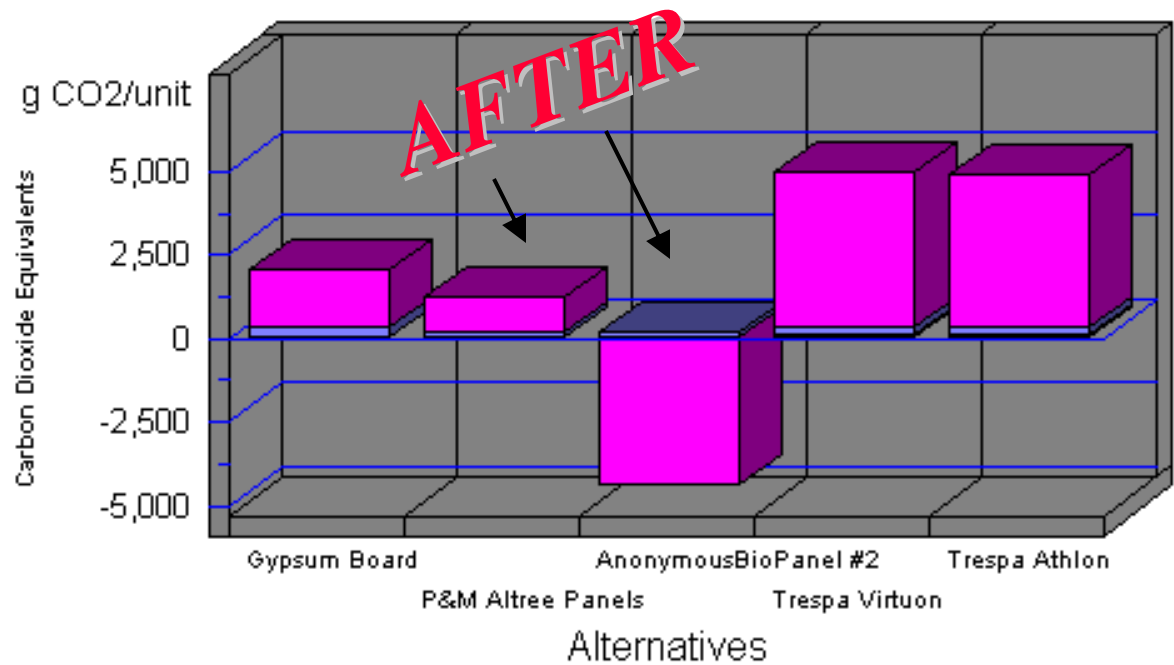


Implications Example A: Significant Drop in Score

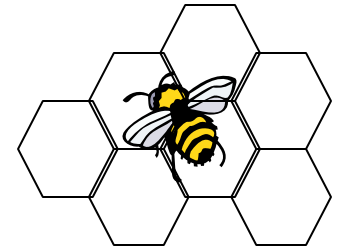


Global Warming by Flow

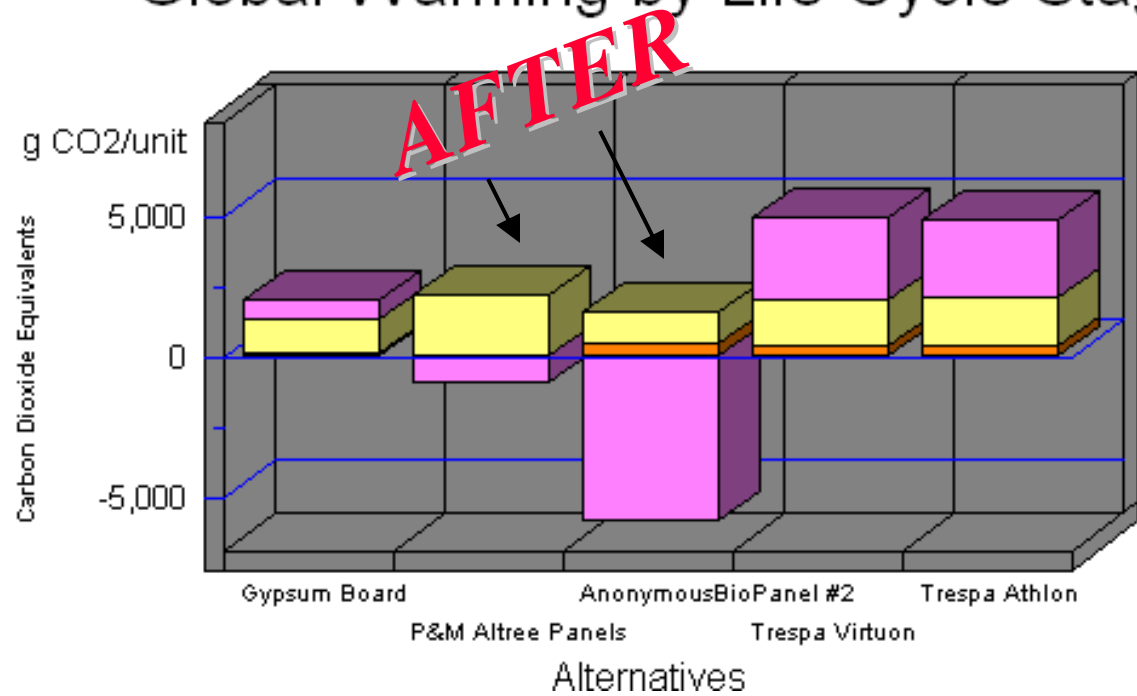
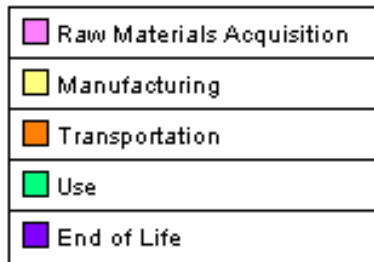
Carbon Dioxide
Carbon Tetrachloride
Carbon Tetrafluoride
CFC 12
Chloroform
Halon 1301
HCFC 22
Methane
Methyl Bromide
Methyl Chloride
Methylene Chloride
Nitrous Oxide
Trichloroethane



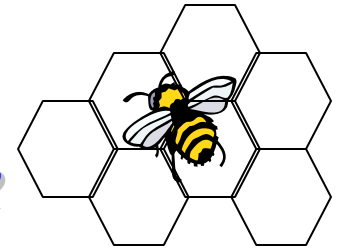
Implications Example A: Significant Drop in Score



Global Warming by Life-Cycle Stage

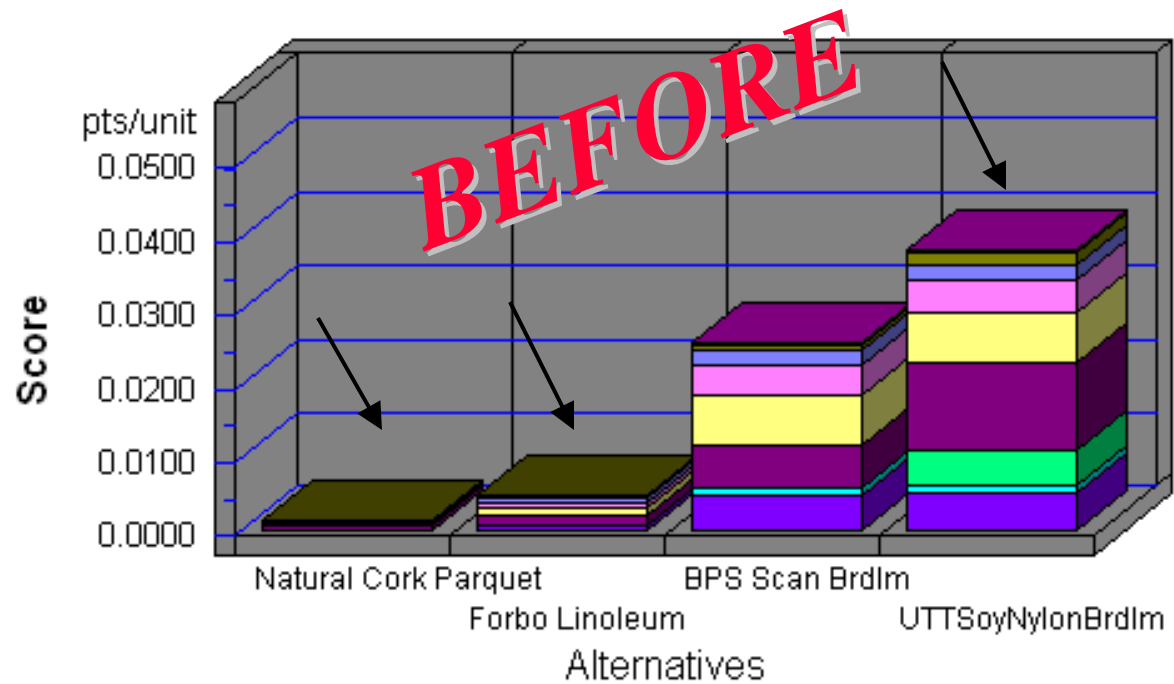


Implications Example B: Insignificant Drop in Score

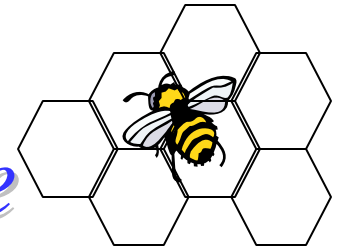


Environmental Performance

Acidification
Crit. Air Pollutants
Ecological Toxicity
Eutrophication
Fossil Fuel Depletion
Global Warming
Habitat Alteration
Human Health
Indoor Air
Ozone Depletion
Smog
Water Intake

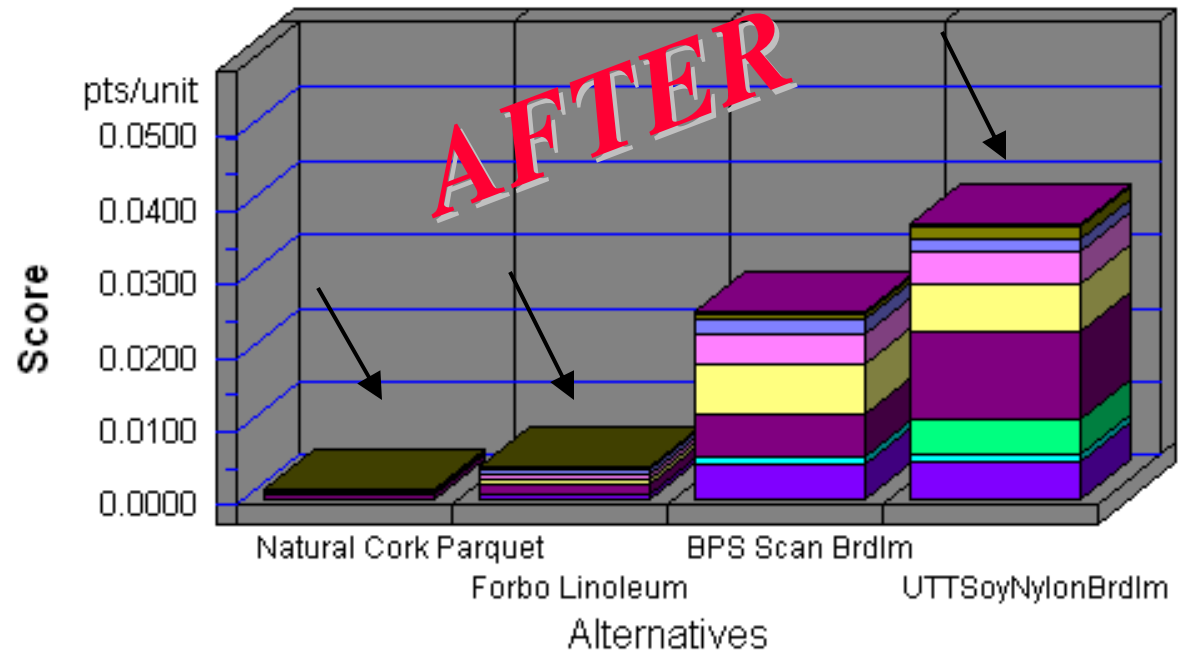


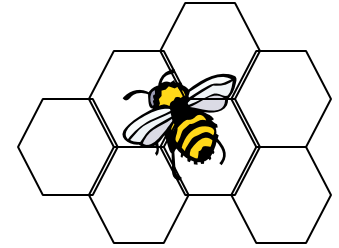
Implications Example B: Insignificant Drop in Score



Environmental Performance

Acidification
Crit. Air Pollutants
Ecological Toxicity
Eutrophication
Fossil Fuel Depletion
Global Warming
Habitat Alteration
Human Health
Indoor Air
Ozone Depletion
Smog
Water Intake



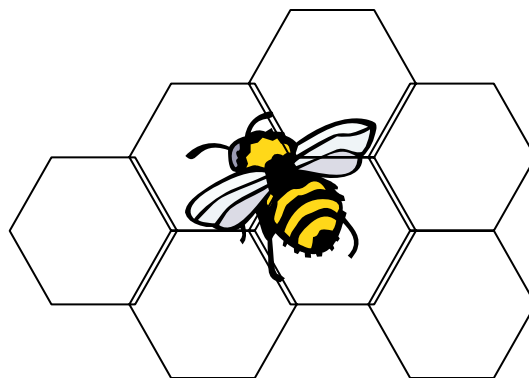


Conclusion

- Data quality matters
- Measurement methods matter
- Harmonization matters more
- BEES commits to adopting harmonized approach

NIST

For More Information...



www.bfrl.nist.gov/oae/bees.html