Choices with Purpose:

How Your Purchases Can Positively Impact Sustainability

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NIRSA Sustainability Committee:
Pam Su, Rodney Bloom, Allison Van Leeuwen, Angie Frederick, Brad Stinnett

Guiding Principles

Conference Greening
Member Education
Triple Bottom Line

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learning outcomes

Participants will be able to:

Describe three specific ways that individuals and departments in campus recreation can reduce their individual carbon footprint.

Understand and define the differences between various terms in sustainability including Life Cycle Assessment, Impacts/Attributes, and Social Sustainability.

Utilize a rubric to help them analyze their purchasing choices impact on sustainability.

Outline

Intro – Triple Bottom Line

Background on Impact – Why is this relevant?

Defining Terms - Life Cycle Assessment, Impacts/Attributes

Challenging Assumptions

Case Study – Selecting Fixtures, Furniture, Equipment

Reviewing Rubric

Graphic Source: Angry Trout Cafe, Minnesota

Background on Impact
Why is this relevant?

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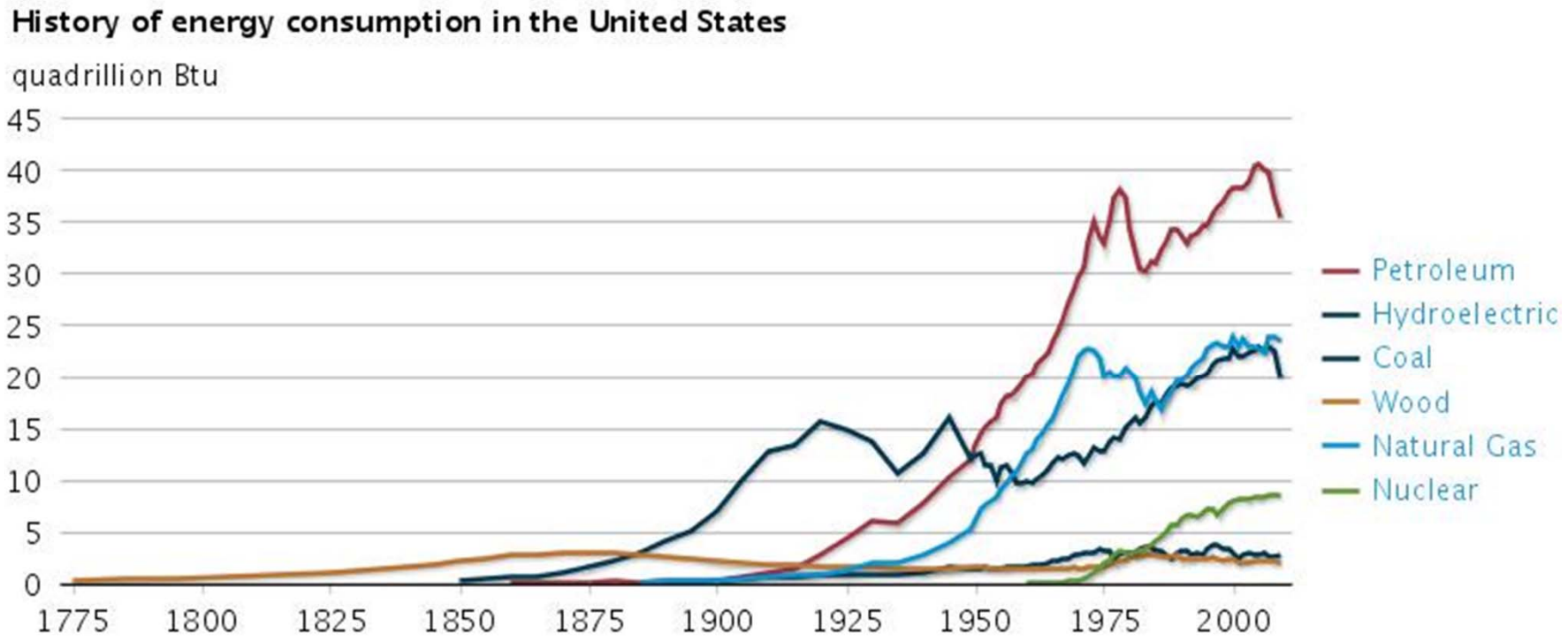
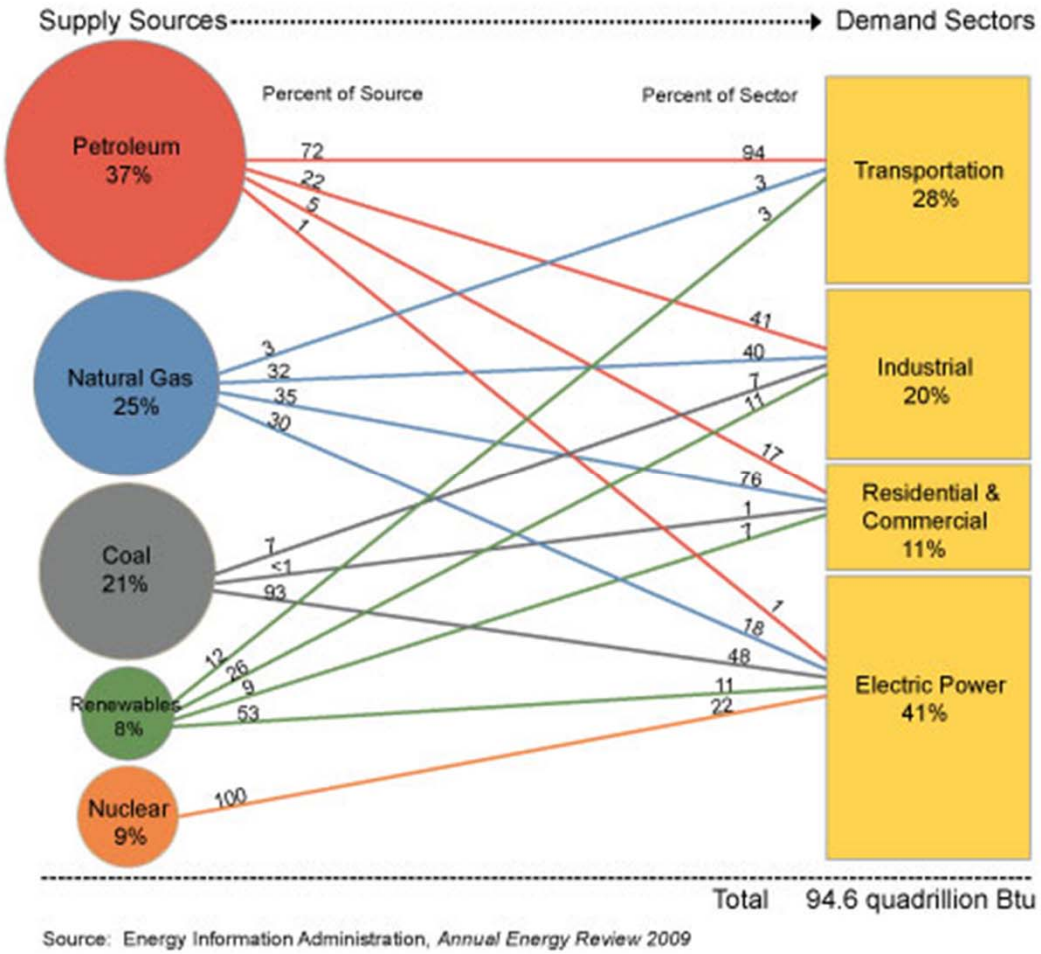
What energy are we using?



Where does it all go?



Source: Energy Information Administration, *Annual Energy Review 2009*

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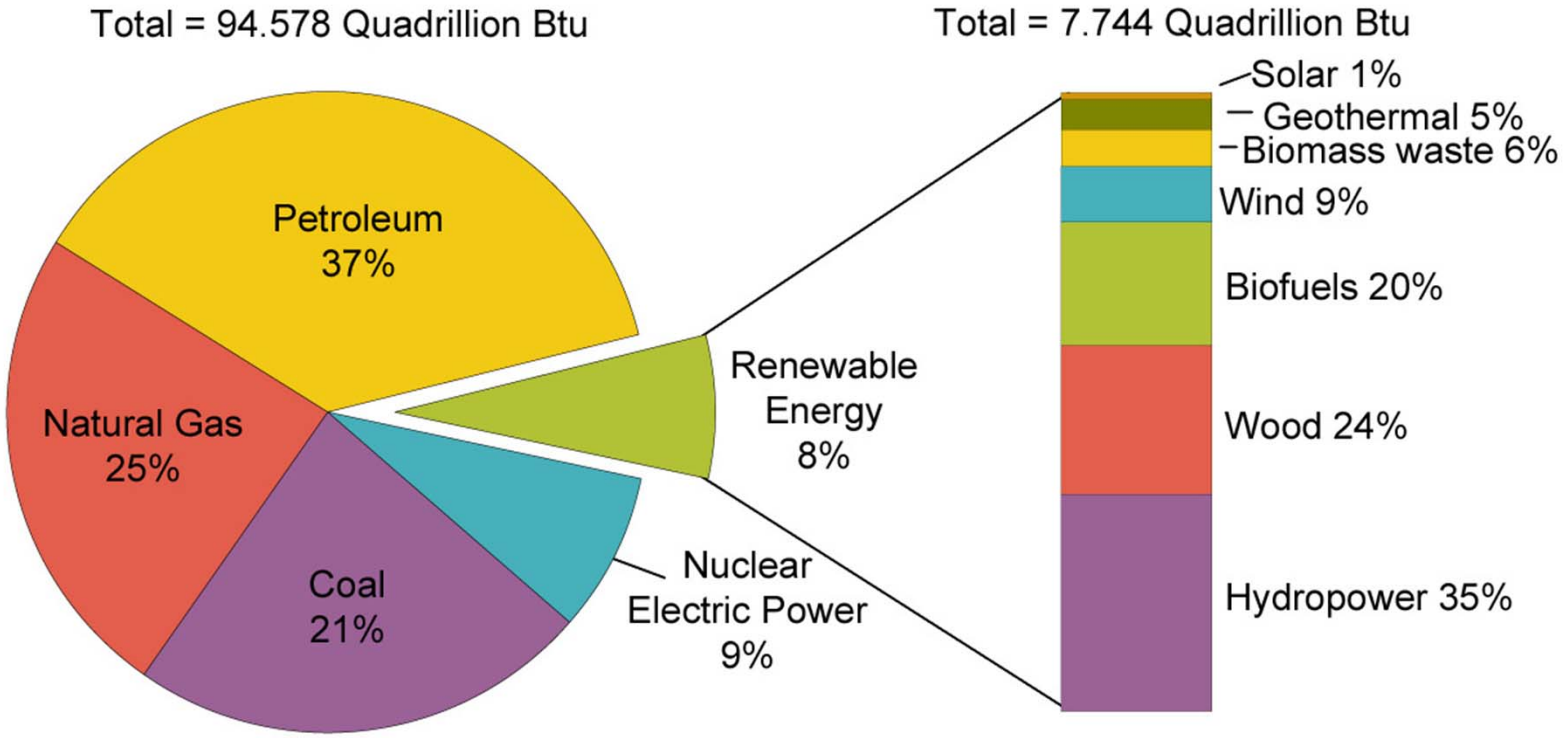
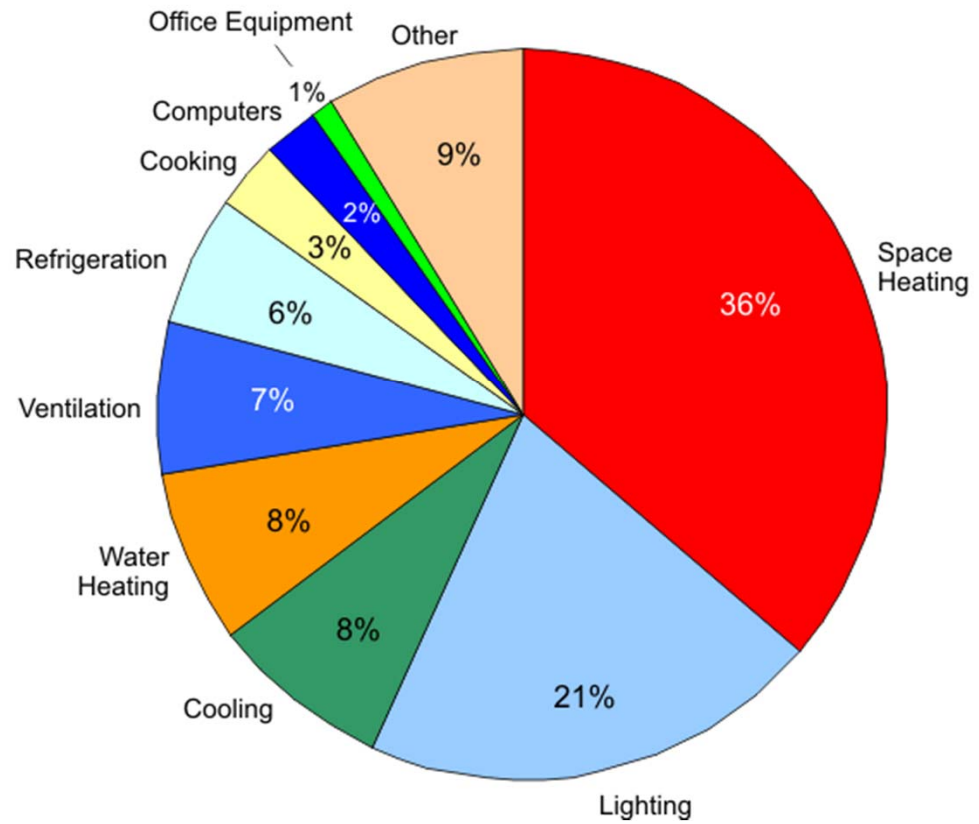
U.S. Energy Consumption by Energy Source, 2009



Note: Sum of components may not equal 100% due to independent rounding.
Source: U.S. Energy Information Administration, *Annual Energy Review 2009*, Table 1.3, Primary Energy Consumption by Energy Source, 1949-2009 (August 2010).

Percent of Total Consumption in Commercial Buildings by End Use



Source: U.S. Energy Information Administration, *Commercial Buildings Energy Consumption Survey.*

Typical energy use in a commercial building

Rec Centers are similar

It all adds up – your purchases can help change the way businesses are run

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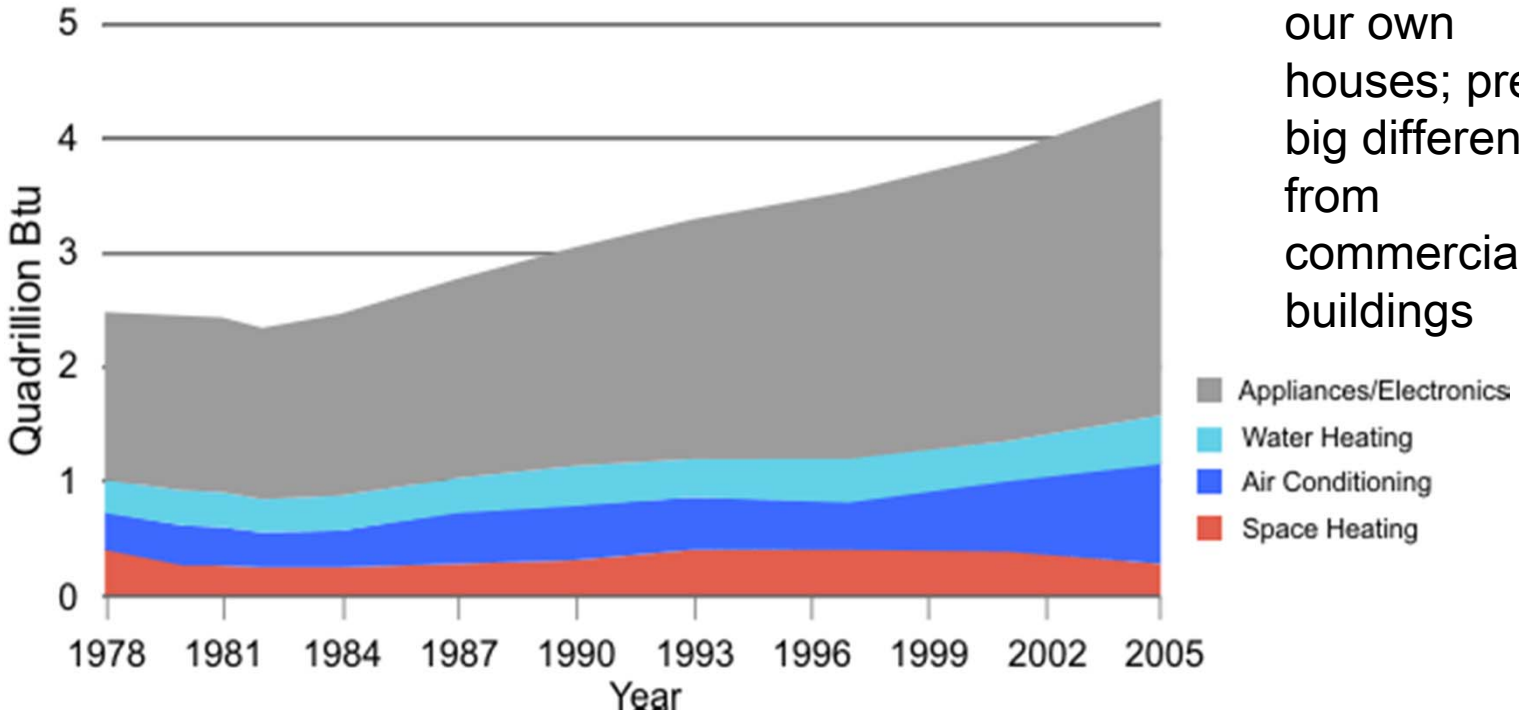
Residential Electricity Consumption, By End Use, 1978-2005



Source: U.S. Energy Information Administration, *Residential Energy Consumption Survey*.

What we do as individuals in our own houses; pretty big difference from commercial buildings

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High Energy Uses

Lighting will be 20%-40% of your total electric bill for most businesses.

Incandescent lighting converts 10% of the energy into light, and 90% into heat.

Heat from lighting increases your air conditioning bill by 10%-15%

Plug-load – estimated that as much as 30% of the electricity consumed in this country is used to power things that are off or not in use.

Common Myths!

Myth: There's no real difference in efficiency between Hot and Cold settings for my washing machine

Truth: Actually there's a big difference. The typical cost of running your washer for a full load of laundry on the Hot cycle is about 69 cents. Compare this with the cost of only 14 cents on the Cold cycle. That's a 55 cent difference per load.

* Multiply that times all the laundry you do and it is a huge fiscal savings – imagine the sustainable savings as well

Common Myths!

Myth: Turning a light back on after it has been off actually uses more electricity than just leaving it on.

Truth: There is no measurable 'surge' of electricity used when you turn your lights on. The same amount of electricity being used when you flip the switch is used every second that the lights remain on. It is ALWAYS cheaper to leave your lights off when they're not being used.

Common Myths!

Myth: More energy is wasted in booting up a computer than it would have been allowing the computer to remain powered up.

Truth: Similar to the lights, the amount of electricity being consumed by your electronics, including a computer, is significantly higher when running for a period of time than the split-second it takes to power it up.

Defining Terms - Cradle-to-Cradle (Life Cycle Assessment) and Impacts/Attributes

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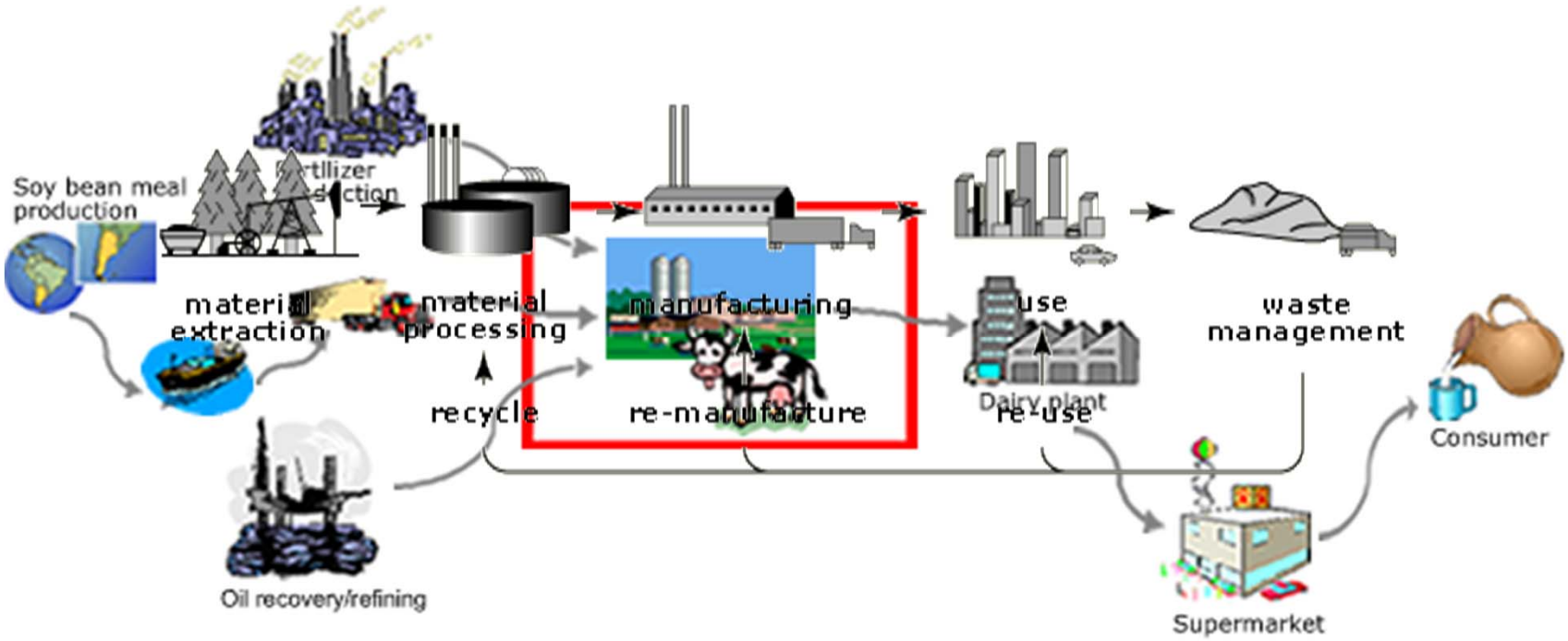
Life Cycle Assessment (LCA)

"Cradle to Cradle" or "Cradle to Grave"

* The science of estimating environmental *impacts* across the "life cycle" of a product (or service)
* A powerful tool for understanding impacts, where/how impacts occur, and how to reduce them
* Far from perfect; potential for abuse; rapidly evolving
* There are two main activities in an LCA:
  * The **inventory analysis** step, which describes the emissions that occur and the materials and resources used during the life of a product
  * The **impact assessment** step, which looks at the impacts of emissions and use of resources and raw materials on the environment.
  * http://www.eiolca.net/
  * http://www.epa.gov/nrmrl/lcaccess/

Life Cycle Assessment (LCA)

"Cradle to Cradle" or "Cradle to Grave"



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Impacts vs. Attributes

Examples of Impacts	Examples of Attributes
• Emissions of Volatile Organic Compounds (VOC's)	• Recyclability
• Greenhouse Gas (GHG) Biodegradable emissions	• % recycled content
• Use of non-renewable resources	• biodegradable

Impacts are more challenging to evaluate …

requires life cycle assessment

Materials: What Are We Looking For?

In the absence of readily-available life-cycle data (impacts), buyers and sustainability champions often turn to attributes such as:

Local	Energy-efficient	Recyclable	Recycled content	Bio-based	Biodegradable

How well do these attributes actually correlate with "low impact" or "sustainable"?

Current Thinking

* According to the Oregon Department of Environmental Quality (DEQ) all of these techniques are equally effective at diverting materials from landfills

Less is best! (Usually)

Reducing is almost always the most sustainable.

But that's not where the big impacts always occur in real world applications!

Section Questions

Please remember to ask questions in your chat box if you have them.

Challenging Assumptions

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DEQ's Life Cycle Analysis of Water Delivery

3 basic systems:

Full study at:
http://www.deq.state.or.us/lq/sw/wasteprevention/drinkingwater.htm

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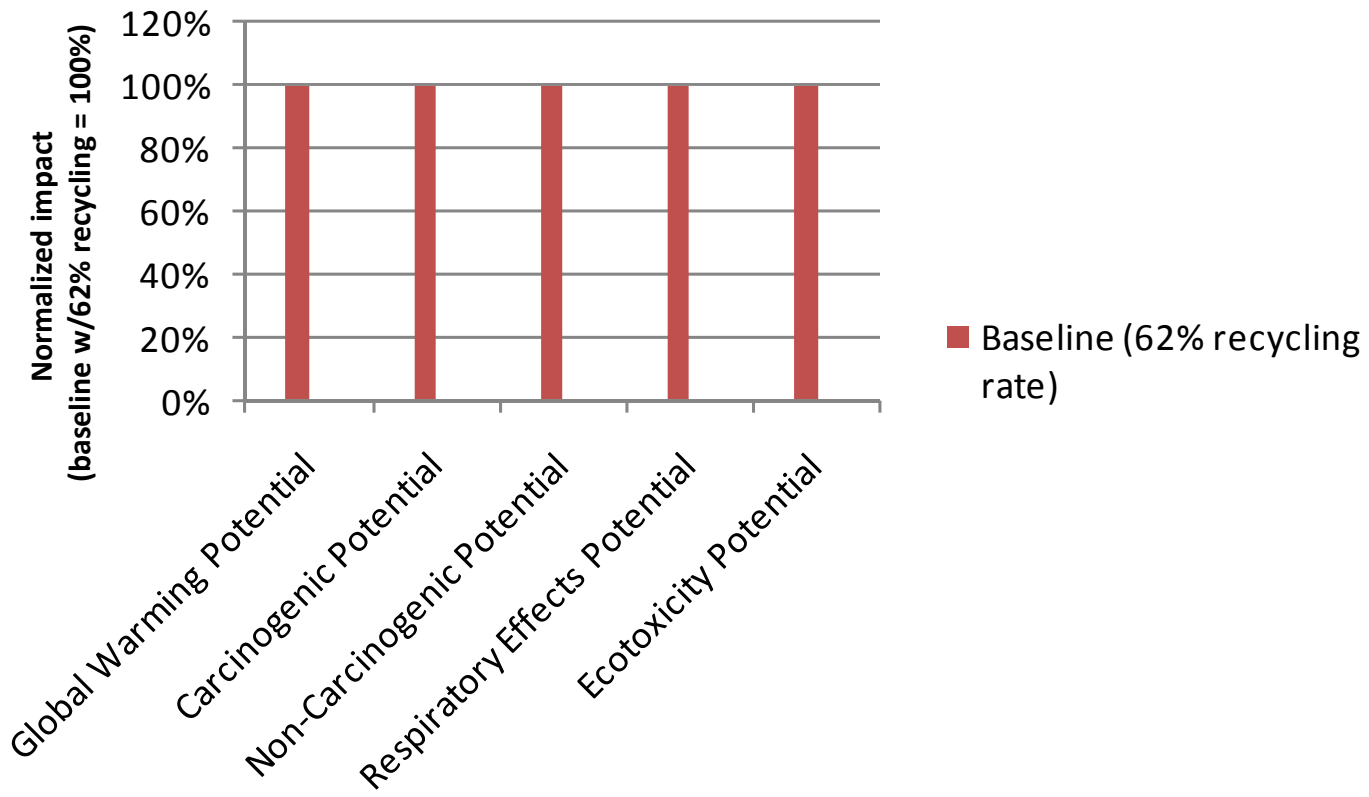
Question 1

Using your own steel water bottle is how much less impactful than equivalent use of plastic water bottles?

A. 45%
B. 65%
C. 80%
D. 95%

Recycling, Recycled Content, and Lightweighting Example: PET Water Bottles



"Baseline" = PET, half-liter, **13.3 grams**, **0% post-consumer recycled content (PCR)**, on-site molding, purified municipal water (reverse osmosis, ozone and uv), 50 miles to retail, 5 miles home-to-retail, co-purchase w/24 other products, no chilling, **62% recycling rate**.

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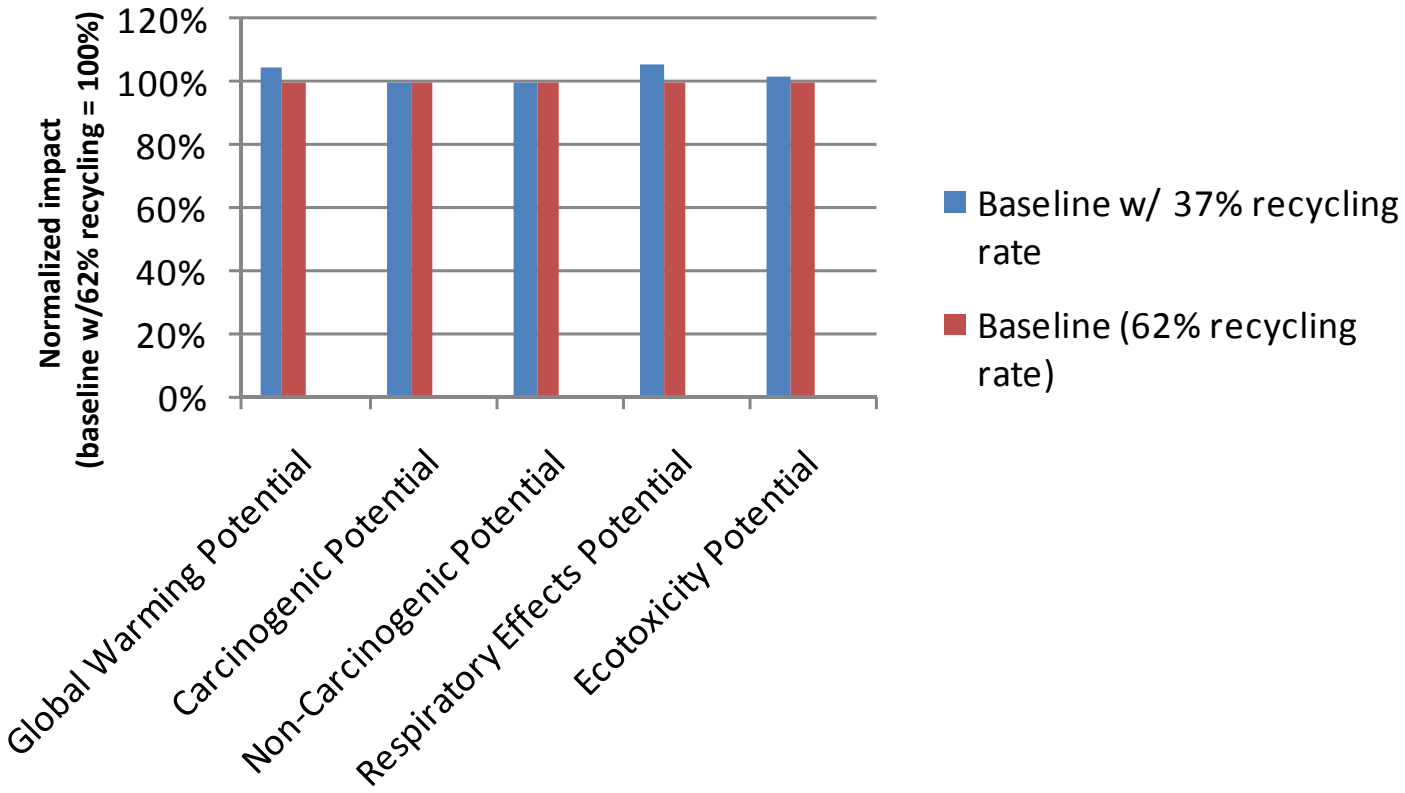
Recycling, Recycled Content, and Lightweighting Example: PET Water Bottles



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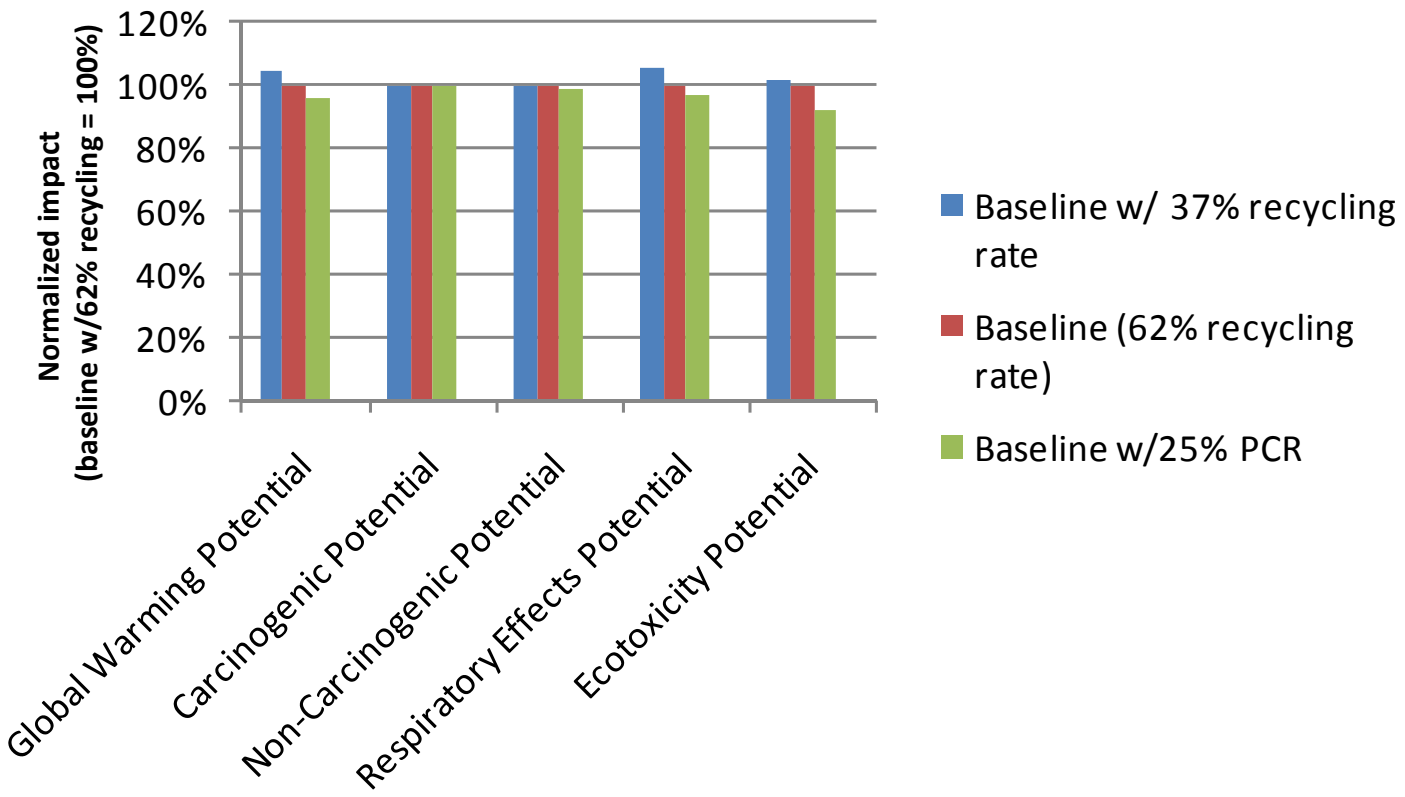

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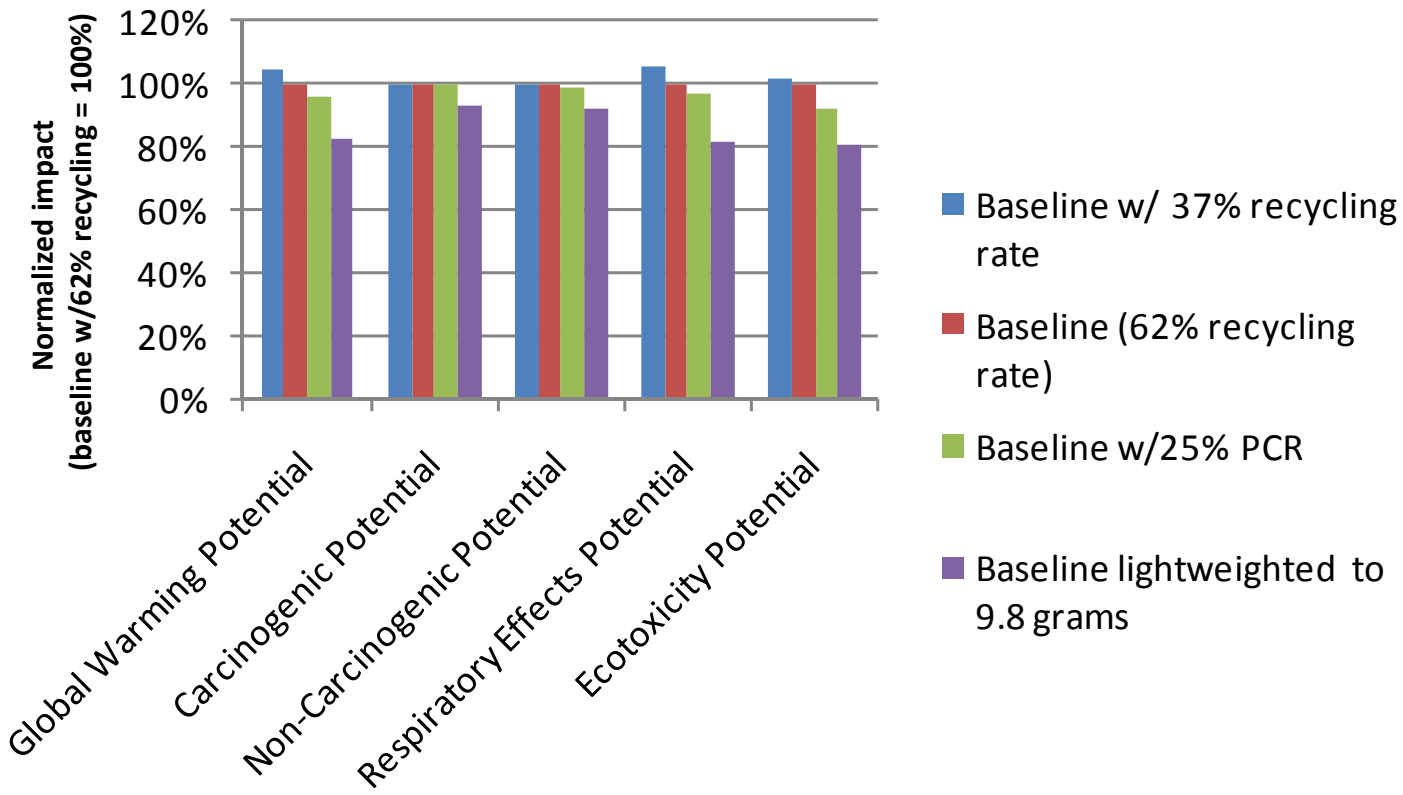

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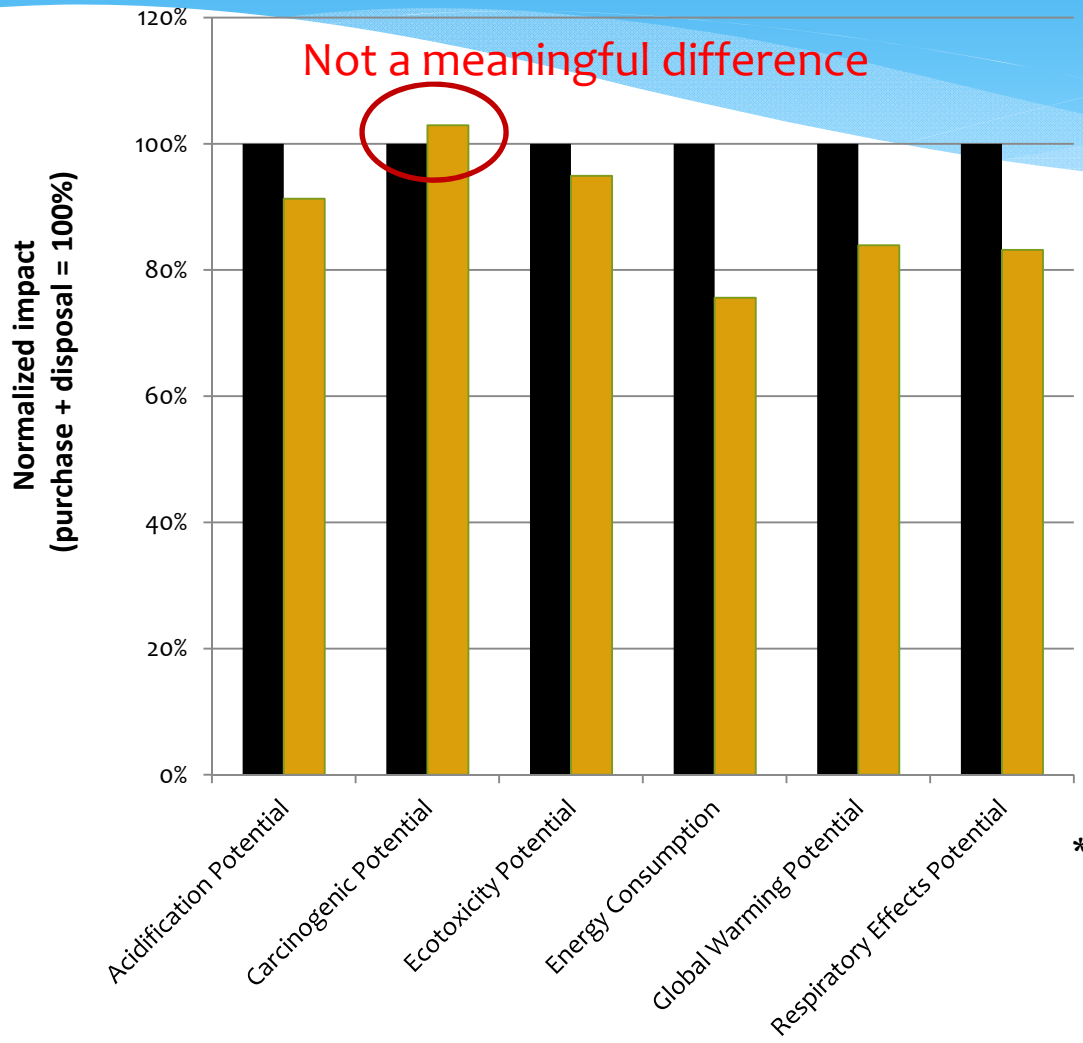
Disposal vs. Recycling



Your answers next

- Standard Oregon purchase* + disposal
- Standard Oregon purchase* + 100% recycling

*Half-liter bottle; 0% recycled content; 13.3 grams; local water

Response next

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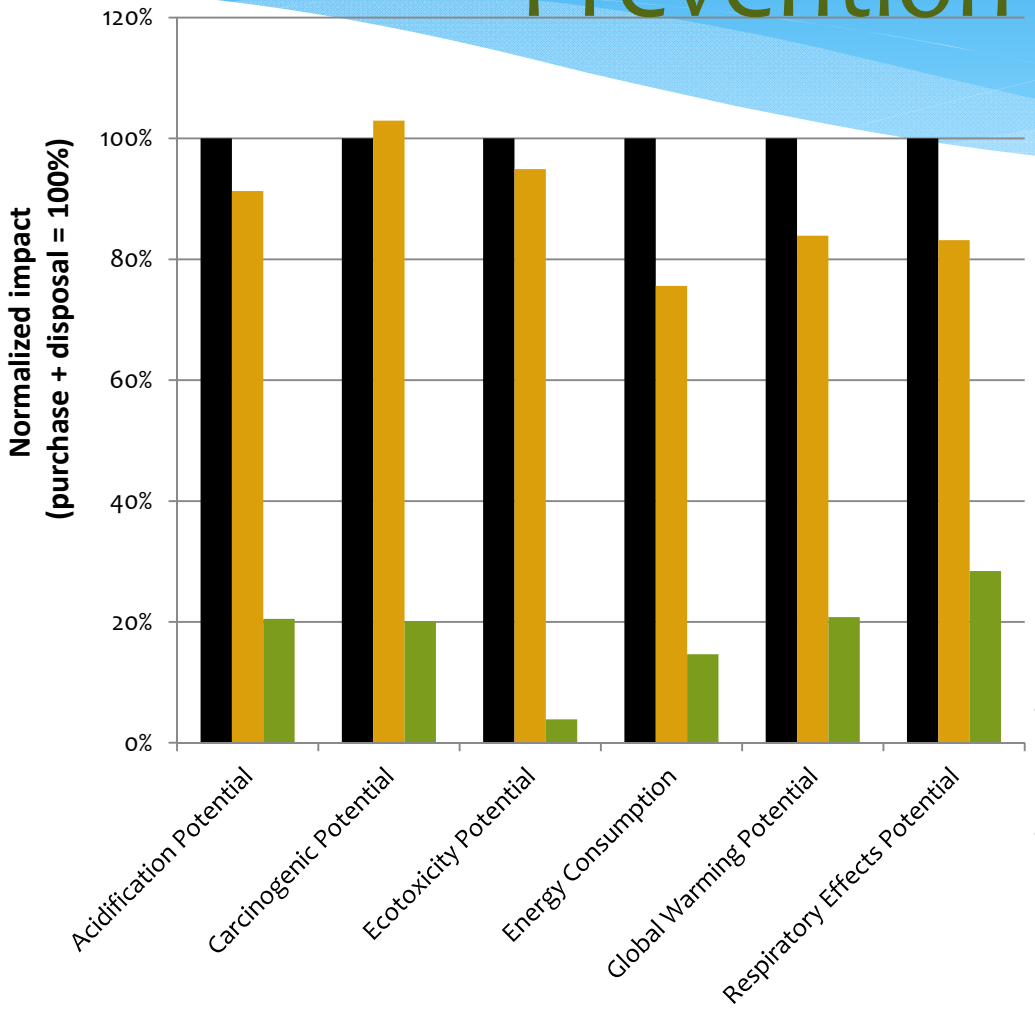
Disposal vs. Recycling vs. Prevention



- Standard Oregon purchase* + disposal
- Standard Oregon purchase* + 100% recycling
- Tap water in reusable bottle** (1 use and wash/day for 1 year)

*Half-liter bottle; 0% recycled content; 13.3 grams; local water

**Average of aluminum/PET/steel; no recycling; high-water use dishwasher

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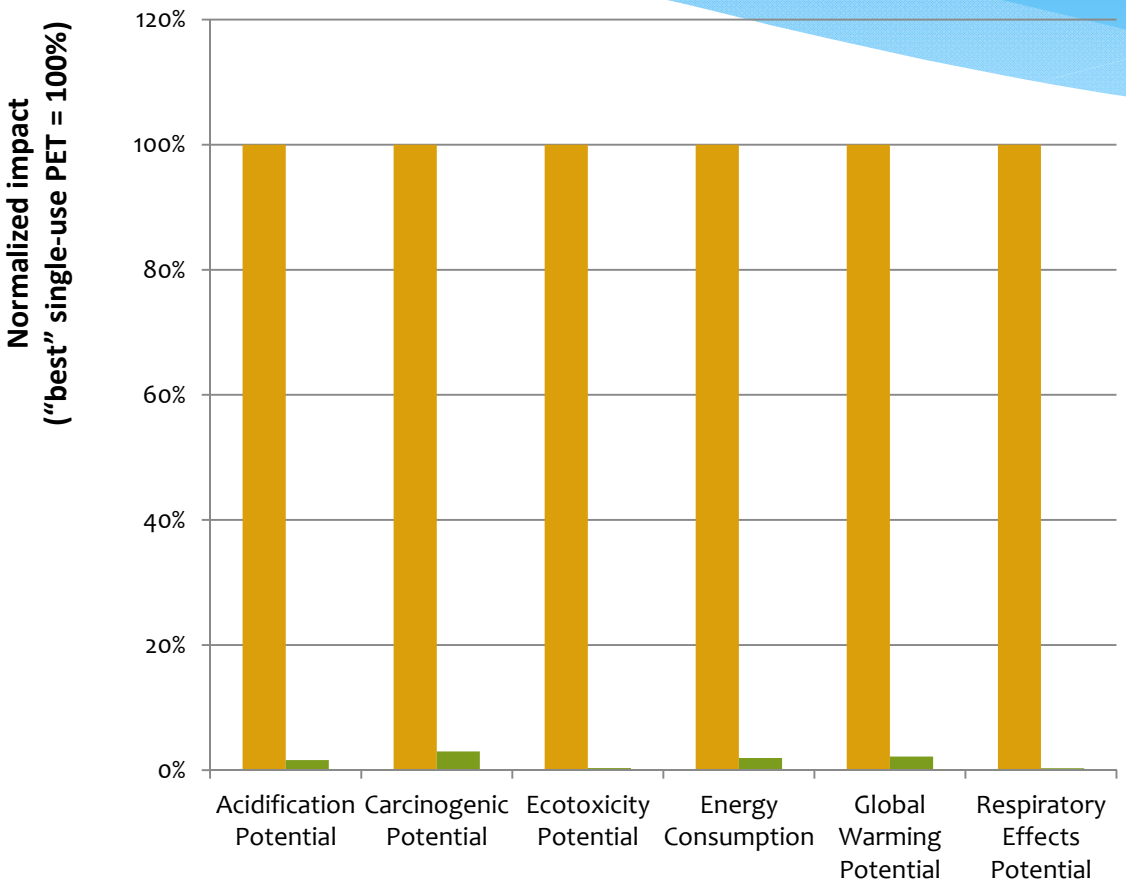
Best Case Recycling vs. Best Case Prevention



*Not currently on market. 9.8 grams; 25% recycled content; very short transport; minimal processing of water; 100% recycling.

**Steel reusable; used 5 years; used 2 times/day; washed weekly in efficient, full dishwasher; 100% recycling

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So What Can You Do?

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DEQ's Life Cycle Analysis Packaging

Cardboard box with "void fill"

Shipping bag with air bubbles

Full study at: http://www.deq.state.or.us/lq/pubs/docs/sw/packaging/lifecycleinventoryshort.pdf

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Question 2

True or False?

Recycled cardboard shipping boxes with 100% recycled paper molded fill are more sustainable than shipping boxes filled with 0% recycled plastic air packet bubbles

A = True
B = False

DEQ's Packaging Life Cycle Analysis: Materials Evaluated

Corrugated box*

Void Fill (for boxes)

Polystyrene loose fill*

Corn starch loose fill

Molded paper loose fill

Inflated air pillows*

Newsprint dunnage*

Kraft dunnage*

Shredded office paper

Shredded boxes

Shipping Bags

Unpadded all-kraft mailer*

Unpadded all-poly mailer*

Kraft mailer with ONP padding*

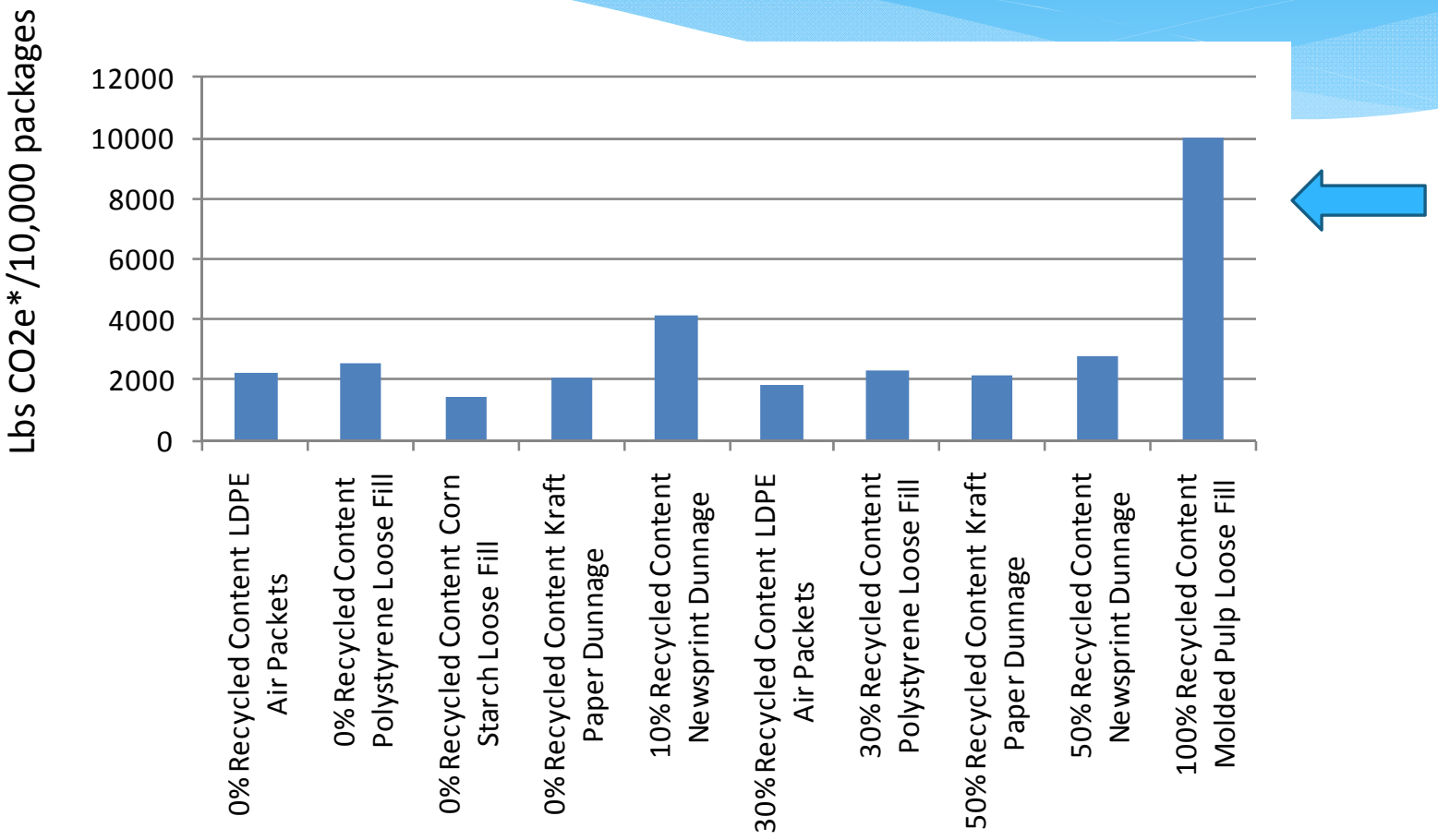
Kraft mailer with poly bubble padding*

Poly mailer with poly bubble padding*

T/F Answers Next

*Different levels of post-consumer content also evaluated.

Void Fills in Packaging (Boxes)



*on a cradle-to-distribution center basis

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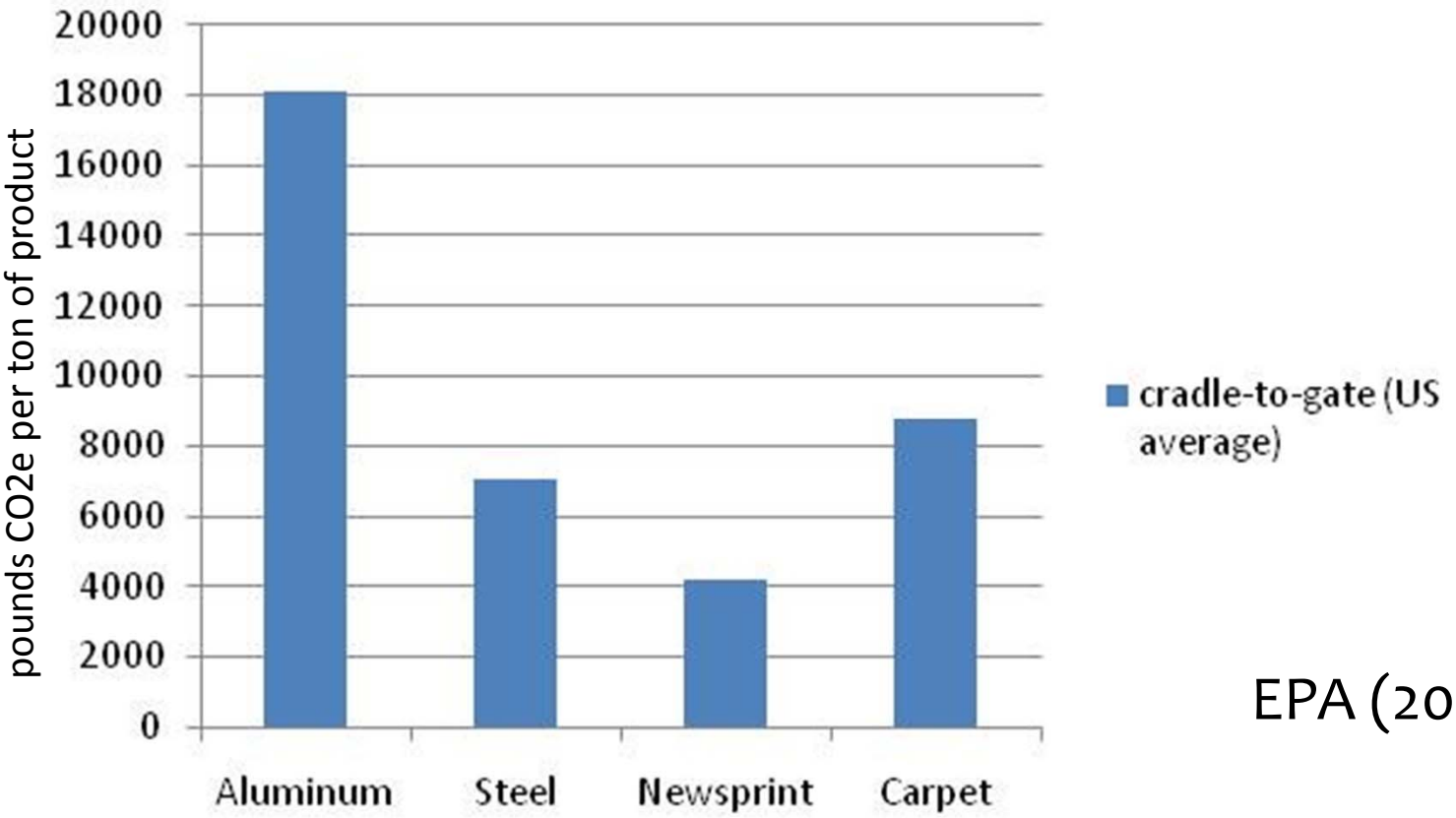
Mass Matters!

* Weight of materials used is a critical factor:
  * All bags evaluated have lower burdens than boxes (in most categories) because of their much lower weight.
  * This confirms (indirectly) the relative ranking of waste prevention (reduce first) and recycling in the waste management hierarchy.

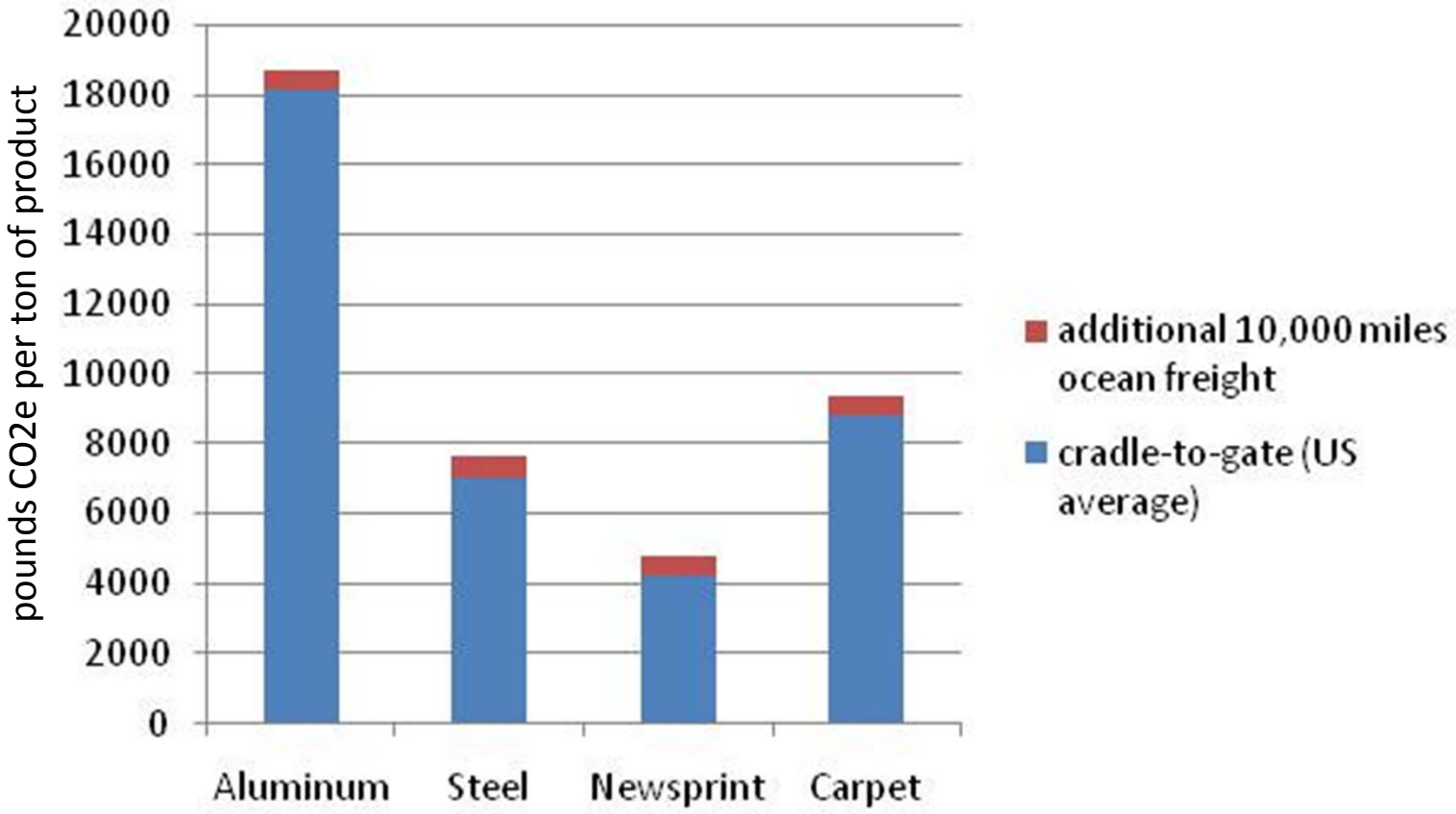
* When comparing dissimilar materials, recyclability and recycled content do not always correlate with reduced Greenhouse Gas emissions:
  * BUT, once you've chosen a packaging material, increasing post-consumer content and recycling opportunities typically reduce emissions.

Is Local Better?



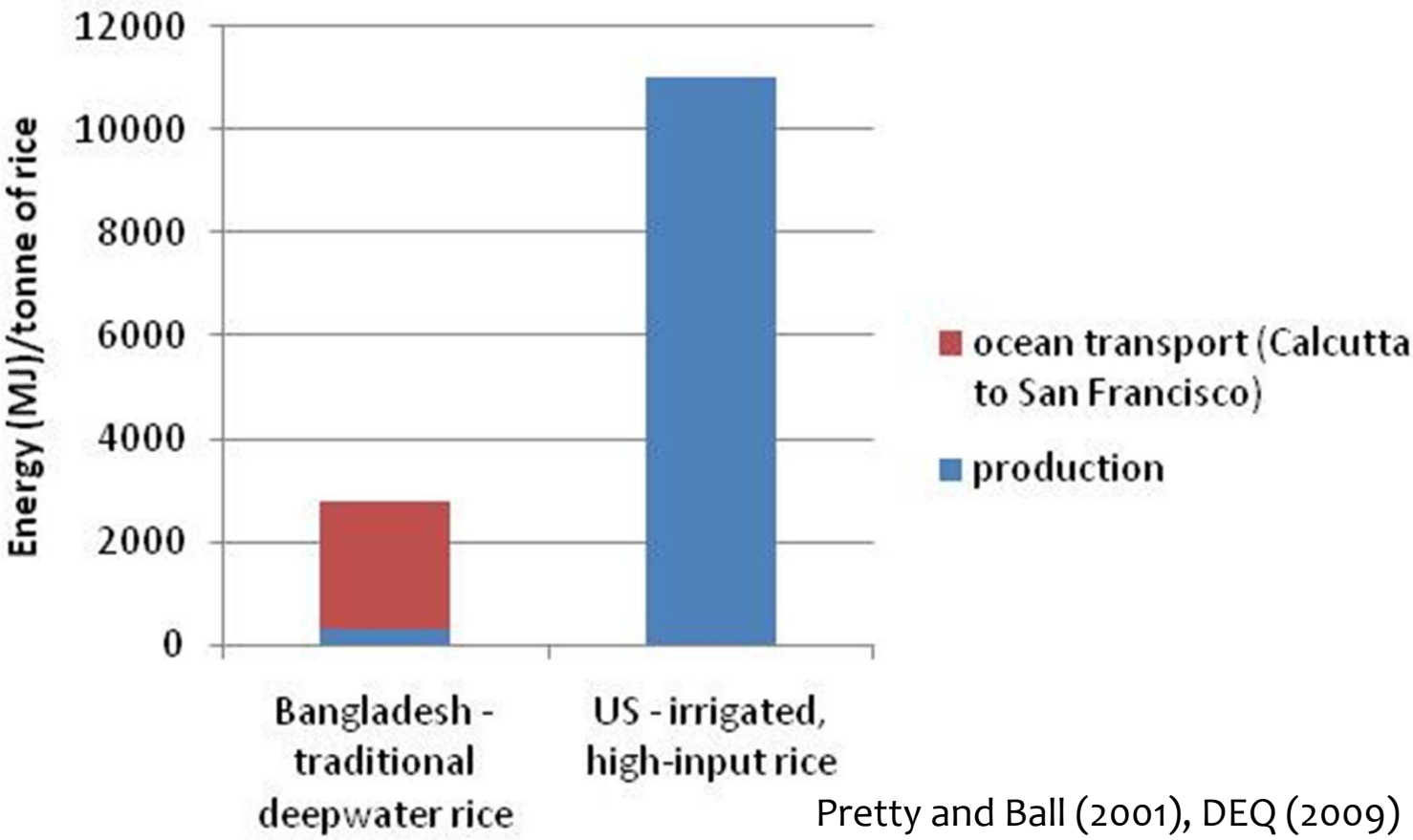
EPA (2006)

Production emissions typically dominate (transportation doesn't)



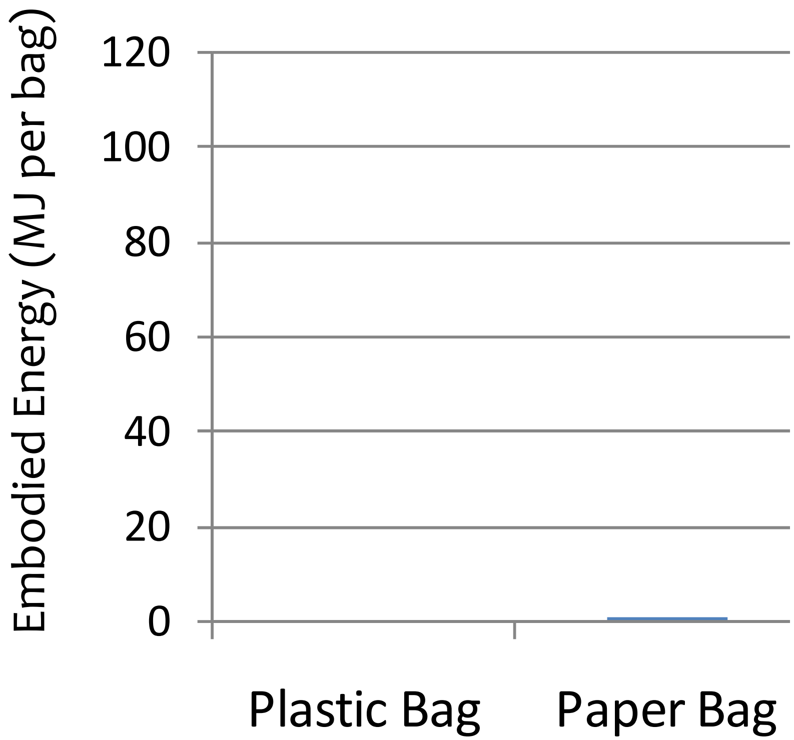
EPA (2006), DEQ (2009)

Imported vs. local rice?



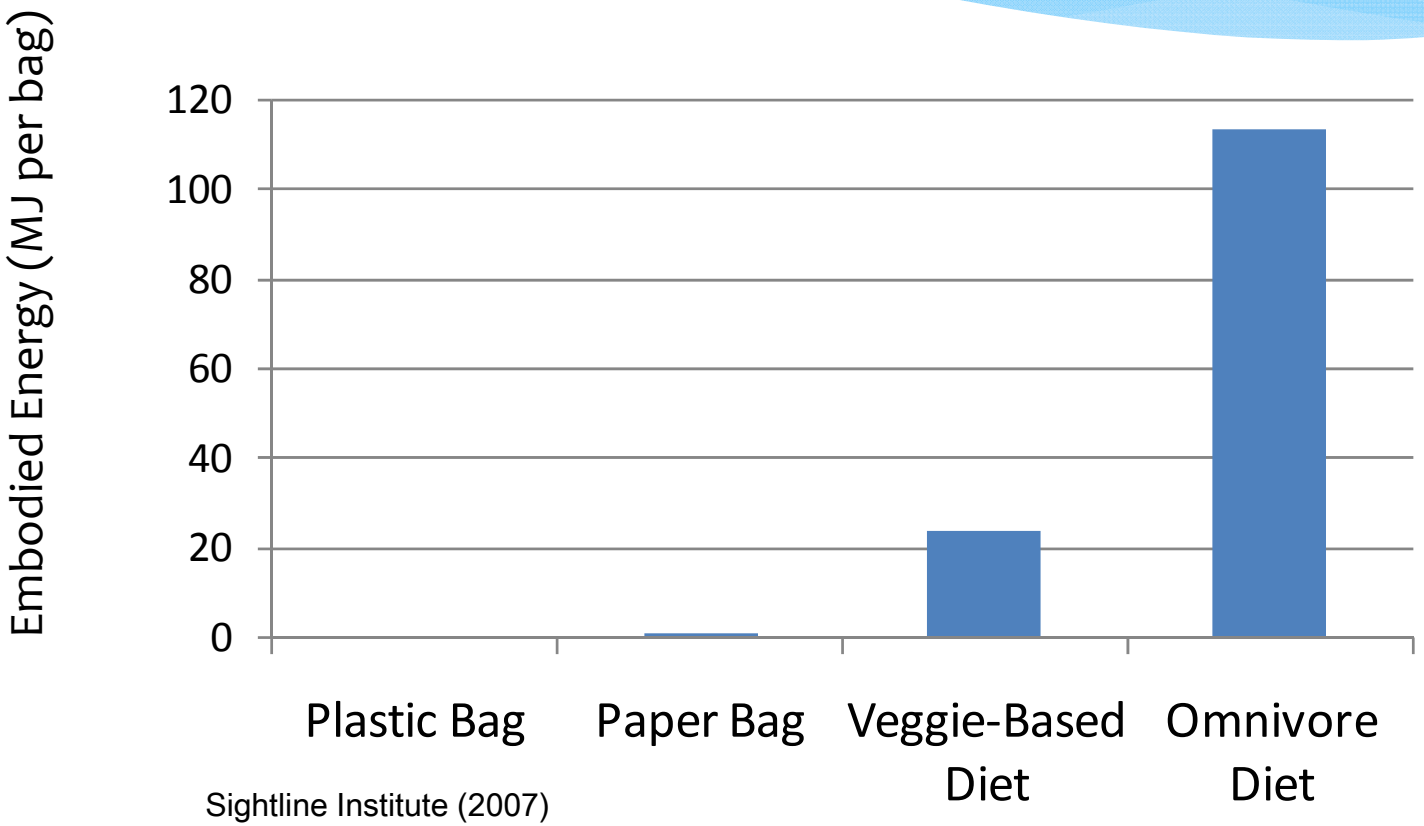
Pretty and Ball (2001), DEQ (2009)

Products are more impactful than packaging



Sightline Institute (2007)

Products are more impactful than packaging



Sightline Institute (2007)

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So, Which Product Attributes Are Most Important (from a GHG perspective)?

* Energy efficiency
* Energy use
* Waste prevention
* Country of origin

Life cycle assessment results trump attributes

Money Isn't All You're Saving

Less important is attributes

* Recyclable
* Recycled content
* Bio-based
* Biodegradable (unless discharged to water)
* Local
* Packaging attributes

STARS® SUSTAINABILITY TRACKING ASSESSMENT & RATING SYSTEM

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Case-Study
Value Based Purchasing

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Context

* New Student Rec Center
  * Opened in January 2010
* 100,000 sq. ft.
* $500,000 budget
* LEED Certification – but this was not part of points

Social Sustainability

Social Sustainability has the following dimensions:

Equity - the community provides equitable opportunities and outcomes for all its members, particularly the poorest and most vulnerable members of the community

Diversity - the community promotes and encourages diversity

Interconnected/Social cohesions - the community provides processes, systems and structures that promote connectedness within and outside the community at the formal, informal and institutional level

Quality of life - the community ensures that basic needs are met and fosters a good quality of life for all members at the individual, group and community level (eg. health, housing, education, employment, safety)

Democracy and governance - the community provides democratic processes and open and accountable governance structures.

Maturity - the individual accept the responsibility of consistent growth and improvement through broader social attributes (eg. communication styles, behavioral patterns, indirect education and philosophical explorations)

Anand, S. and Sen, A.K. (1996) 'Sustainable human development: concepts and priorities', Office of Development Studies Discussion Paper, No. 1, UNDP, New York

Portland State Fitness Equipment RFP Information - Accessibility

Process:

Our Core Value:

"We provide programs that are accessible to our community."

Researched Inclusive Fitness Initiative (IFI) – found out standards/vendors

Contacted Disabled Resource Center to communicate to potential users

Traveled with wheelchair user and non-traditional user to tradeshow

First lens to narrow equipment choices

Included large US and multi-national companies as well as small local fitness distributors in our conversations

We let all vendors know when we were at NIRSA/IRSA that we had this as a value that we would be considering and we expected them to respond accordingly

Portland State Fitness Equipment RFP Information

Inclusive Fitness Initiative
Creating Inclusive Environments

"In order ople as possible
can benef esistance based
workout, um package of
fitness ec hat wherever
possible, ."

Inclusive Fitness Initiative
Creating Inclusive Environments

www.inclusivefitness.org/

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Portland State Fitness Equipment RFP Information

Inclusive Fitness Initiative
Creating Inclusive Environments

This minimum package includes the following key pieces:

* Treadmill
* Upright and/or recumbent cycle
* Upper body ergometer
* Leg curl
* Leg extension/leg press
* Upper body resistance equipment including chest press, row, shoulder press and lat pulldown or equivalent upper body multi-station
* Package of small equipment

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Portland State Fitness Equipment RFP Information

Inclusive Fitness Initiative
Creating Inclusive Environments

"When considering purchasing new fitness equipment, the IFI recommends that tender documents should clearly state that IFI Accredited Items (Stage 2) are required to ensure that the best current accessible and inclusive fitness equipment is installed."

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Portland State Fitness Equipment RFP Information

Visual Cues

Chair Accessible

Perchance works great for all

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Portland State Fitness Equipment RFP Information

Embossed controls and dome switches on the new console overlay increase tactility to allow visually impaired users to easily navigate commands

Embossed controls on the new activity zone overlay allows visually impaired users to easily navigate the most-used controls

Contrast lines, increased logo size and an additional logo on the running belt indicates to users that the treadmill is in operation

Platform reduces the step-up height allowing both disabled and non-disabled users easier access to the product

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RFP Language for IFI

Big Picture

Preferred:

1. Portland State is committed to providing an equitable service to all its clients. To meet the needs of our disabled customers, the equipment submitted in response to this RFP is PREFERRED to be accredited by the Inclusive Fitness Initiative (IFI) and meet the current IFI Equipment Standards Stage 2. Within the RFP the following IFI Accredited items (2007 - 2011) are PREFERRED to be included:

1.1. Minimum 50% of treadmills

1.2. Minimum 50% of recumbent and upright bikes

1.3 All relevant lower body equipment accredited

1.4 A range of accredited upper body resistance equipment including at a minimum: Lat Pulldown, Chest Press, Row, Shoulder press and an accredited upper body multi station

Required: Section 10: Proposers must identify detailed training protocol/plan for use of equipment by all able bodied and disabled individuals.

Equipment Proposal: Provide a proposal of the equipment which meets the Mandatory or Optional Requirements. In a separate section of your proposal detail each individual component listed that is included in your response. Please describe the qualitative elements of your equipment and your efforts to include exercise equipment that is easy to use and accessible to all individuals. Include in your proposal detailed training protocol/plan for use of equipment, warranty information and any value added goods or services related to this project, or any other factors or additional services that are relevant to the firm's capacity and willingness to satisfy the University. See Section 2, Scope of Work. **(130 points)**

MANDATORY:

5. All vendors must identify their use of raised iconography

6. All vendors must identify their usage of contrasting colors for visual cues

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Portland State Fitness Equipment RFP Information - Sustainability

Process:

Our Core Value

"We promote the link between recreation and sustainability."

Grad Student and Intern worked with me

Grad Student had work checked by faculty member

Consulted with other students interested

Used contacts from RFP to interview manufacturers and businesses

Included large US and multi-national companies as well as small local fitness distributors

We let all vendors know when we were at NIRSA/IRSA that we would use this method and they would need to respond

Early Equipment Example

* Refrigerator display case
  * Costs of operation
  * Shipping distance
    * O'Fallon, MO
      * 2,015 Miles
    * Unknown, Korea
      * 5,322 Miles
  * Interesting to note the transportation issue, we might change that

Refrigeration cases				
TRUE - GDM-23			Turbo Air - TGM-22RV	
Cost	$1,659.00		Cost	$1,229.00
Kw per Day	6.9		Kw per Day	5.221
Current Electricity Costs	$0.065		Current Electricity Costs	$0.065
Operational Cost Per Day		**$0.45**	Operational Cost Per Day	**$0.34**
Operational Cost Pre Year		$163.70	Operational Cost Pre Year	$123.87
20 Year Life Expectancy Operational Costs		**$3,274.05**	20 Year Life Expectancy Operational Costs	**$2,477.36**
One Year Maintenance Cost		$182.50	One Year Maintenance Cost	$202.50
Lifetime Maintenance Cost		**$3,650.00**	Lifetime Maintenance Cost	**$4,050.00**
Total Operational Costs		$6,924.05	**Total Operational Costs**	$6,527.36
Life Costs		$8,583.05	**Life Costs**	$7,756.36
		Delta Life Costs	**$826.69**	

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Portland State Fitness Equipment RFP Information

Sustainability:
Provide a detailed response of the companies documented sustainable business practices and the sustainable practices in fabrication, delivery, and routine maintenance for all equipment . Must designate person in company who can discuss sustainability with us.
(35 points) *-- this was out of 350 total possible – 10%*

Portland State Fitness Equipment RFP Information

Section 4: Proposers must provide a detailed response of the company's documented sustainable business practices and the sustainable practices in fabrication, delivery, and routine maintenance for all equipment Proposal must include complete contact information for a designated contact person knowledgeable of sustainable practices who PSU may speak to directly.

Proposal Content and Evaluation Criteria

* Corporate Sustainability Report
  * Green Office Building
  * Contact Person

Reviewing Rubric

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Proposal Content and Evaluation Criteria

* Equipment
  * "Cradle to Cradle" Design
    * Recyclable Material
    * Easy Disassembly
    * Documentation of end-of-use Planning
  * Materials Sourcing
    - Recycled Content
    - VOC Free
    - Formaldehyde Free
    - Lead Free
  - Maintenance
    - Plan
    - Interchangeable Pieces
    - Local Maintenance
      - Technicians
      - Parts Deliverability

Proposal Content and Evaluation Criteria

* Equipment continued

  - Manufacturing
    - Shipping Distance
    - Waste Solutions
      - Reduction of Waste
      - Reusable Shipping Materials
      - Recycling
  - Energy Efficiency
    - Documented Energy Reduction in Manufacturing
    - On-Site Energy Generation (solar, wind, etc)
  - Standards
    - Restriction of Hazardous Materials
    - International Organization of Standardization
  - Innovation
    - Various Solutions

Our best responder got just over half

Additional Information

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Other Purchasing

* Other Purchases
  * Office Chairs – Hermann Miller
    * Cradle to Cradle Certified
    * Greenguard Certified
    * Mirra– 94% Recyclable
    * 32% Recycled material

  * Forest Stewardship Council Certified Wood Floors

  * Cloth Materials – Chairs and Cubicle Panels
    100% Recycled
  * On-Site Energy Generation (solar, wind, etc)
  * Paper
    100% Recycled

Pros and Cons

* Pros
  * Doing the right thing
  * Limited choices made selecting end-product easier
    * Yahoo listed at least 80 commercial fitness vendors
  * Worked within budget
  * Long term impact minimized – chairs last way longer
  * Less repairs
  * Investing in new technology
* Cons
  * Limited vendor choice
  * Some higher up front costs – offset by others
  * More time

Credits

* Credits:

David Allaway - Oregon Department of Environmental Quality

(full presentation - http://oregonstate.edu/sustainability/post-conference-information)

Portland State Disability Resource Center

Jeremy Robbins – Rippin' wheelchair user

Serah Freeman – Rec Center Committee

Jamie Hoffman – UCLA Adaptive Rec

Josh Read – Graduate Student

Dave Ervin – Portland State Faculty Advisor for Josh

Jenny Grant – Student Sustainability Coordinator

Questions

Thanks for participating!

Contact Information:
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