

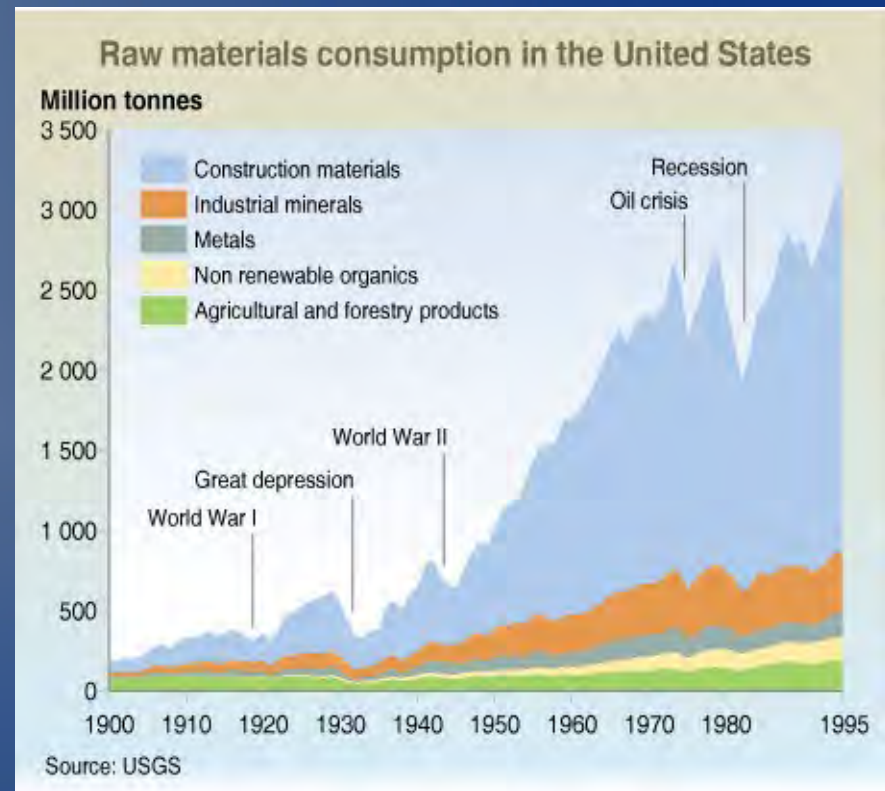
# LEED V4: A View from the Dumpster

*Construction and Demolition requirements under LEED  
Version 4*



# Why be concerned with construction waste?

- Construction uses more raw material than any other industry
- Much of this material ends up in landfills when buildings are demolished

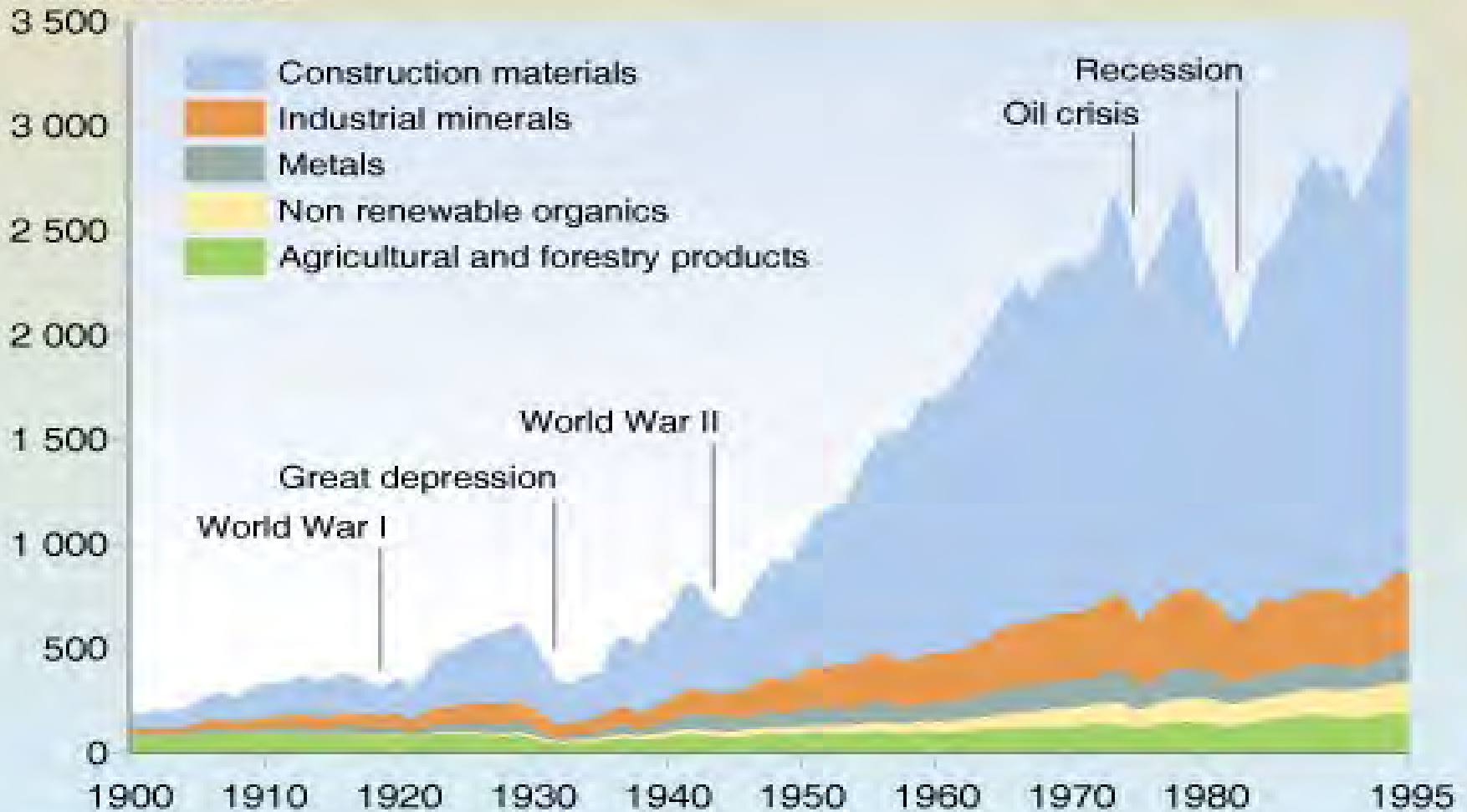


- Source: United Nations Environment Programme (UNEP) <http://tinyurl.com/b8gogas>



# Raw materials consumption in the United States

Million tonnes



Source: USGS



# Why be concerned with construction waste?

- Construction Waste is 28% of the material going to landfills Kansas City and St. Louis  
*Source: Missouri DNR <http://tinyurl.com/a5dodaz>*
- Much of this waste could be recycled
- Landfill costs are increasing
- Landfill space is becoming scarce
- Locating new landfills generates passionate opposition from neighbors



# Why be concerned with construction waste?

- Recycling construction waste reduces carbon footprint
- Recycling construction waste can save money in landfill tipping fees



# Why be concerned with construction waste?

- Recycled materials can create unique and valuable architectural features

*City Museum in St. Louis is largely decorated with recycled industrial cast-offs*



# What is different?

- LEED 2009:
  - Construction Waste Mgmt. is a Credit
  - Brief Waste Mgmt. Plan is required
  - 2 points possible (1 extra point for 95% diversion )
  - Only measures diversion rates
- LEED V4:
  - Construction Waste Plan is a prerequisite
  - 2 points possible for Waste Diversion Credit
  - Can get points for total waste less than 2.5 lb/sf regardless of diversion rates



# Review of LEED V4 C&D Requirements

- Two major sections:
  - Construction and demolition waste management planning is now a prerequisite
  - Construction and demolition waste management is worth up to two points
- Related Sections:
  - Building life-cycle impact reduction
    - Includes reuse of buildings and building materials





# Review of MR C&D Waste Prerequisite

- Develop and Implement a C&D Waste Management Plan
  - Establish goals to keep 5 materials out of the landfill
  - Specify whether comingled or source-separated
  - Describe where materials will be taken, how handled
  - Provide a final report



# Review of MR C&D Waste Prerequisite

- Final Report
  - Which waste streams generated?
  - What were the actual disposal and diversion( recycling) rates?



# Review of MR Credit for C&D Waste

- Two levels of compliance:
  - Divert 50% from landfill: 1 point
  - Divert 75% from landfill: 2 points
- Second option: Reduce total waste material. Generate no more than 2.5 lbs of construction waste per square foot – 2 points



# Review of MR Credit for C&D Waste

- Divert 50%/75% from Landfill
  - Very similar to LEED 2009 requirements
  - Excludes land clearing debris and soil
  - Excludes Alternative Daily Cover
- Diverting 50% requires at least three waste streams
- Diverting 75% requires at least four waste streams



# Review of MR Credit for C&D Waste

- Option 2: Generate no more than 2.5 lbs of construction waste per square foot of floor
  - Strategies include: Ordering precut material, aggressive recycling, SIPS panels, modular design based on standard material dimensions

*Typical new construction generates 4 lbs per square foot or more*





- 5 Materials easily recycled:
  - Steel Scrap to a metals recycler
  - Asphalt pavement and shingles to an asphalt plant
  - Concrete and brick waste to a clean fill site
  - Wood Waste to a compost or wood chipping facility
  - Cardboard to a recycler



# Calculations by weight or volume?

- Calculations by weight:
  - Many demolition materials are dense, maximizing their effect
  - Concrete, Steel, Brick, Asphalt, Roofing
- Calculations by volume:
  - Weighing is inconvenient
  - Small containers are used on some jobs
- Reporting must be consistent
  - Convert if records are mixed weight/volume



# Brief review of synergistic credits

- MR Prerequisite – Storage and Collection of Recycleables
  - This prerequisite only applies *After Construction is complete*
  - Requires the finished building to have dedicated recycling areas.
  - Does not affect Construction Waste





# Brief review of synergistic credits

- MR Credit: Building Life Cycle Impact Reduction
  - Credits reuse of existing building in-place
  - Credits using salvaged materials, from on-site or off-site
  - Reuse of building elements can dramatically reduce construction waste



# Strategies for Success

- Don't forget salvage!
  - Donations to Habitat for Humanity can be tax deductible
  - Many items can be sold – antique doors, railings, woodwork, bath fixtures, lighting fixtures, wood beams
  - Some companies will deconstruct the building for the materials inside at reduced cost



# Strategies for Success

- Recycle something heavy!
- Concrete, Asphalt and Brick, if measured by weight, count for a lot!
- Clean fill sites take many of these materials



# Strategies for Success

- Creativity



# Case Study

## LEED Gold Certification



- Boone Hospital Patient Tower Achieved 95% Construction Waste Diversion



# How did Boone Hospital Center achieve 95% Construction Waste diversion in their Patient Tower?

- Recycle asphalt pavement and concrete
- Make all calculations by weight
- Meticulously recycle all other available waste types – gypsum board, wood scraps, cardboard, brick waste, whenever possible



# Hand Outs

- LEED 2009 vs. LEED V4 Requirements
- Sample Construction and Demolition Waste Management Plan
- Developing a Construction Waste Management Plan *used courtesy LEEDUSER.COM*
- Construction and Demolition Resources Database



# Hand Outs

- LEED 2009 vs. LEED V4 Requirements
  - Highlighting differences between old and new systems





# Hand Outs

## Sample Construction and Demolition Waste Management Plan

- Simple example plan, with links to more examples



# Hand Outs

## Developing a Construction Waste Management Plan *used courtesy LEEDUSER.COM*

- Guidelines, considerations when making a waste management plan



# Hand Outs

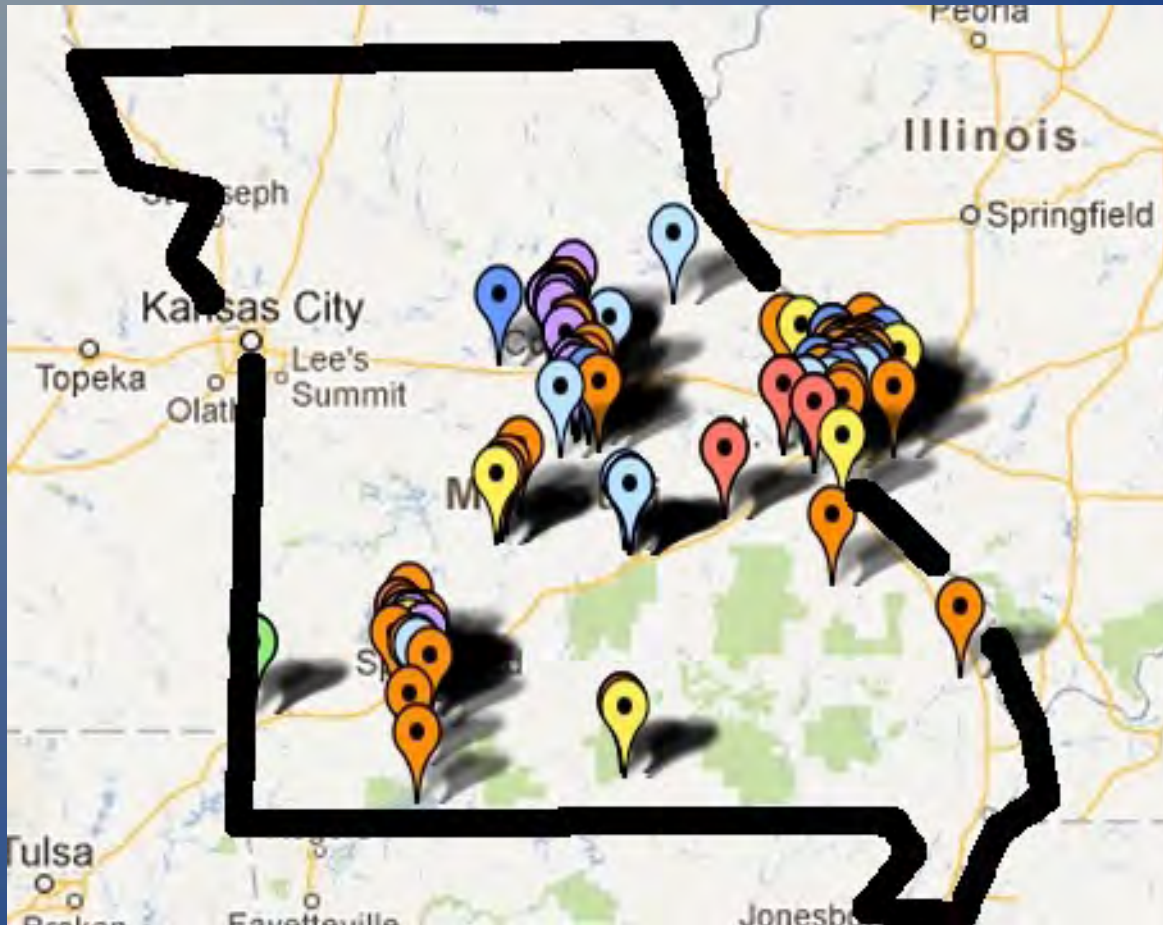
## Construction and Demolition Resources Database

- Lists of companies around Missouri and Illinois
- Includes Asphalt recyclers, comprehensive waste handlers, Architectural Salvage Companies, and much more
- Also some regional companies



# Construction & Demolition Resources Map

<http://goo.gl/maps/Eck24>



# Questions and discussion

