

The US LCI Database Project: Creating Publicly Available LCI Data Modules

**Presented to:
American Center for Life Cycle Assessment**

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The Project Objective

To develop a publicly available LCI database for commonly used materials, products, and processes

Rationale

- ◆ Support decision-support systems and tools
 - » E.g., ATHENA, BEES, LEED
- ◆ Support supplier-specific LCA work
- ◆ Provide regional benchmarks for assessing company, plant or new technology data
- ◆ Provide the foundation for subsequent life cycle assessment tasks

Database Users and Uses

- ◆ Developers of tools
 - » for LCA practitioners
 - » for non-practitioners
- ◆ Manufacturers, researchers, others doing specific product or process LCAs
- ◆ Organizations or individuals engaged in product assessment and labeling

Key Database Criteria

- ◆ Consistent protocol meeting ISO guidelines and standards
 - » transparent
 - » representative
 - » peer reviewed
- ◆ Uniform treatment of all materials
- ◆ Regional data development as necessary to reflect variations within and across sectors
- ◆ Fully accessible in format(s) to maximize use

A Three-Phase Project

◆ I - Initiation Phase

- » develop a research protocol, establish research parameters, prepare a Phase II work program.

◆ II - Inventory

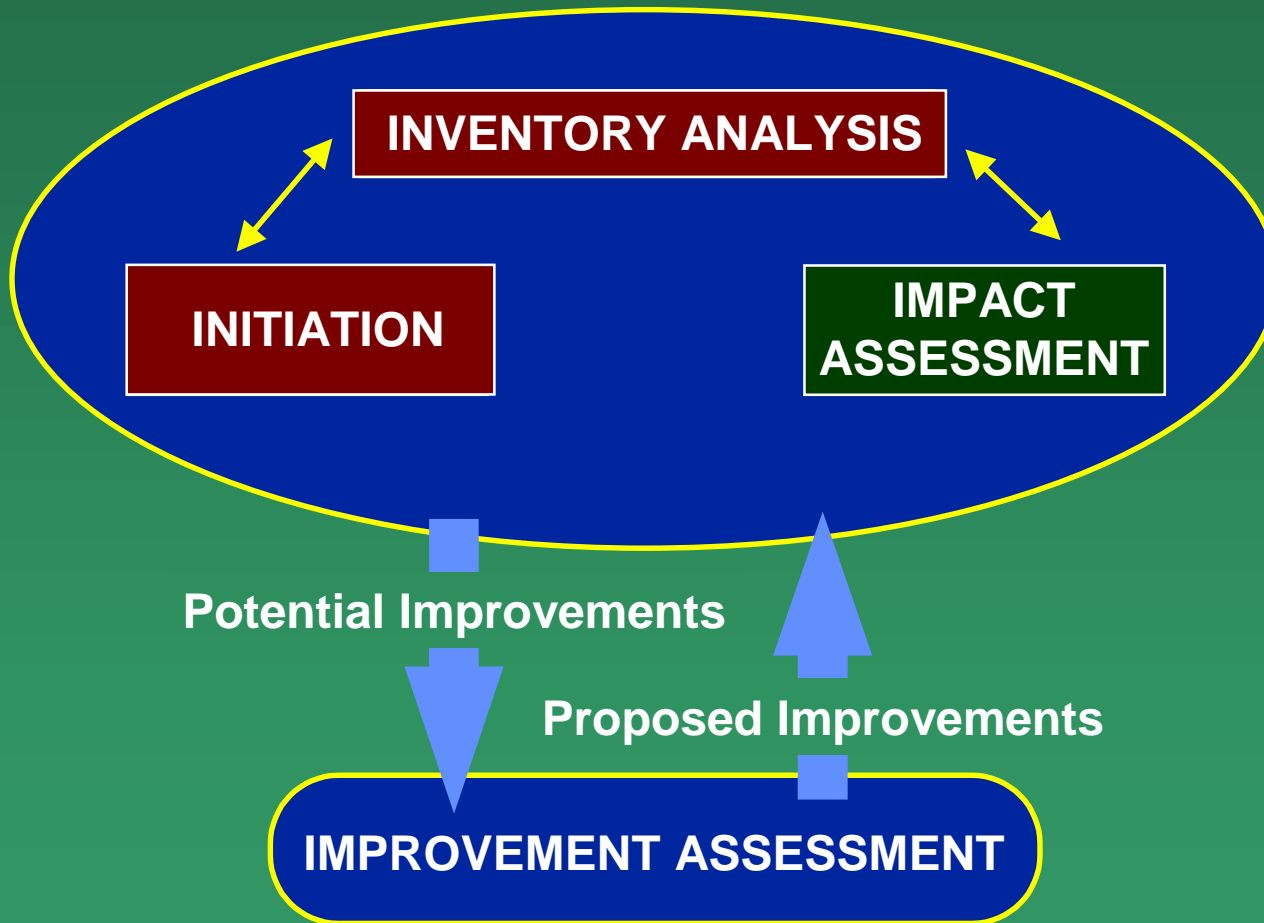
- » collect, analyze and review data

◆ III - Ongoing

- » disseminate data, maintain/expand database

Generic Life-Cycle Model

LIFE CYCLE ASSESSMENT



Phase I Consultant Team

Athena Sustainable Materials Institute

in association with:

Franklin Associates, Ltd.

Prairie Village, Kansas

Sylvatica

North Berwick, Maine

The Basic Phase I Approach

- ◆ 45 person Advisory Committee formed
 - » manufacturers, data users, LCA experts, other public & private sector interests
- ◆ Workshop held to discuss project details and develop Phase I work program
- ◆ Smaller task groups worked with the consultant team on specific topics
- ◆ Web site to made documents public as they were developed and solicited feedback

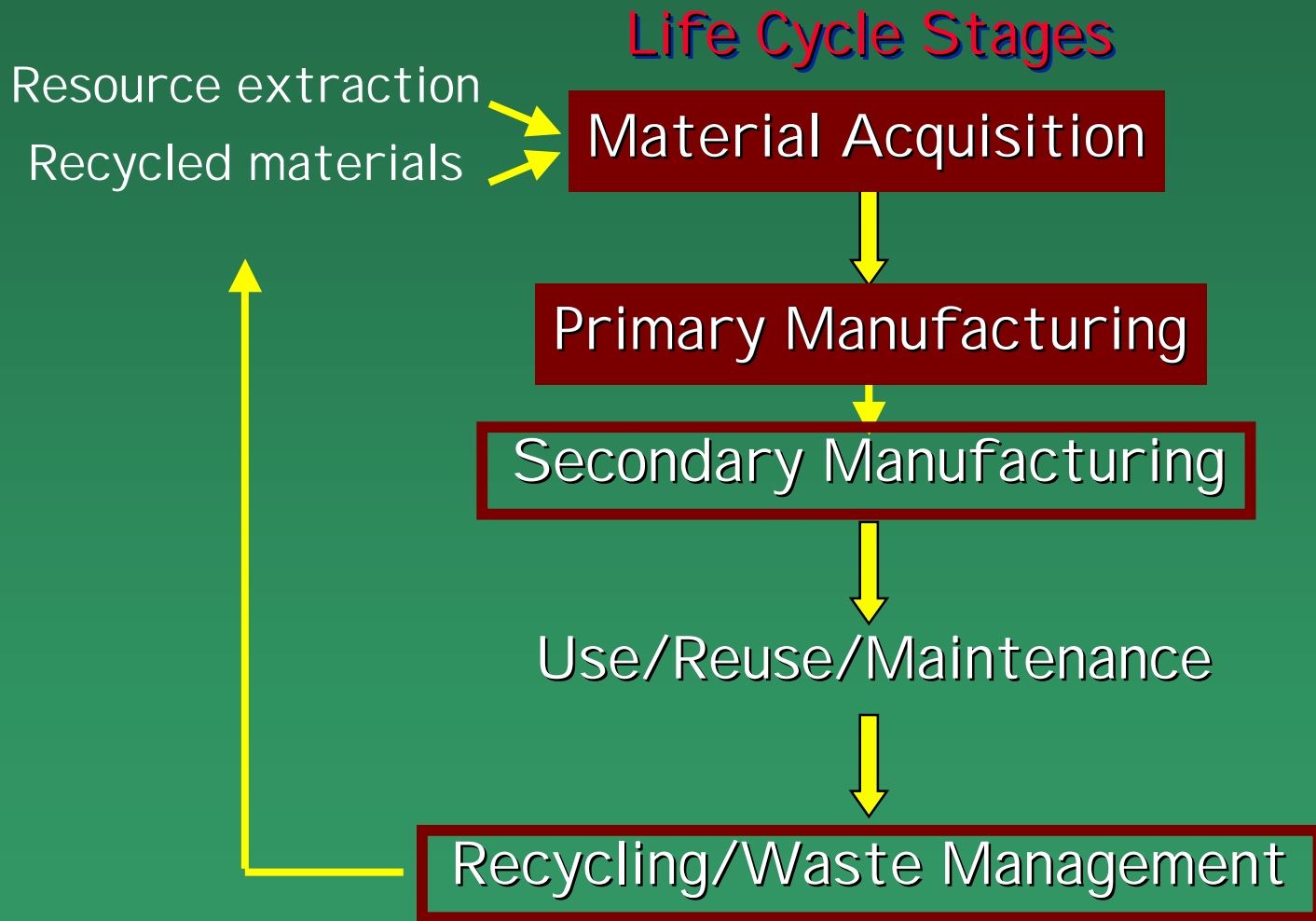
Status

- ◆ Phase I complete with funding from DOE, GSA and the Navy through NREL
 - » broadly representative advisory group
 - » base protocol developed
 - » Phase II work program recommendations
- ◆ Phase II:
 - » critical common process data (e.g., energy, transportation) and other basic modules
 - » 2 years; \$1.2 to \$1.8 million
- ◆ Phase III:
 - » maintenance and expansion by NREL (ongoing)

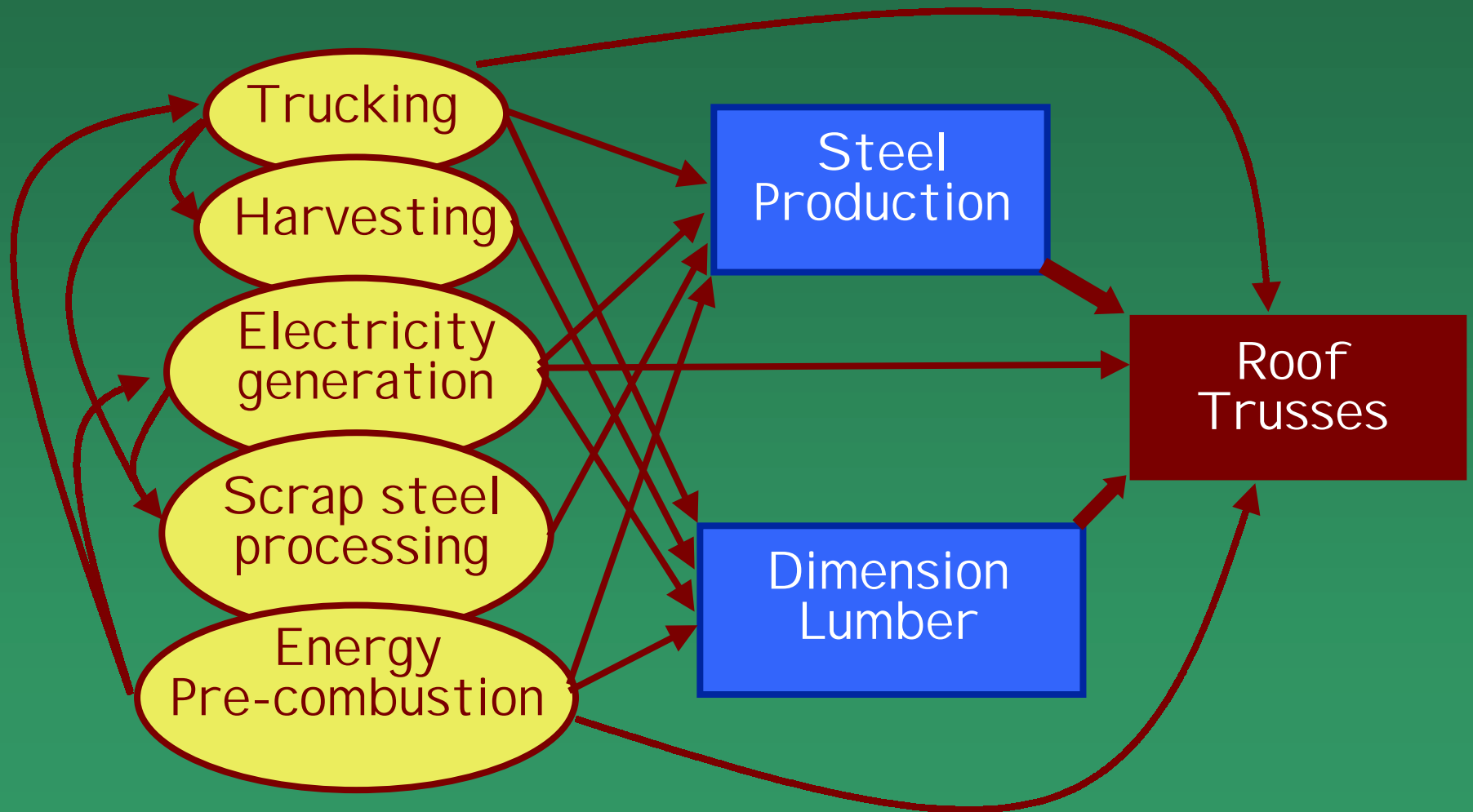
Phase II Scope

- ◆ Common processes
 - » electricity generation, transportation,
 - » energy pre-combustion
 - » end-of-life modules
- ◆ Commodity level manufacturing for commonly used materials and products
 - » unit process data
 - » cradle-to-gate scope
- ◆ Standard transformation processes
 - » stamping, pressing, painting and other “heat, beat and treat” operations

Cradle-to-Gate Focus

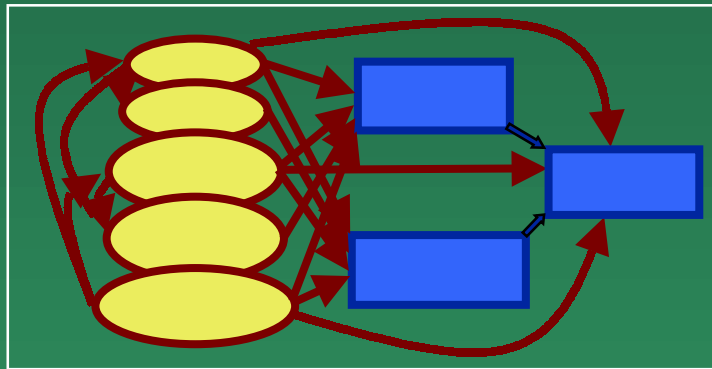


Working with process modules



Using the results

LCI of concrete



LCA
tools

Impact Potentials
Global warming
Ozone depletion
Etc.

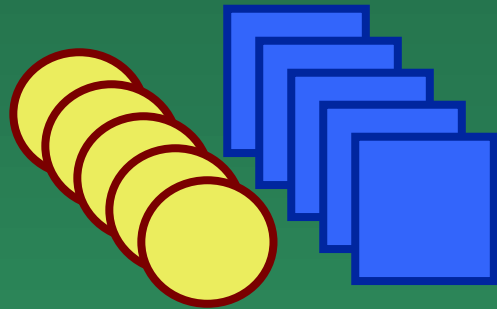
specialized
tools

ATHENA™

BEES

Supplier-specific uses

Database modules



floor covering LCA

In-plant processes
Use phase

Product X



floor covering LCA

In-plant processes
Use phase

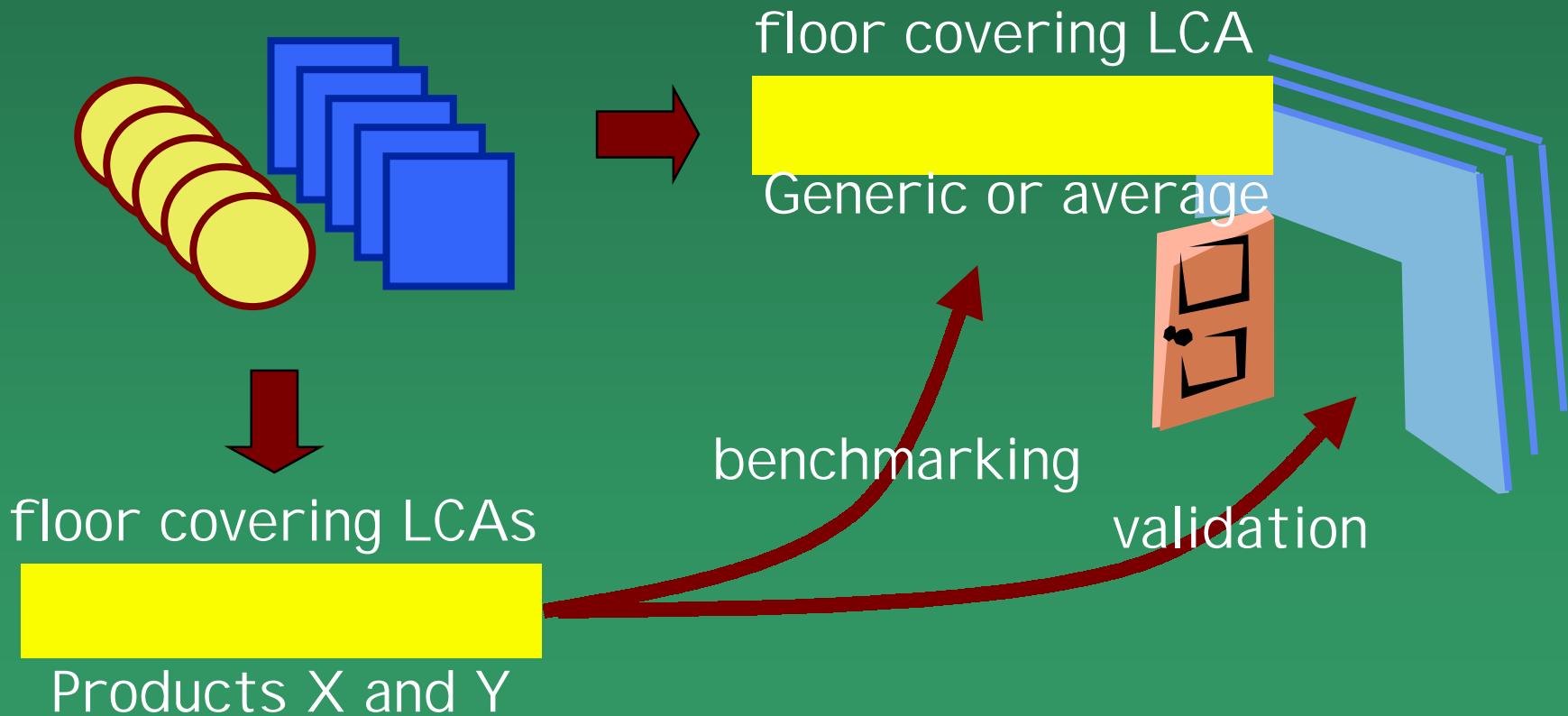
Product Y

fair comparison

reduced assessment costs

The vision: benchmarking & validation

Database modules



The LCI is Critical

Quality of LCA results \leq Quality of LCI data

No matter what tool is used or
how results are presented

Issues

- ◆ Understanding and communication
 - » between industry and LCA practitioners
 - » among practitioners
- ◆ Allocation — physical causality vs economics
 - » availability of upstream price data
- ◆ Recycled content vs recyclability vs recycling potential
 - » is LCA science or ideology
 - » when is the loop open or closed
 - » when is there a change in inherent properties
- ◆ Relative treatment of home, prompt, and obsolete scrap
- ◆ Handling imports (material inputs, components, products)
- ◆ Transparency
 - » how much is enough
 - » ability to disaggregate and use common process modules

Visit the project web site at . . .

www.nrel.gov/lci/

or the ATHENA Institute at . . .

www.athenaSMI.ca