Materials Management for Local Greenhouse Gas Reduction

John C. Davis

High Desert RMDZ

Mojave Desert and Mountain Recycling Authority

May 2011 Zone Works

MOJAVE DESERT & MOUNTAIN RECYCLING

Integrated Waste Management Joint Powers Authority

West Coast Climate and Materials Management Forum

- West Coast local, state, tribal governments working with US EPA to integrate and share lifecycle materials management policies and practices to drive climate action

West Coast Climate and Materials Management Forum

- Mission: Identify areas of collaborative effort and strategic actions to reduce greenhouse gas (GHG) emissions through improvements in *waste prevention, recovery, and disposal*

West Coast Climate and Materials Management Forum

- Objectives
  - Provide state, local and tribal governments with tools for evaluating the climate implications of waste and materials management decisions
  - Influence national and regional policies on climate change
  - Advance priority climate and materials management research

What Is Materials Management?

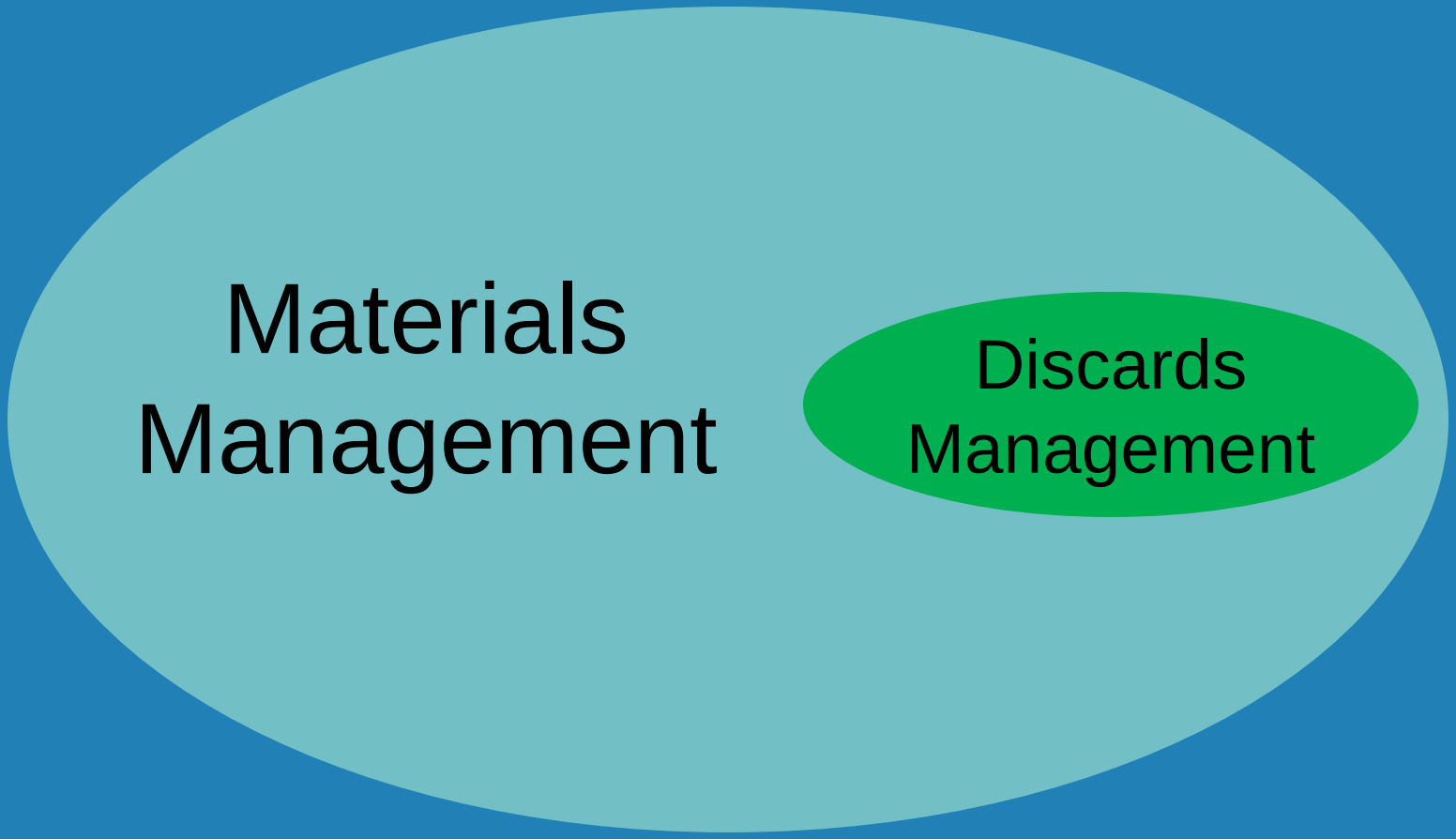
- An approach to using and reusing resources most productively and sustainably throughout their life cycles
  - Minimize the amount of materials involved
  - Minimize associated environmental impacts

What Is Materials Management?

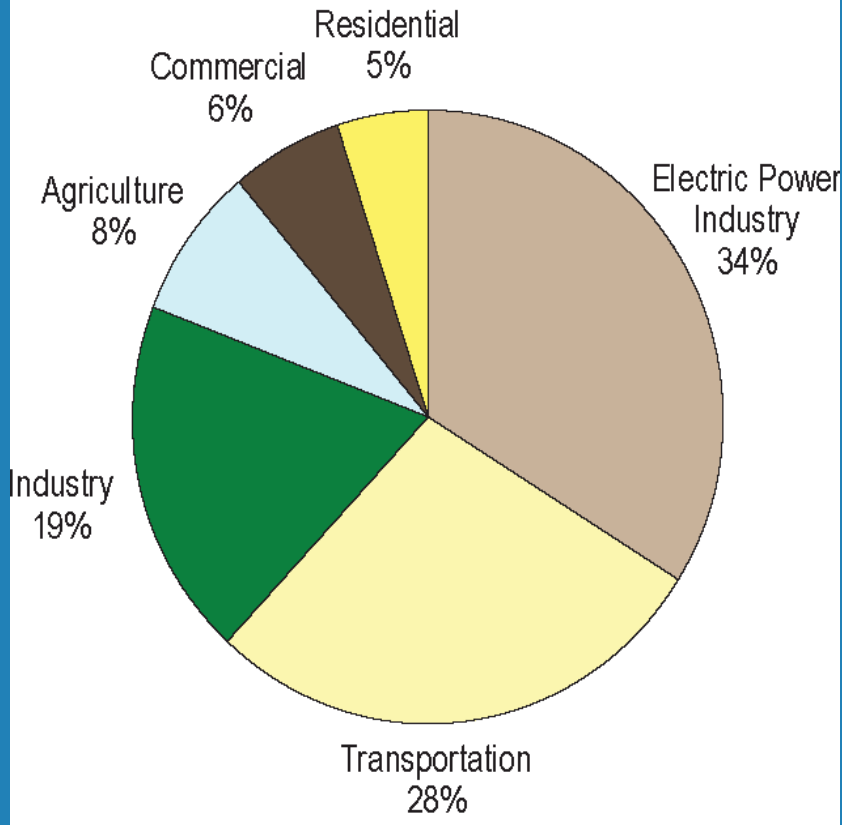
- Effective and comprehensive
  - Sees products and materials from conception to disposal
  - Minimize resources consumed and other associated environmental impacts

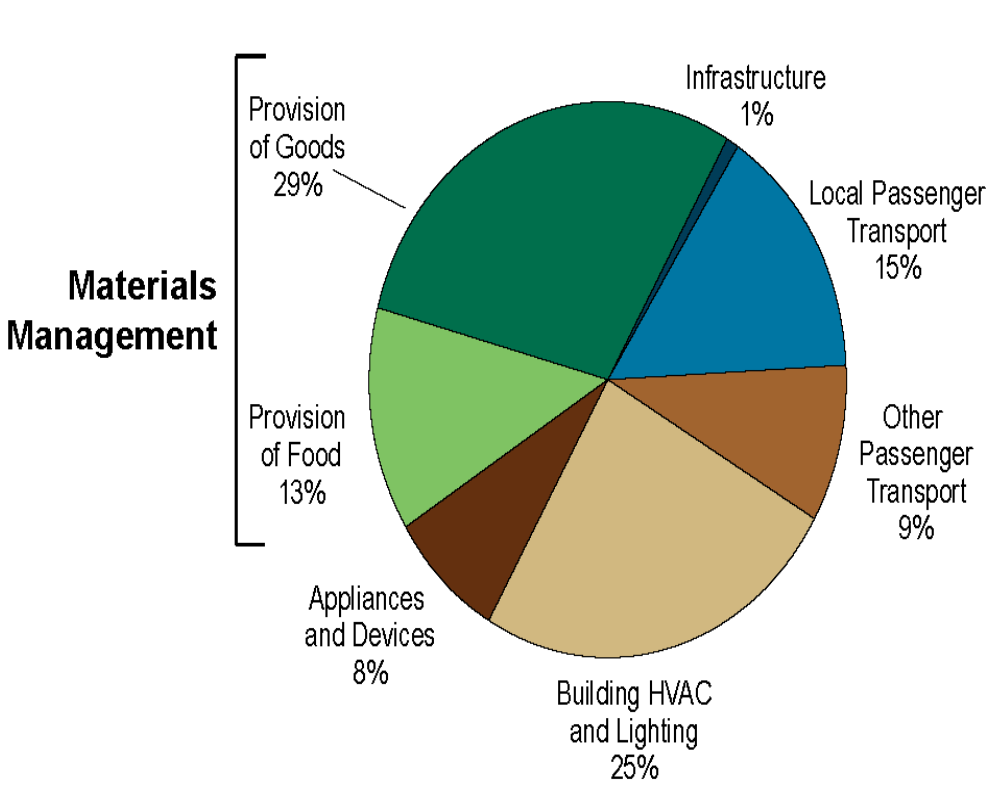
What Is Materials Management?

Discards Management: A Subset of MM



Conventional vs. Systems Based GHG Accounting



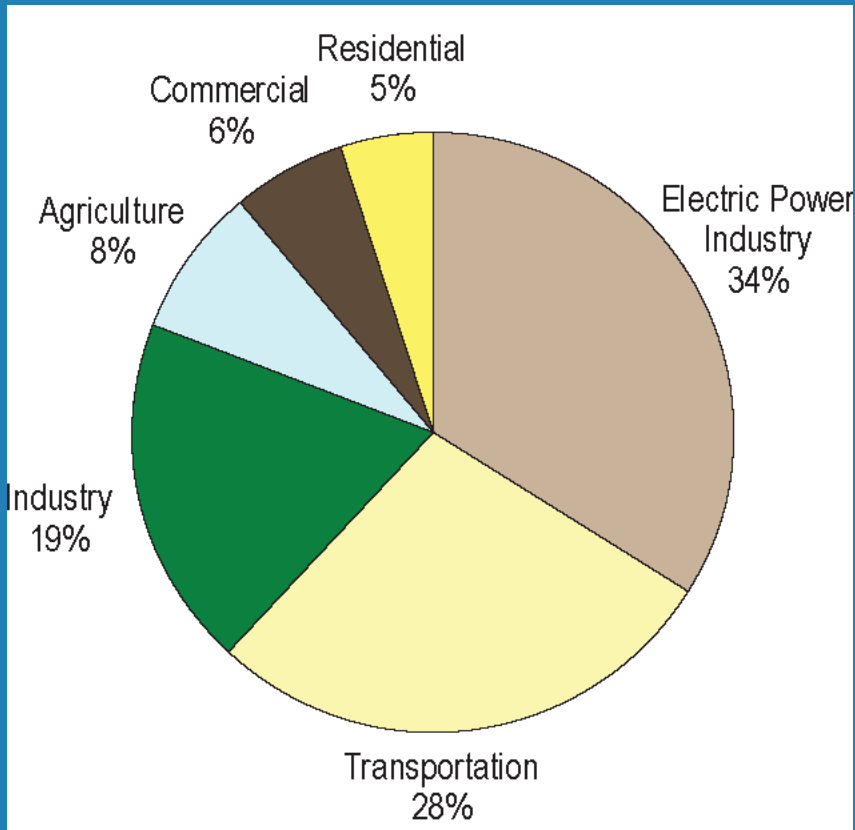


Conventional Sector Based Accounting

End-of-pipe focus

Doesn't show role materials management plays in reducing GHG emissions

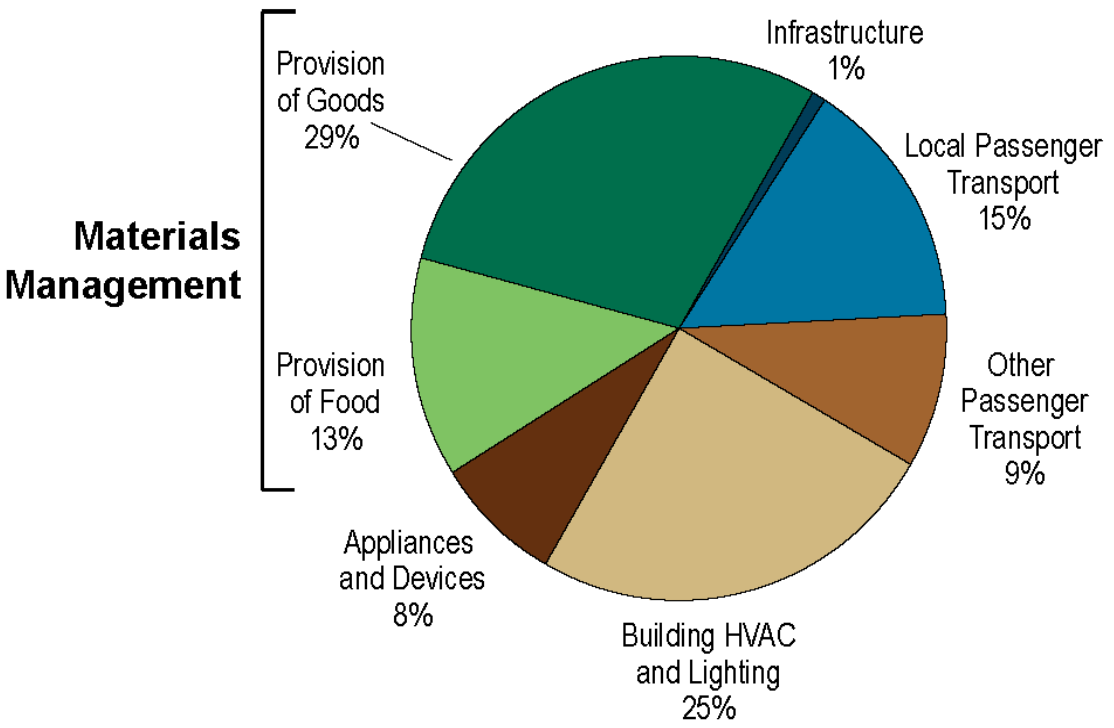
U.S. GHG Emissions (2006)



Systems Based View

Same GHG emissions, a new lens

Identifies new opportunities for GHG reductions



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Reducing Greenhouse Gas Emissions through Recycling and Composting

A Report by the Materials Management Workgroup of the West Coast Climate and Materials Management Forum

May 2011

United States Environmental Protection Agency, Region 10
Seattle, WA

Materials Management Report

"Reducing GHG Emissions through Recycling and Composting"
www.epa.gov/region10/westcoastclimate.htm

- Prepared by the Materials Management and Product Stewardship Workgroup
- Identifies top 10 materials with greatest GHG emissions reduction potential in waste streams of WA, OR and CA

Materials Management Report

- Uses EPA's WARM calculator to compare emissions of landfilling to recycling and composting
- Inputs statewide disposal characterizations
- Highlights best practices for recycling and composting priority materials to achieve state and local policy goals

Greatest Emissions Reduction Potential

Top 10 materials, broken into 4 categories:

- Food Scraps
- Dimensional Lumber
- Carpet
- Core Recyclables
  - Corrugated containers
  - Office, news, mixed paper
  - Aluminum cans
  - Steel cans
  - PET, HDPE (or mixed plastics)

Greatest Emissions Reduction Potential

CALIFORNIA		OREGON		WASHINGTON	
Material Type	MTCO2E Reduced	Material Type	MTCO2E Reduced	Material Type	MTCO2E Reduced
Carpet	**9,324,721**	**Carpet**	**490,438**	**Carpet**	**1,053,864**
Corrugated Cardboard	*6,061,275*	**Food Scraps**	**433,855**	**Food Scraps**	**872,695**
Food Scraps	**5,837,189**	*Corrugated Cardboard*	*239,367*	*Corrugated Cardboard*	*601,724*
Office Paper	*3,093,923*	**Dimensional Lumber**	**128,271**	*Aluminum Cans*	*383,414*
Dimensional Lumber	**2,123,138**	*Office Paper*	*96,435*	*Office Paper*	*210,128*
Newspaper	*913,942*	*Mixed Plastics*	*43,041*	*Newspaper*	*151,145*
Magazines	*750,902*	*Aluminum Cans*	*40,096*	*Magazines*	*122,420*
Aluminum Cans	*652,958*	*Magazines*	*39,870*	**Dimensional Lumber**	**93,089**
Steel Cans	*434,140*	*Newspaper*	*34,074*	*PET*	*74,758*
PET	*310,425*	*Steel Cans*	*33,346*	*HDPE*	*72,819*
Core Recyclables	***12,217,564***	***Core Recyclables***	***526,229***	***Core Recyclables***	***1,616,408***

CA AB 32 Goals Through Recycling Composting

- Carpet, core recyclables, and dimensional lumber (combined) *4-6% of 2050 annual emissions reduction compared to 2008*
- Food scraps *1.5% of 2050 annual emissions reduction compared to 2008*
  - *More than 2x using ARB factors*

Carbon Credits and Offsets

- Climate Action Reserve
  - Food Composting Protocol
  - Anaerobic Digestion Protocol
  - www.climateactionreserve.org
- ARB Cap and Trade?
  - Compost upstream rather than avoided landfill methane emissions
  - Recycling lifecycle similar to WARM

+ Economic Impact

- Additional Salaries and Wages
- Additional Goods and Services
- Additional Sales
- Well over $2.5 billion annually in California
- Continued strong demand for core recyclables
- Local markets for compost

RMDZ Opportunities

- Carpet
  - AB 2398 fee
  - Collection and processing infrastructure needed
  - New products
  - Open or closed loop?

RMDZ Opportunities

- Core Recyclables
  - Paper and plastic are export based
  - California's power grid is relatively clean now and will be 30% renewable
  - Mandatory Commercial Recycling means more material (OP and OCC)
  - Primary cleaning and processing
    - Multi-grade optical sorting
    - PET bottle manufacturing

RMDZ Opportunities

- Dimensional Lumber
  - Mostly biomass or mulch based now
  - CALGreen will increase supply
  - LEED's resource-efficient standards create demand
  - Engineered wood, laminates, parquet, countertops, shelving, furniture, pallets
  - Processing opportunities
  - Non-structural and product reuse

RMDZ Opportunities

- Food
  - High Quantity (6 million tons/year)
  - Collection and processing infrastructure needed (12 food compost facilities out of 120 permitted)
  - Regulatory hurdles
  - Covered aerated static pile composting
  - Anaerobic digestion (Program EIR)
  - Product use and application
  - Water efficient agriculture and landscape

RMDZ Opportunities

- Upstream changes
  - Transportation modes
  - Manufacturing practices
  - Distribution infrastructure
  - Energy sources
  - Product design

Materials Management and Climate Protection

- To learn more about materials management approaches for state and local climate protection, visit: http://captoolkit.wikispaces.com/
  - Climate Protection Actions
  - Example Climate Action Plans
  - New approaches to GHG Inventories
  - Measurement Tools
  - Links to resources

Join the Workgroup

- Materials Management and Products Stewardship Workgroup needs market development perspective
- Open to state and local governments
- Contact John Davis or Ashley Zanolli zanolli.ashley@epa.gov
- http://yosemite.epa.gov/R10/ecocomm.nsf/climate+change/wccmmf#involve