Overview

• ENERGY — Waste is an abundant, underutilized, and valuable domestic energy resource.

• RECOVERY — Recovery of energy and materials from waste reduces the use of virgin materials for products and energy.

• POLICY — Absent thoughtful, targeted policy incentives to change market behaviors, the least-cost disposal options will continue to dominate—which tends to undermine both energy and material recovery opportunities.
Resource Conservation and Recovery

- Solid waste policy in the United States was established by the Resource Conservation and Recovery Act (RCRA) of 1976
- RCRA Objective: maximize the utilization of valuable resources and to encourage resource conservation
- Subsequent policies have largely failed to support RCRA's objectives

Policy Failure

EPA Solid Waste Management Hierarchy

- Source Reduction & Reuse
- Recycling / Composting
- Energy Recovery
- Treatment & Disposal
- Landfill

MSW in the United States

- Landfill: 38.9%
- WTE: 63.5%
- Recycling/Composting: 7.6%
THE CASE FOR POLICIES THAT SUPPORT Energy Recovery

MSW IN THE UNITED STATES

Landfill: 7.6%
WTE: 28.9%
Recycling/Composting: 63.5%

MSW IN THE EUROPEAN UNION

Landfill: 24%
WTE: 42%
Recycling/Composting: 34%

Increased recycling

MSW IN THE UNITED STATES

Landfill: 7.6%
WTE: 28.9%
Recycling/Composting: 50.4%

MSW IN THE EUROPEAN UNION

Landfill: 24%
WTE: 42%
Recycling/Composting: 34%

Still 50% waste
THE CASE FOR POLICIES THAT SUPPORT Energy Recovery

MSW IN EIGHT EUROPEAN COUNTRIES

- Germany: 52%
- Austria: 46%
- Norway: 2%
- Sweden: 52%
- Switzerland: 40%
- Netherlands: 30%
- Belgium: 28.9%
- Denmark: 27.5%

MSW IN THE UNITED STATES

- Landfill: 63.5%
- WTE: 28.9%
- Recycling/Composting: 7.6%

MSW IN EIGHT EUROPEAN COUNTRIES

- Landfill: 2%
- WTE: 52%
- Recycling/Composting: 46%
Policies that Support Changes in Market Behavior

**Objective:** minimize use of virgin material for products and energy

**Strategy:** resource recovery and conservation

**Tactic:** establish policies that support RECOVERY of materials and energy

- **Value of Material/Energy**
  - + (Cost of Recovery)
  - + (Profit Margin)
  - + Value of Policy Support
  - = Economic Viability

**Economic Viability**
- If economic viability is positive, recovery technologies are deployed and energy and materials are recovered.
- If economic viability is negative, current policies are insufficient and resources are wasted. New policies supporting the economic viability of material and energy recovery are needed.
Today’s Economy with Current Weak Policies

- Raw Materials
- Energy
- Manufacturing
- Distribution
- Consumption (use, reuse, repair)
- Collection
- Waste
- Energy & Materials

United States (2011)
Landfill = 63.5%
Recycling = 28.9%
Energy Recovery = 7.6%

Tomorrow’s Economy with New Successful Policies

- Raw Materials
- Energy
- Manufacturing
- Distribution
- Consumption (use, reuse, repair)
- Collection
- Waste
- Energy & Materials

8 Euro Countries (2012)
Landfill = 2%
Recycling = 52%
Energy Recovery = 46%

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