

The Climate and Energy Case for Recycling

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Presentation Overview

- Introduction
- Climate Change Benefits
- Energy Benefits
- National Example
- Available Tools
- WARM Demonstration
- Summary



Introduction

- The EPA Climate and Waste Program's mission: to identify and address linkages between waste reduction and climate protection
- Quantification of the GHG and energy impacts of recycling requires a life-cycle approach
- Recycling can significantly reduce GHG emissions and conserve energy



Climate Change Benefits

■ Upstream Benefits

- Reduce carbon dioxide emissions from energy use in the material acquisition and manufacturing stages
- Increase carbon storage in forests
- Increase carbon storage in soils when organics are composted and applied to the soil

■ Downstream Benefits

- Avoid landfill methane emissions
- Avoid carbon dioxide emissions from combustion

■ Full Analysis Provided in EPA's Revised Report:

- www.epa.gov/globalwarming/actions/waste/reports.html#ghgemissions



Energy Benefits

- Decrease the Demand for Raw Materials (e.g., trees, bauxite)
 - Reduce energy associated with raw material extraction
- Reduce the Amount of Energy Needed for Manufacturing and Transportation
- Full Analysis Provided in EPA's White Paper on Energy Savings:
www.epa.gov/globalwarming/publications/waste/energy.pdf



National Benefits



- 30% National Recycling Rate Yields Significant GHG and Energy Benefits
 - GHG Emission Reductions = 32.9 million metric tons of carbon equivalent
 - Comparable to taking 25 million passenger cars off the road each year
 - Energy Savings = 661 trillion British thermal units
 - Comparable to the annual energy requirements of roughly 6.5 million houses



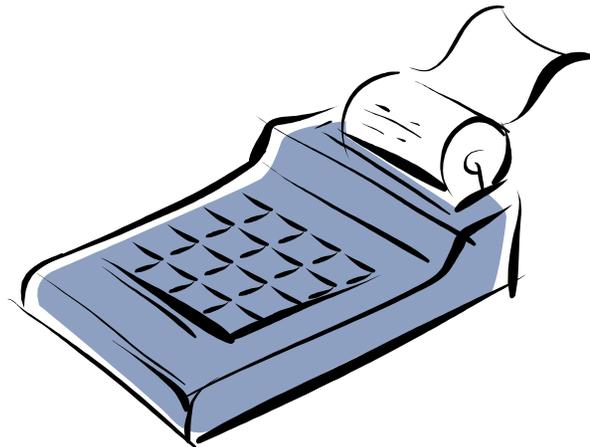
Tools to Calculate Benefits

- EPA Office of Solid Waste's WASTE Reduction Model (WARM)
 - www.epa.gov/globalwarming/actions/waste/warm.htm
- NRC's Environmental Benefits Calculator
 - www.nrc-recycle.org/member/advocacy/rworks/calculator.htm
- ICLEI Cities for Climate Protection Campaign GHG Emission Software
 - www.iclei.org/us/ccpsoftware.html
- EPA Office of Research and Development's Decision Support Tool
 - www.rti.org and search for municipal solid waste



Basic Data Requirements

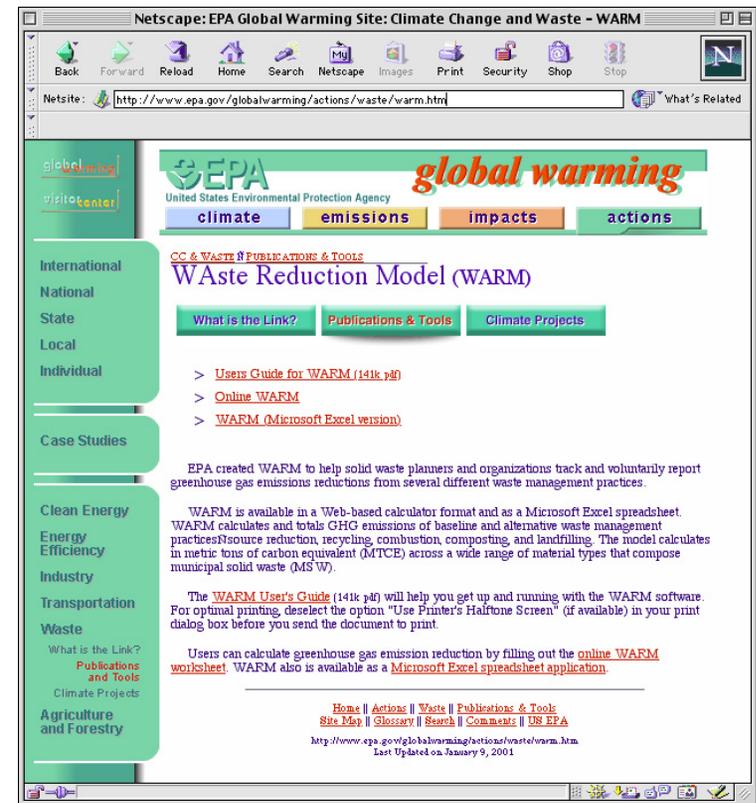
- Waste Generated
- Waste Disposal Method
- Waste Disposed by Commodity
- Waste Recycled by Commodity





WARM

- User-friendly
- Available in online and spreadsheet versions
- Allows users to tailor to local circumstances
- Provides results in several formats





Tailoring WARM to Meet Your Needs



- Source Reduction Assumptions
- Landfill Gas Recovery Assumptions
 - Gas recovery/no gas recovery
 - Recovery and flaring
 - Recovery and electricity production
- Transportation Assumptions
- Output Units
 - MTCE, MTCO₂E, MBtu
- Voluntary GHG Reporting Options



WARM Demonstration

- Evaluate GHG and Energy Benefits of Projected 2005 Recycling Rate (35%)
- Demo Outline
 - Data inputs (baseline, alternative)
 - Tailor assumptions/reporting format
 - View GHG reductions
 - View energy savings



Projected National Benefits

■ GHG and Energy Benefits of Projected 35% National Recycling Rate



- GHG Emission Reductions = 42.9 million metric tons of carbon equivalent
 - Comparable to taking 33 million passenger cars off the road each year
- Energy Savings = 903 trillion British thermal units
 - Comparable to the annual energy requirements of roughly 8.9 million houses

- Recycling Offers Significant Energy and GHG Benefits
- Tools Like WARM Can Help Waste Managers Quantify and Communicate These Benefits
 - Incorporate GHG and energy impacts into decision-making processes
 - Communicate GHG emission reductions and energy savings to the public
 - Use GHG and energy impacts to help “sell” recycling programs in new and important ways



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