



What are the Benefits of Recycling?

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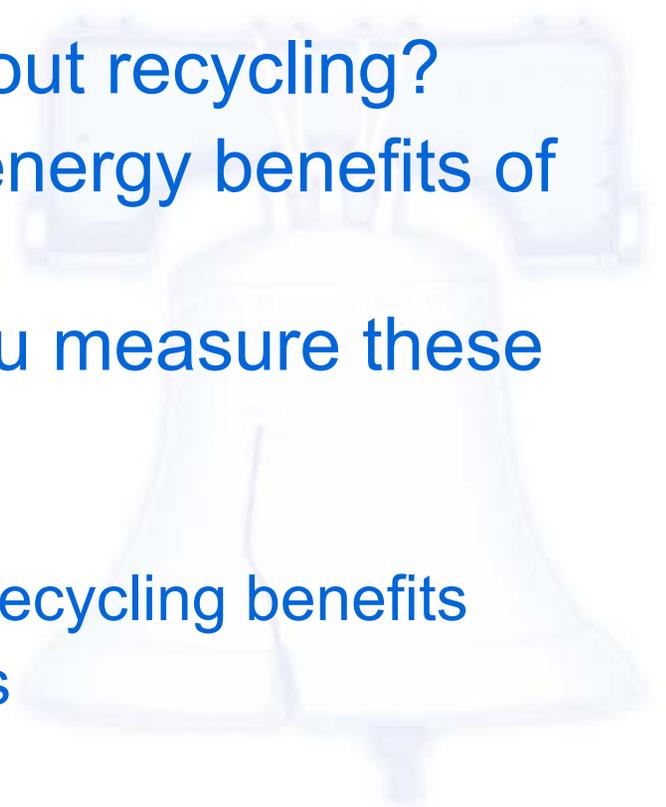
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Overview

- How much do you know about your recycling practices?
- Why should you care about recycling?
- What are the GHG and energy benefits of recycling?
- How can WARM help you measure these benefits?
 - Model demonstration
 - Philadelphia commercial recycling benefits
 - National recycling benefits





How Much do You Know About Your Recycling Practices?

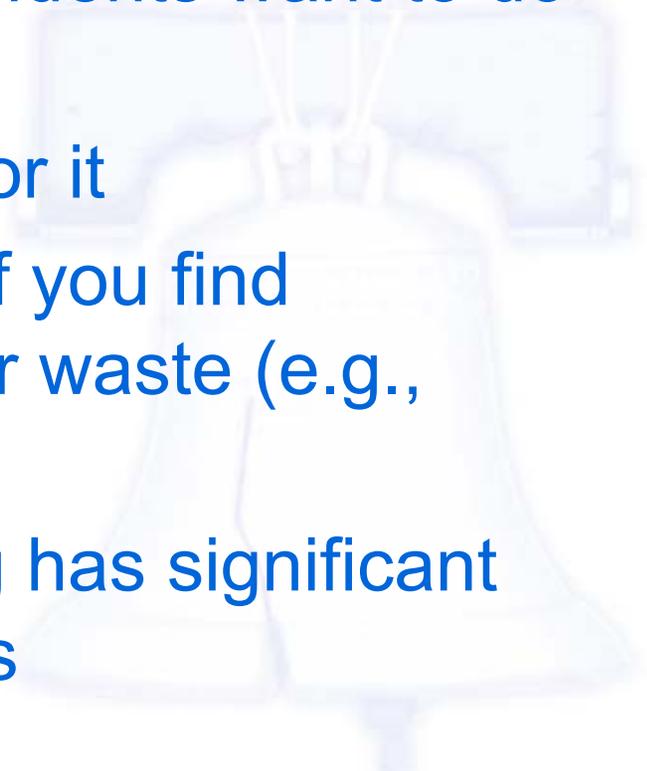
- Do you separate your recyclables?
- Are your recycling bins large enough?
- What materials do you recycle?
- Do have data on your recycling practices?
- Are you sure that the recyclables leaving your facility/building are actually being recycled?





Why Should You Care About Recycling?

- You are required to recycle
- You and your tenants/residents want to do the right thing
- You are already paying for it
- You could *make* money if you find someone who wants your waste (e.g., industrial byproducts)
- You realize that recycling has significant energy and GHG benefits







Why Bother?

Recycling yields GHG and energy benefits that occur throughout the product life cycle

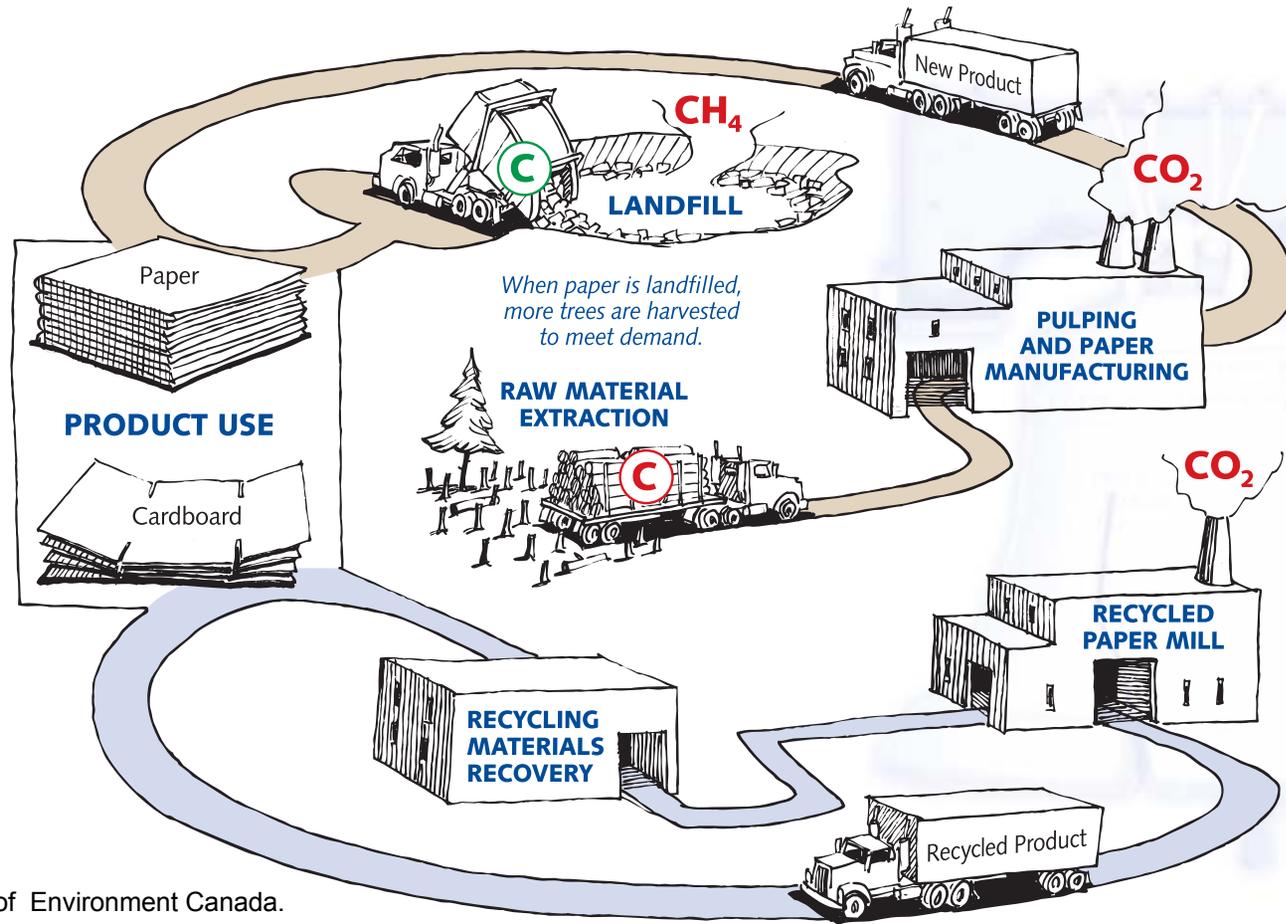
- **Benefits accrue upstream –**
 - Energy use and emissions are reduced when recycled inputs are used in place of virgin inputs
 - Carbon is stored in forests when less trees are harvested to make paper and wood products
- **Benefits accrue downstream –**
 - Emissions from landfills and incinerators are reduced



Paper Life Cycle

GHG Emissions and Sinks for Paper

Life Cycles for Landfilling vs. Recycling

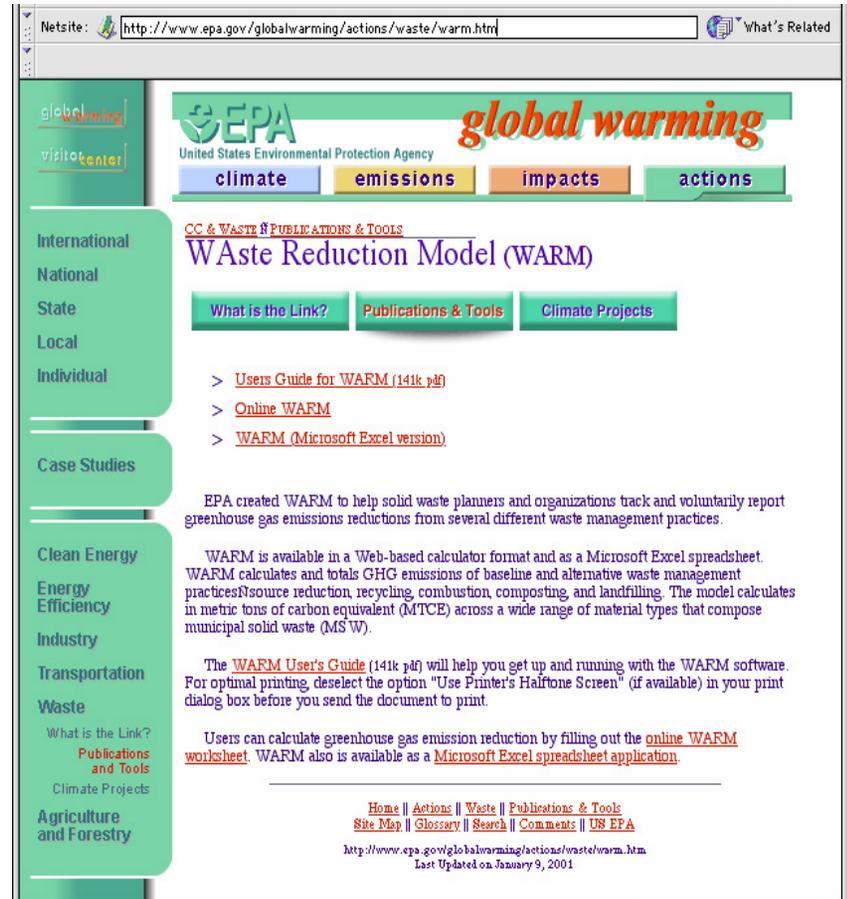




The Waste Reduction Model (WARM) Can Help Quantify Benefits

yosemite.epa.gov/oar/globalwarming.nsf/content/ActionsWasteToolsWARM.html

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



The screenshot shows a web browser window with the URL <http://www.epa.gov/globalwarming/actions/waste/warm.htm>. The page features the EPA logo and navigation tabs for climate, emissions, impacts, and actions. A sidebar on the left lists various categories like International, National, State, Local, Individual, Case Studies, Clean Energy, Energy Efficiency, Industry, Transportation, Waste, and Agriculture and Forestry. The main content area is titled "Waste Reduction Model (WARM)" and includes links for "What is the Link?", "Publications & Tools", and "Climate Projects". Under "Publications & Tools", there are links for "Users Guide for WARM (141k pdf)", "Online WARM", and "WARM (Microsoft Excel version)". A paragraph explains that EPA created WARM to help solid waste planners track and report greenhouse gas emissions reductions. Another paragraph states that WARM is available as a Web-based calculator or a Microsoft Excel spreadsheet, calculating GHG emissions of baseline and alternative waste management practices. A final paragraph mentions the "WARM User's Guide (141k pdf)" and provides instructions for optimal printing. At the bottom, there are navigation links for Home, Actions, Waste, Publications & Tools, Site Map, Glossary, Search, Comments, and US EPA, along with the URL and a last updated date of January 9, 2001.



WARM Demonstration

- Evaluate GHG and Energy Benefits of Commercial Recycling in Philadelphia
- Demo Outline
 - Data inputs (baseline, alternative)
 - Tailor assumptions/reporting format
 - View GHG reductions
 - View energy savings





Basic Data Requirements

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





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





Benefits of Philadelphia Paper and Cardboard Recycling Efforts

- GHG Emission Reductions = 101,340 metric tons of carbon equivalent
 - Comparable to taking 77,000 passenger cars off the road each year
- Energy Savings = 1.4 million British thermal units
 - Comparable to the annual energy requirements of roughly 14,000 houses





Benefits of National Recycling Efforts (30% Recovery)



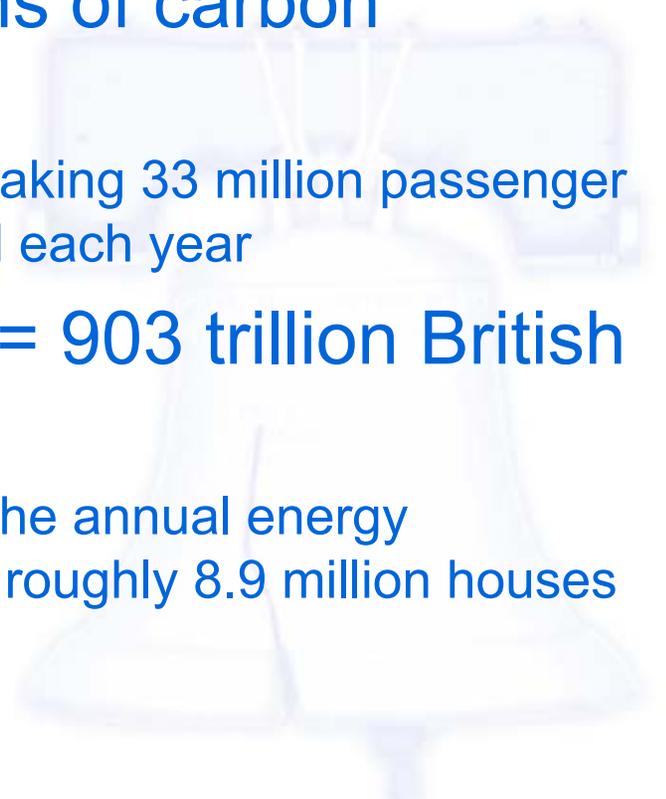
- GHG Emission Reductions = 32.9 million metric tons of carbon equivalent
 - Comparable to taking 25 million passenger cars off the road each year
- Energy Savings = 661 trillion British thermal units
 - Comparable to the annual energy requirements of roughly 6.5 million houses





Benefits of Projected National Recycling (35% Recovery)

- 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





Next Steps

- Think about the significant GHG and energy savings resulting from your commercial recycling efforts
- Devise a system for collecting and reporting data
- Use WARM to quantify and communicate these benefits
- “Sell” recycling programs in new and important ways





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