# Fact Sheet
# Cutting-Edge Software To Cut Emissions

"**Today's software tools empower waste planners with the ability to design the most effective waste management strategies for achieving their environment goals.**"

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In 1998, the United States generated 220 million tons of municipal solid waste (MSW). The landfilling and combustion of this waste resulted in greenhouse gas (GHG) emissions of 65 million metric tons of carbon equivalent (MMTCE). Today, a variety of software programs and models are available to help managers and planners reduce emissions at state, local, business, and institutional levels. These tools can enable them to determine the impact of their practices on climate change and the environment, as well as strategies to reduce those impacts.

## Comparison of Three Waste Management Tools

The WAste Reduction Model (WARM) was developed by ICF Consulting for EPA's Climate and Waste Program. The Cities for Climate Protection (CCP) Campaign Greenhouse Gas Emission Software was produced by Torrie Smith Associates for the International Council for Local Environmental Initiatives (ICLEI). The MSW Decisions Support Tool (DST) was developed by EPA's Office of Research and Development and the Research Triangle Institute (RTI). Each tool targets specific end-users to satisfy unique needs and constraints.

## Comparison of Tools at a Glance

| | WARM | CCP | MSW DST |
|---|---|---|---|
| **Primary to End-Users** | All waste management planners | Municipal government planners | State and local planners |
| **Type of Emissions** | GHG | GHG, criteria pollutants | GHG, criteria pollutants, +30 other pollutants |
| **Sectors** | Waste | Waste, energy, and transportation* | Waste |
| **Model Outputs** | Emissions | Emissions, energy use, cost | Emissions, energy use, cost, policy targets, cost and benefit optimization |
| **Costs** | Free | $240- $2,000 | Variable |

\* The user can input direct greenhouse gas emissions from any identified source, if the data are available.

## The WAste Reduction Model

The WAste Reduction Model (WARM) is a user-friendly software tool that enables waste managers to compare GHG emissions from business-as-usual waste management practices with emissions from alternative strategies. WARM covers 17 types of materials and 5 waste management options: source reduction, recycling, combustion, composting, and landfilling. WARM also accounts for transportation distances to disposal and recycling facilities, carbon sequestration, and utility offsets that result from landfill gas collection and combustion.

WARM users input data on the amount of waste handled by material type and management practice, and WARM instantly calculates the associated emissions in metric tons of carbon equivalent (MTCE) for base-

line and alternative scenarios. The difference between alternative emissions and baseline emissions represents the benefits of changing your waste management practices.

Available free on the Web and in Microsoft Excel©, this program is ideal for waste planners to track and report voluntary GHG emission reductions from waste management practices and to compare the climate change impacts of different approaches.

## CCP Software

The Cities for Climate Protection (CCP) Campaign Greenhouse Gas Emission Software is targeted for use by local governments. This Windows-based tool can analyze emissions and emissions reductions on a community-wide basis and for municipal operations alone. The community-wide module looks at residential, commercial, and industrial buildings, transportation activity, and community-generated waste. The municipal operations module looks at municipal buildings, fleets, and waste from in-house operations. In addition to computing greenhouse gas emissions, the CCP software estimates reductions in criteria air pollutants, changes in energy consumption, and financial costs and savings associated with energy use reductions.

The software supports quantification of emissions reductions from waste reduction, source reduction, energy savings, and fuel switching. Users can employ the preformatted charts and reports to develop cost-effective action plans to monitor progress on reducing emissions.

CCP software subscriptions, which include technical support, are available to governments that are members of ICLEI for a subsidized price of $240. The full retail price of the software in the United States is $2,000.

## MSW Decision Support Tool

The MSW Decision Support Tool (DST) is intended for use by solid waste planners at state and local levels to analyze and compare MSW management strategies with respect to cost, energy consumption, and environmental releases to the air, land, and water. As such, this tool calculates projected emissions of greenhouse gases, criteria air pollutants, and emissions of more than 30 air- and water-borne pollutants.

The MSW DST is designed to model emissions associated with municipal waste activities, including emissions from source reduction, waste collection and transportation, materials recovery facilities, transfer stations, compost facilities, combustion and refuse-derived fuel facilities, and landfills. The MSW DST can be used to perform complex analyses, such as determining the most cost-effective or most energy-efficient waste management strategy for reaching specific policy goals (e.g., how best to divert 40 percent of landfill waste by 2005).

This modeling tool is available to the public on a case-by-case basis. The MSW DST studies vary in cost, with simple analyses offered at no charge, and complex analyses generally starting at $10,000. In addi-

tion, a supporting life cycle inventory (LCI) database for North America is planned for release in the fall of 2001. This comprehensive database contains environmental emissions and cost data on waste management activities, materials production, equipment usage, transportation, and energy production.

## Benefits

Solid waste management practices can reduce greenhouse gas emissions from the waste sector, as well as reduce upstream and downstream emissions. Empowering waste managers and government planners with information on the climate and other environmental impacts of their current activities and alternative practices enables them to design the most effective strategies for maximum environmental, economic, and social benefits.

## Additional Information

For EPA's **WAste Reduction Model (WARM),** see www.epa.gov/mswclimate

For the **CCP Software,** contact ICLEI at http://www.iclei.org

For the **MSW DST** and **LCI,** contact Keith Weitz, of RTI, at Kaw@rti.org, or Susan Thorneloe, of EPA, at Thorneloe.Susan@epa.gov

**EPA's Climate and Waste Program** increases awareness of climate change and its link to waste management in order to (1) make greenhouse gas emissions a factor in waste management decisions and (2) employ waste management as a mitigation action for reducing greenhouse gas emissions. For additional information on EPA's Climate and Waste Program, see www.epa.gov/mswclimate.