



The Commonwealth of Massachusetts
Executive Office for Administration and Finance
Operational Services Division
One Ashburton Place, Boston, MA 02108-1552



Mitt Romney
Governor

Eric A. Kriss
Secretary

Kerry Healey
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State Purchasing Agent

NASPO Cronin Innovation Award 2005

EnviroCalc

Environmental Benefits and Energy Cost Savings Calculator for Purchasers

PROCUREMENT AGENCY:

Commonwealth of Massachusetts Operational Services Division

APPLICANT NAME:

Environmentally Preferable Product Procurement Program

CATEGORY NAME:

Cronin Classic

DATE OF IMPLEMENTATION:

2002 - 2005

ORIGINATOR:

The Massachusetts Environmentally Preferable Products Procurement Program is administered by the **Operational Services Division (OSD)**, with the support of the **Executive Offices of Environmental Affairs (EOEA)**, and the **Department of Environmental Protection (DEP)**. The purpose of the Program is to promote the purchase of recycled and other environmentally preferable products to Commonwealth agencies and departments in recognition of the need to make more efficient use of our natural resources, create the markets for the materials collected in recycling programs and reduce solid waste volume and disposal costs.

CONTACT PERSON:

Dmitriy Nikolayev
Environmental Purchasing Project Specialist
Operational Services Division
One Ashburton Place, Room 1017
Boston, MA 02108-1552
(617) 720-3351
dmitriy.nikolayev@osd.state.ma.us

1. Introduction

Over the past several years, numerous federal agencies, state and local governments, colleges, universities, and private companies have incorporated environmentally preferable products (EPPs)¹ into their purchasing practices. Governments have proven most active in this area and established numerous programs and policies that mandate or provide preference for the purchase of certain EPPs. These policies are based on the recognition that purchasing EPPs is a proactive means of environmental protection as well as a way to realize significant cost savings associated with some of those products. EPP purchasing policies of at least 50 state, city and county governments are available online.

One of the pre-requisites for the success of any purchasing initiative, however, is the ability to measure and track its progress and overall impact. This principle is especially true in the case of purchasing EPPs. The benefits of EPP purchasing (e.g. saved trees, saved landfill space) are not realized exclusively by the purchasing organization and are hard to measure and track, yet quantifiable data are vital to program development, performance measurement, marketing and education.

In 2001, the Massachusetts Environmentally Preferable Products Procurement Program (“the Program”) hired a consultant to perform a comprehensive assessment of the environmental and other impacts associated with the Program’s activities. The consultant was asked not only to provide a one-time estimate of the environmental benefits of EPP purchasing, but also to identify resources, models and methodologies that would enable the Program to obtain similar estimates in the future.

After the 2001 study, the Program used the methodology to continue tracking its environmental impact. However, the calculations proved to be extremely labor intensive. They involved analyzing supplier reports, using multiple third-party models focused on specific products or materials and then combining the model outputs into a set of final results (Appendix 1). While many constituents and partner EPP programs were also interested in quantifying their impacts, the time and effort required to complete the calculations were prohibitive.

To address this barrier for broader use, over the past two years the Program has worked to combine all the relevant calculations and models into a single easy-to-use tool called EnviroCalc. The tool takes in information provided by an organization’s EPP suppliers and immediately estimates the environmental benefits of those purchases. As an added benefit, it estimates the cost savings associated with the purchase of energy efficient products.

2. Describe the Innovation

EnviroCalc is a spreadsheet-based tool designed to estimate the environmental benefits of purchases of recycled-content and energy efficient products. Combining the best available methodologies and models for assessing the environmental impacts of purchasing, it allows the purchaser to simply input the information obtained from the organization’s suppliers and receive an instantaneous estimate of the environmental impact of the purchases.

Existing environmental purchasing tools are typically focused on one product type (e.g. copy paper) or attempt to justify a future purchase of a product as opposed to tracking

Product Categories Covered by EnviroCalc

- Post-consumer recycled-content products
 - Paper (e.g. janitorial paper products, copy paper, paper used in printing, office supplies, lottery tickets, etc)
 - Recycled plastic products (e.g. traffic cones, recycling bins, plastic containers and carts, etc.)
 - Recycled content metal products
 - Remanufactured furniture
 - Compost and mulch
 - Recycled glass products
 - Remanufactured antifreeze
 - Re-refined motor oil
- Energy efficient products
 - Compact fluorescent light bulbs
 - Computer monitors
 - Copiers
 - Fax machines

¹ Environmentally Preferable Products (EPPs) are products or services that have a lesser or reduced effect on human health and the environment when compared with competing products or services that serve the same purpose. Such products or services may include, but are not limited to, those which contain recycled content, minimize waste, conserve energy or water, and reduce the amount of toxics disposed or consumed.

the benefits of the purchases that have taken place (e.g. EnergyStar® calculators). Unlike these tools, EnviroCalc is designed specifically to fulfill the reporting needs of purchasing departments and covers a broad range of products.

Some of the benefits of the EnviroCalc include the ability to:

- Provide environmental benefit estimates for both recycled-content and energy efficient products;
- Continuously update information (e.g. as additional supplier reports are submitted);
- Interpret environmental benefits through easy-to-understand equivalents (e.g. household energy use, acres of forest preserved);
- View the benefits by product group (e.g. recycled paper products);
- Assess each product group's contribution to a specific environmental benefit (e.g. contribution of recycled paper to the total greenhouse gas emission reduction);
- Calculate cost savings based on the purchases of energy efficient products.

Appendix 2 provides an illustration of EnviroCalc's capabilities based on the Commonwealth of Massachusetts' Fiscal Year 2004 purchases.

3. Describe the Potential for Transferability

EnviroCalc can be downloaded and used on any computer with Microsoft Office software. Initial presentations of the tool have demonstrated that it has the potential for nationwide adoption throughout all levels of institutional purchasing. As long as an organization is purchasing recycled-content or energy-efficient products, they will be able to use EnviroCalc to estimate the benefits of those purchases.

The tool was designed to be straightforward and uncomplicated for use by purchasing and other professionals with limited environmental expertise and time. As a result, purchasing departments without formalized EPP purchasing programs will be able to use this tool to track their progress and justify implementing additional environmental initiatives.

Recently, the tool has been demonstrated at the Eastern Regional NASPO conference in Portland, Maine, and the Responsible Purchasing Network Conference in Washington, DC, and has generated a lot of excitement among the purchasing officials and environmental policy specialists alike. The Institutional Procurement Program of the Center for a New American Dream, a major resource on EPP procurement nationwide, has expressed interest in promoting EnviroCalc as part of their services.

Types of benefits estimated by EnviroCalc

- Energy savings
- Monetary savings based on energy conservation
- Greenhouse gas (GHG) emission reductions
- Weight of materials recycled
- Weight of materials reused
- Landfill space savings
- Number of trees saved
- Avoided oil extraction

4. Demonstrate cost reductions or other financial benefits resulting from this initiative.

EnviroCalc has already helped to achieve a dramatic reduction in the amount of time and effort needed to produce the Program's reports on environmental benefits and cost savings. In many ways, it is an equivalent of hiring the original consultant, but obtaining the results faster and free of charge. Even the EPP programs using alternative tools to estimate environmental benefits are also likely to realize a reduction in the amount of resources needed for the task, because EnviroCalc combines and enhances many of those tools.

An important feature of EnviroCalc is its ability to reliably estimate annual cost savings from purchasing energy efficient products (Appendix 2). As a result, EnviroCalc will be a valuable resource to the purchasing departments that previously lacked the resources for estimating both environmental benefits and cost savings associated with their purchases of environmentally preferable products.

5. Explain the involvement of user agencies and highlight the achievements.

The tool was designed in consultation with the staff of the Operational Services Division and a variety of other Massachusetts state agencies, which provided information on some of the typical products they purchased. For example, the Massachusetts State Lottery worked with their suppliers to obtain information on the standard weights and recycled content of the lottery tickets they purchase. This effort

will enable them (as well as any other state lottery buying recycled-content tickets) to use EnviroCalc to estimate the environmental benefits of their purchases.

The Massachusetts State Sustainability Program (SSP), part of the Executive Office of Environmental Affairs, plans to promote EnviroCalc among the state agencies it works with. One of SSP's activity areas is supporting the state agencies' efforts to meet the goals of Governor Romney's *Massachusetts Climate Protection Plan*. In meeting those goals, EnviroCalc will enable each agency to track and report the greenhouse gas emission reductions associated with EPP purchases.

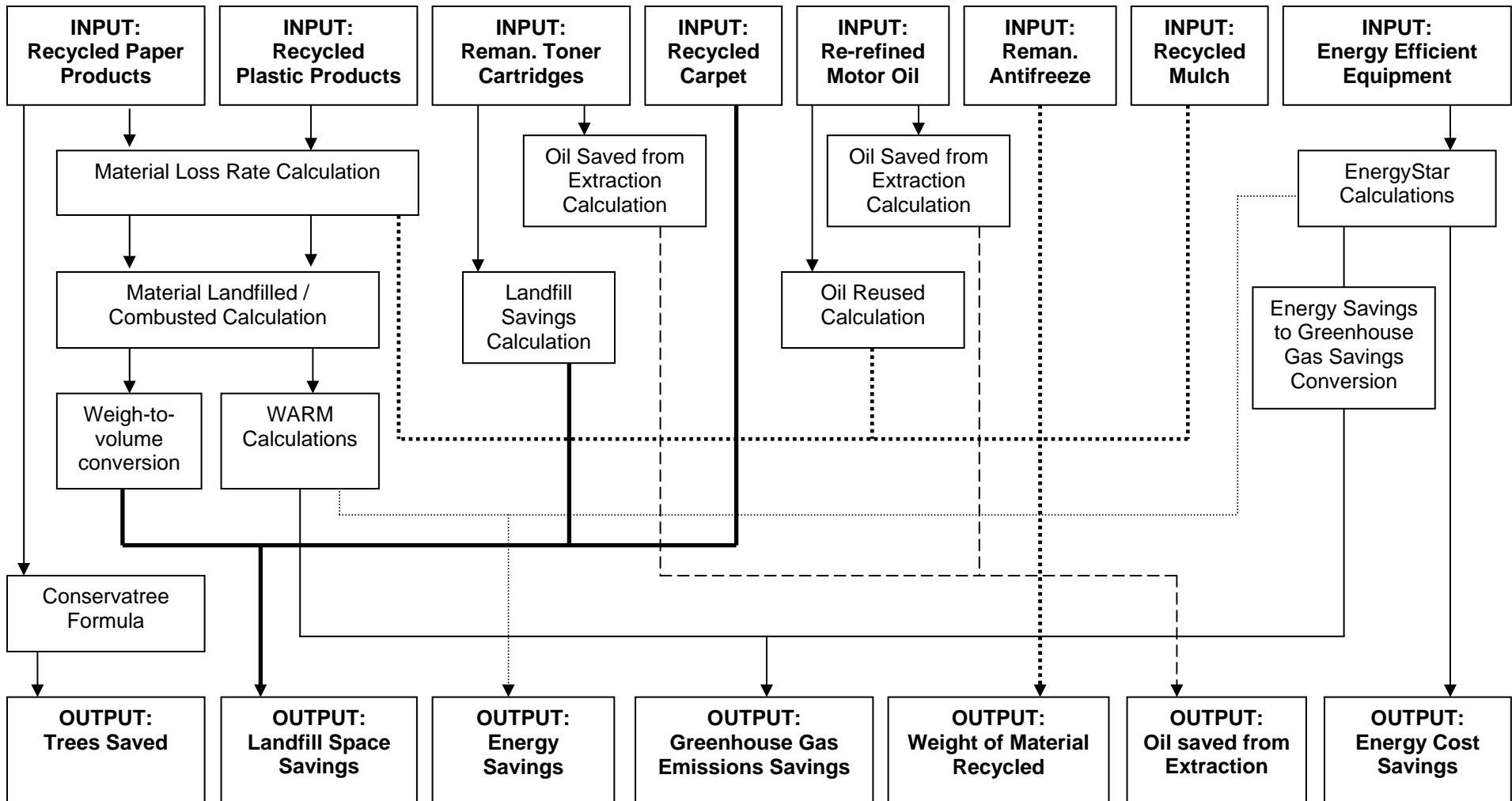
6. Describe any service improvements brought about by the initiative.

The use of EnviroCalc will result in a variety of service improvements for the Operational Services Division as well as any other organization using the tool:

- EnviroCalc will reduce the time and effort necessary to estimate the environmental benefits of last fiscal year's purchases for annual reporting. Thus OSD's environmental staff will be able to perform more specification development, technical assistance or customer service tasks.
- EnviroCalc will assist the Executive Office of Environmental Affairs in advancing towards the statewide greenhouse gas emission reduction goals established by Governor Romney in his *Massachusetts Climate Protection Plan*. Thus OSD will be able to provide beneficial information to a sister agency.
- EnviroCalc will help OSD and any other organization using it in easily quantifying and marketing their environmental initiatives to their customers.

Appendix 1. Original Methodology Used as a Basis for EnviroCalc

The flowchart below summarizes the variety of calculations performed to estimate the environmental benefits of purchasing recycled content and energy efficient products. The challenge of the process was not only in analyzing the supplier reports to obtain data that can be used in appropriate product-specific calculations and models, but also in combining the results produced by the models into a set of final estimates. EnviroCalc eliminates both challenges and is capable of accepting product quantity data as submitted by the supplier and instantaneously estimating the benefits of the purchases.



**Appendix 2.
Examples of Environmental Benefits Calculations Created with EnviroCalc**

Environmental benefit estimates and their “real life” equivalents presented in both “OUTPUT” tables were created using EnviroCalc based on the information provided by the Commonwealth’s suppliers.

INPUT: Summary of Commonwealth of Massachusetts FY2004 EPP Purchases		
• Recycled-Content Purchases		
○ Recycled content paper with (10-30% post-cons.)		22,990 tons
○ Recycled plastic with (8-55% post-cons.)		890 tons
○ Remanufactured toner cartridges (13,834 cartridges)		17 tons
○ Re-refined motor oil (72,000 gallons)		270 tons
○ Recycled antifreeze (1,000 gallons)		9 tons
○ Recycled furniture		62 tons
○ Recycled mulch		140,360 tons
• Energy Efficient Purchases		
○ Compact Fluorescent Light (CFL) Bulbs		45,300
○ Desktop Computers		25,852
○ Monitors		21,000



OUTPUT: Commonwealth of Massachusetts FY2004 Environmental Benefits

	Environmental benefit estimate	Equivalent to...
Energy savings	14,530,804 kWhrs	Annual energy needs of 476 households
Carbon dioxide emissions	58,520 tons	Annual tailpipe emissions of 11,491 cars
Landfill space savings	350,641 cubic yards	Annual solid waste generation of 59,602 households
Number of trees saved	80,288	803 acres of wood plantation
Avoided oil extraction	833,176 gallons	Heating oil to warm 1,271 houses during a New England winter



OUTPUT: Commonwealth of Massachusetts FY2004 Energy Cost Savings

	Environmental benefit estimate	Equivalent to...
Energy cost savings	\$1,453,080	13 MA EPP Program’s budgets