ENVIRONMENTAL BENEFITS OF 2010 EPEAT® PURCHASING

Fifth Year of Strong Growth and Significant Environmental Impact

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Executive Summary and Report documents are available at http://www.epeat.net/learn-more/environmental-benefits/

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EXECUTIVE SUMMARY

Over the past five years, the EPEAT green electronics rating system has transformed the marketplace for environmentally preferable electronic products. EPEAT's breadth, depth and geographic reach have quickly made it one of the most widely used and trusted systems worldwide for assessing product environmental performance in the IT sector. A burgeoning roster of private and public purchasers around the world is using EPEAT to green their IT purchases, increasing interest among consumers has motivated EPEAT's gradual entry into the consumer market, and international demand has expanded the system's geographic reach.

Beginning in July 2006, the EPEAT program has evolved from three participating manufacturers—known in EPEAT as "Subscribers"—to 54, and from 60 registered products sold in the US to over 3000 unique products registered and sold in 41 countries worldwide.

International usage has spread rapidly, with purchasers in Europe, Asia, and Latin America increasingly using EPEAT to identify and specify green IT products. In addition, the universe of EPEAT products will expand shortly, with IEEE work group processes to develop new 1680 standards for imaging devices (printers, faxes, copiers, etc.) and televisions in their final stages of completion.

This is the fifth annual report on the environmental benefits resulting from the purchase of electronic products registered and evaluated under the EPEAT program.

EPEAT Essentials

EPEAT is the definitive global rating system for greener electronics, covering the most products from the broadest range of manufacturers. Only EPEAT combines comprehensive criteria for design, production, energy use and recycling with ongoing independent verification of manufacturer claims.

EPEAT currently covers personal computer products—including desktops, laptops, integrated systems, displays, workstations, and thin client devices—offering purchasers a uniform measuring stick to assess products' lifecycle environmental impacts. Imaging Equipment and Television standards are currently in the final stages of development through the Institute of Electrical and Electronics Engineers (IEEE).

Products are rated in EPEAT according to the proportion of 28 optional criteria they meet on top of 23 required, baseline criteria. The EPEAT Gold designation is the hallmark of the highest environmental performance, meeting an extensive set of criteria. EPEAT Silver and Bronze products meet a broad set of criteria, making them an environmentally responsible purchasing option.

Products on the EPEAT registry are subject to unannounced audits at any time, and results are publicly reported—this ongoing verification system helps ensure environmental criteria are being met as declared.

Finally, by providing a central product registry, EPEAT enables purchasers to view and compare the specific environmental performance of registered products from all participating manufacturers—encouraging manufacturers to compete to meet higher numbers of criteria and qualify products at higher levels, which pushes innovation and environmental excellence forward.

Manufacturers of all sizes participate in EPEAT—from Fortune 50 global leaders, including all 10 top global producers, to small regional companies. The system provides manufacturers with guidance for developing environmentally preferable products that will meet market demand.

EPEAT's environmental performance criteria, registration and verification processes, are embodied in the Institute of Electrical and Electronic Engineers (IEEE) 1680 and 1680.1 standards, and were developed through an open, consensus-based, multi-stakeholder process supported by the U.S. Environmental Protection Agency (US EPA). That process included participants from the public and private purchasing sectors, manufacturers, environmental advocates, recyclers, technology researchers and other interested parties and lasted several years.

Bringing these varied constituencies' needs and perspectives to bear on standard development enabled the resulting system not only to address significant environmental issues, but also to fit within the existing structures and practices of the marketplace—making it easy to use and thus widely adopted.

As a result, EPEAT has revolutionized the environmental playing field for the electronic product sector, with very broad participation by manufacturers and purchasers of all sizes and an extensive registry of products that meet the system's demanding criteria.

2010 EPEAT Registry Growth

2010 witnessed significant growth in EPEAT product registrations, with particularly rapid growth in Gold level registrations.

There are two ways to assess the EPEAT registry's growth—by unique product count and by registrations.

Unique product count reveals the number of individual products registered in the system, and offers a rough indicator of the volume of products on the market today that are able to meet EPEAT's stringent environmental performance requirements.

Each unique product may be registered in as many as 41 different countries. The number of such country-specific registrations is the alternate way to assess EPEAT's scope, and is a useful indicator of the overall volume of EPEAT registered products available to purchasers in different markets around the world.

The number of unique products registered in EPEAT more than doubled in 2010. On December 31, 2009, 37 manufacturers had some 1,400 unique products registered in the US, and 277 registered across the other 39 covered countries. By June 2010, manufacturers were registering 2139 unique products across 41 countries and by the end of December 2010, 2830 unique products were registered in total.

Numbers of product registrations— i.e. each instance of a given product being registered in a specific country—also nearly doubled (see Appendix E). In late December 2009 there were just over 1400 product registrations for the US and 8300 outside the US - 9700 total.

By June 2010, there were 14,709 EPEAT product registrations in total, with 5,465 at the Gold level and 9,149 at the Silver level. By the end of December 2010, US product registrations stood at 2219 and there were just under 18,000 product registrations in total across the 41 covered countries, including 6,645 registrations at Gold and 11,350 at Silver.

In total, 54 manufacturers participated in EPEAT during 2010.

2010 EPEAT Registered Product Sales

EPEAT's manufacturer Subscribers reported worldwide sales of 93,363,415 EPEAT registered products in 2010.

The number of unique products registered in EPEAT **and** the number of country specific product registrations more than doubled in 2010.

Because EPEAT only covers 41 of the world's countries, we can only make a rough comparison between unit sales of EPEAT registered product purchases and total products that are sold worldwide. However the comparison gives a useful indication of the prevalence of EPEAT registered products in the global market. Reviewing the 2010 EPEAT registered product sales in comparison with previous years' data and with 2010 data on worldwide and regional unit sales[1] reveals that:

- **Sales of EPEAT registered products in the US increased 5% over 2009, with sales exceeding 51 million products.**
- **Canadian sales increased more than 33%, with more than 4.2 million EPEAT-registered units sold in 2010.**
- **Combined unit sales of EPEAT-registered notebooks and desktops constituted more than 22% of 2010 worldwide sales of notebooks and desktops, and 57% of US 2010 combined product sales.**
- **EPEAT rating continues to play a significant role in the notebook market, with EPEAT-registered products constituting 72% of notebooks sold in the US and over 30% of notebook sales worldwide in 2010.**

1 Thanks to Gartner for sharing their 2010 unit sales data for the purposes of this comparison.

2010 EPEAT Environmental Benefits

The lifecycle environmental benefits of the reported EPEAT registered product sales are calculated using the Electronics Environmental Benefits Calculator (EEBC) originally developed by the University of Tennessee Center for Clean Products under a grant from the US EPA. (See methodology section for more detail.) This calculation reveals remarkable lifecycle environmental benefits linked to 2010 EPEAT purchasing.

Combined 2010 purchases of EPEAT registered notebooks and desktops constituted close to 57% of total US sales and more than 22% of worldwide desktop and notebook unit sales.

Over their lifetime, compared to products that do not meet EPEAT criteria, EPEAT registered notebooks, desktops, and monitors purchased worldwide in 2010 will:

- **Reduce use of primary materials by 15.7 million metric tons, equivalent to the weight of 48 Empire State Buildings**
- **Reduce use of toxic materials, including mercury, by 1,156 metric tons, equivalent to the weight of 192 elephants.**
- **Eliminate use of enough mercury to fill 437,048 household mercury fever thermometers.**
- **Avoid the disposal of 59,525 metric tons of hazardous waste, equivalent to the weight of 4 Eiffel Towers.**
- **Eliminate the equivalent of more than 16,052 US households' annual solid waste—31,991 metric tons**

In addition, due to EPEAT's requirement that registered products meet the latest ENERGY STAR efficiency specifications, these products will consume less energy throughout their useful life, resulting in:

- **Savings of over 9 billion kWh of electricity—enough to power 757,416 US homes for a year.**
- **Avoidance of 36 million metric tons of air emissions (including greenhouse gas emissions) and over 77 thousand metric tons of water pollutant emissions.**
- **Reduction of over 1.6 million metric tons of greenhouse gas emissions—equivalent to taking nearly 1.1 million US passenger cars off the road for a year**

Conclusion

In its fifth year of operation the EPEAT system continued to serve a significant global role in motivating, communicating and measuring reduction of electronic products' environmental impact. That constructive role will continue and increase as EPEAT expands to additional geographies and product types in 2012 and beyond.

More broadly, EPEAT's novel approach to environmental assessment—rating based on public, stakeholder consensus-based standards, tiered rankings that encourage competition and continuous improvement, pre-market declaration followed by ongoing independent verification, and easy access to a single registry of qualified products to compare and select among them—continues to show its merit, by engaging dozens of manufacturers of all sizes and differing nationalities, and thousands of purchasers worldwide, in a complementary process of creating and rewarding more sustainable product design and delivery.

For more information, visit www.epeat.net.

INTRODUCTION

Five years ago, the EPEAT green electronics rating system—51 environmental performance criteria, a central registry where products meeting those criteria are listed, and a verification system for vetting product declarations—established a user-friendly scheme designed and guided by all stakeholders and accessible to purchasers and manufacturers of any size. Since then, EPEAT has revolutionized the environmental playing field for the electronic product sector, with very broad manufacturer and purchaser participation and an extensive registry of products that meet the system's demanding criteria.

EPEAT is now the definitive global rating system for greener electronics, covering the most products from the broadest range of manufacturers. Only EPEAT combines comprehensive criteria for design, production, energy use and recycling with ongoing independent verification of manufacturer claims.

EPEAT's environmental performance criteria, registration and verification processes, embodied in the Institute of Electrical and Electronics Engineers 1680 family of standards for the Environmental Assessment of Personal Computer Products ("IEEE 1680"), were developed through an open, consensus-based, stakeholder process that included participants from the public and private purchasing sectors, manufacturers, environmental advocates, recyclers, technology researchers and other interested parties. Bringing these varied constituencies' needs and perspectives to bear on standard development enabled the resulting system not only to address significant environmental issues, but also to fit within the existing structures and practices of the marketplace—making it easy to use and thus widely adopted.

The EPEAT system currently covers personal computer products, including desktops, laptops, integrated systems, displays, workstations, and thin client devices, offering purchasers a uniform measuring stick to assess products' lifecycle environmental impacts.

Products that meet EPEAT criteria reflect reduced environmental impact across the product life cycle— from fewer toxins in manufacturing to efficient operation and easier recycling. The EPEAT Gold designation is the hallmark of the highest environmental performance, designating products that meet an extensive set of criteria. EPEAT Silver and Bronze products meet a broad set of criteria, making them an environmentally responsible purchasing option. Products on the EPEAT registry are subject to unannounced audits at any time, and results are publicly reported—this ongoing verification system helps ensure environmental criteria are being met as declared.

TABLE 1: 2010 Epeat Covered Countries 2010

United States	Estonia	Lithuania	Singapore
Australia	France	Liechtenstein	Slovakia
Austria	Finland	Luxembourg	Slovenia
Belgium	Germany	Malta	Spain
Brazil	Greece	Mexico	Sweden
Bulgaria	Hungary	Netherlands	Switzerland
Canada	Iceland	New Zealand	Taiwan
China	Ireland	Norway	United Kingdom
Cypress	Italy	Poland	
Czech Republic	Japan	Portugal	
Denmark	Latvia	Romania	

All products on the EPEAT registry must meet the criteria of the IEEE 1680 standards, which remain the same globally, but manufacturers must support their product declarations locally to ensure conformity with the declared criteria. This country by country registration expansion was launched in 2009 with 40 covered countries—all EU and European Free Trade Area (EFTA) countries, China, Japan, Taiwan, Australia, New Zealand, Brazil and Mexico, in addition to the US and Canada. During 2010, Singapore joined, to bring the number of covered countries to 41.

EPEAT GROWTH

EPEAT provides manufacturers with guidance for development of environmentally preferable products that will meet market demand, while not restricting their strategic choices about how to design products to meet specific ratings . Manufacturers of all sizes participate in EPEAT—from Fortune 50 global leaders, including all 10 top global producers, to small regional companies.

EPEAT 's central product registry enables purchasers to view and compare the specific environmental performance of registered products from all participating manufacturers—encouraging manufacturers to compete to meet higher numbers of criteria and qualify products at higher levels, which pushes innovation and environmental excellence forward.

EPEAT's breadth, depth and geographic reach have quickly made it one of the most widely used and trusted systems worldwide for assessing product environmental performance in the IT sector, with a burgeoning roster of private and public purchasers around the world using the system to green their IT purchases. Increasing interest among consumers has also motivated EPEAT's gradual entry into the consumer market, as international demand has expanded the system's geographic reach.

FIGURE 1: 2010 EPEAT Registry Growth - Unique Products and Registrations

2010 Growth in EPEAT Registration and Participation

There are two ways to assess the EPEAT registry's growth—by unique product count and by registrations.

Unique Products Unique product count reveals the number of individual products registered in the system, and offers a rough indicator of the volume of products on the market today that are able to meet EPEAT's stringent environmental performance requirements.

The number of unique products registered in EPEAT more than doubled in 2010 (See Fig. 1). On December 31, 2009, 37 manufacturers had just over 1,400 unique products registered in the US, and 277 registered across the other 39 covered countries. By June 2010, manufacturers were registering 2139 unique products across 41 countries and by the end of December 2010, 2830 unique products were registered across the system's 41 covered countries. This growth continued and intensified EPEAT's rapid expansion since launch(illustrated by Table 3).

Product Registrations Each unique product may be registered in as many as 41 different countries. The number of such country-specific registrations is the alternate way to assess EPEAT's scope, and is a useful indicator of the overall volume of EPEAT registered products available to purchasers in different markets around the world.

2010 witnessed significant growth in EPEAT product registrations, with very rapid growth in registrations of PC products outside North America. (See Fig 1)

EPEAT's overall product registrations grew by more than 86% between January and December 2010, with the major increase occurring outside North America

In January 2010, the EPEAT registry contained 9,758 total product registrations from 44 manufacturers, with 3,422 Gold and 6,261 Silver registrations worldwide. By June 2010, there were a total 14,709 registered products, including 5,465 Gold rated and 9,149 Silver registrations.

At the end of December 2010, EPEAT's overall registrations had grown more than 86% since January, with total registrations surpassing 18,000 products. Gold level registrations increased 94%, totaling 6,645 registered products worldwide. Silver registrations increased 81% throughout the year, with 11,360 total Silver product registrations by December 2010.

Registration growth was most marked in the international (non-North American) markets—likely reflecting increasing use of EPEAT by national and state governments, and uptake by local municipal purchasers in countries like Australia, Brazil, China and France, and the resulting increase in awareness among the broader purchasing and supplier communities.

International registrations (outside North America) by both existing and new manufacturer Subscribers grew rapidly in 2010—by nearly 90%, from 8,352 registrations in January to 15,857 in December.

Growth Since Inception This one year growth in 2010 is consistent with the EPEAT registry's continual expansion since 2006—intensifying with the new country-specific registration requirements. This ongoing growth has persisted through updates of the Energy Star specifications in 2007 and 2009—each of which saw dozens of products removed from the registry because they did not meet the new ENERGY STAR specifications. Manufacturer growth slowed somewhat this year—but only because all major manufacturers in the PC/Display sector already participate. Smaller regional manufacturers continue to join EPEAT, as customers in different geographies require EPEAT registered products.

FIGURE 2: EPEAT Growth 2006-2010 – By Unique Products and Gold Products

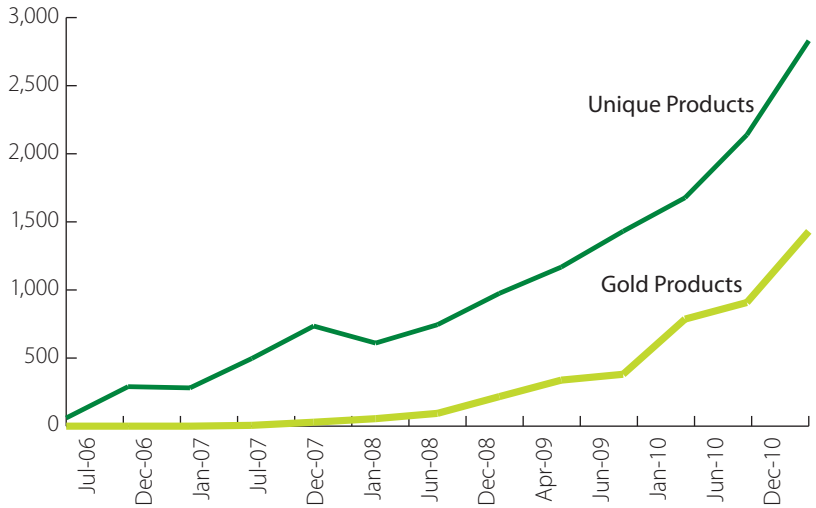
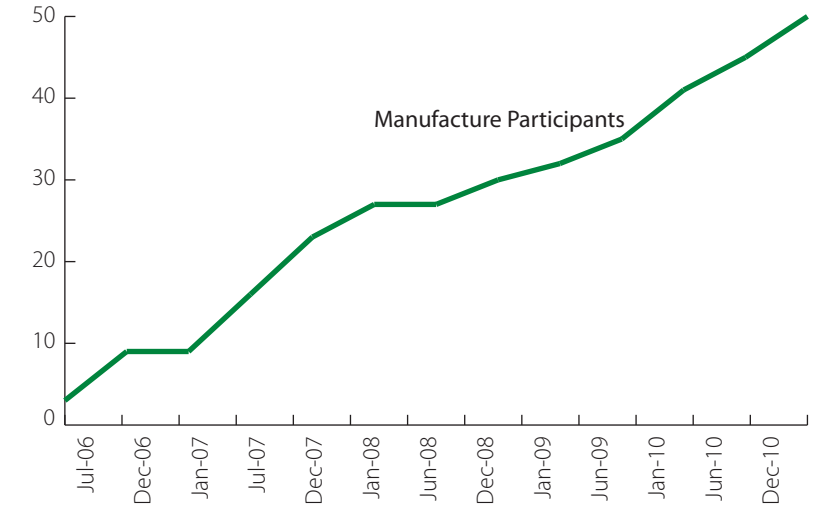


FIGURE 3: EPEAT Growth Since inception – Manufacturer Participation



See Appendices F through G for detailed information on 2010 product registrations and manufacturer participation by country.

2010 SALES OF EPEAT REGISTERED PRODUCTS

Unit sales of EPEAT registered products in 2010 were very strong—reaching a total of 93,363,415 products purchased. These figures come from EPEAT's manufacturer Subscribers, who must report annually on their sales of all EPEAT registered products sold in covered countries where they actively register products, by ratings tier (Bronze/Silver/Gold).

Table 3 below shows total unit sales worldwide for 2010. For the first time, we have broken out subcategories for Eastern and Western Europe from the previously aggregated "Rest of World" figures, to reveal the significant uptake of EPEAT registered products in the European market. Strongly growing sales in European countries accounted for 55% of total EPEAT sales outside the US and Canada in 2010.

TABLE 3: 2010 Worldwide Unit Sales of EPEAT Registered Products

Region	Desktops	Notebooks	Displays	Integrated Systems	Total
USA	3,340,172	32,628,963	12,474,055	2,612,388	51,055,577
Canada	253,628	2,556,857	1,097,152	304,475	4,212,112
ROW*	4,427,729	26,508,866	6,543,893	615,237	38,095,725
Eastern Europe	140,894	925,633	300,893	-	1,367,419
Western Europe	2,792,884	12,377,865	3,698,705	615,237	19,484,691
Total	**8,021,529**	**61,694,686**	**20,115,100**	**3,532,100**	**93,363,415**

To increase the specificity of sales reporting over previous years', we have broken out the sales figures for Europe, where the most significant growth in 2010 sales occurred. The ROW totals include the European sales numbers as well as sales numbers from the Asia/Pacific region and Latin America.

Prior to implementation of country-specific registration in 2009, Subscribers reported all their EPEAT registered product sales worldwide. Naturally, the number of reported sales dropped in 2009 due to the significant restriction of reporting territory, however in 2010 sales once again climbed—to surpass the totals reported in 2008 when reporting was not limited by geography or active registration status. (Appendix E contains specific 2010 purchase volumes for each product category by country.)

Key findings on 2010 EPEAT Unit Sales :

- EPEAT sales in the US grew by 5%, exceeding 51 million products. In Canada sales increased by more than 33%, to over 4.2 million EPEAT registered units.
- EPEAT continues to play a significant role in the notebook market, with EPEAT registered products constituting more than 72% of notebooks sold in the US and over 30% of notebook sales worldwide.[1]
- Combined 2010 purchases of EPEAT registered notebooks and desktops (including integrated systems) constituted close to 58% of total sales in the US (41,193,900 of 71,701,900) and approximately 22 percent).[1] of worldwide desktops and notebooks shipped in 2010 (76,780,400 of 295,350,896,900
- Growth of EPEAT registered product sales was rapid in the notebook segment — with a year over year increase from 2009 to 2010 of 39% for the US, and more than 57% in Canada. The Rest of World notebook sales grew by 74% with EPEAT notebooks sales in Western Europe accounting for 19% of all EPEAT notebook sales worldwide. Worldwide, sales of EPEAT registered notebooks increased by more than 53% overall.
- While sales of EPEAT registered desktops declined in the US and Canada, in keeping with generally declining desktop sales in those countries, the Rest of World countries saw a 60% increase in sales over 2009.

1 This percentage does not accurately reflect EPEAT's presence in the system's covered countries. Because EPEAT reporting excludes many countries where sales are reported by Gartner, the Gartner worldwide unit sales denominator is out of scale with EPEAT's 41-country reporting territory.

EPEAT 2010 ENVIRONMENTAL BENEFITS

Using the Electronics Environmental Benefits Calculator (EEBC), developed as a means to assess the benefits of purchasing EPEAT registered products, we can estimate the total reductions in environmental impact connected to the lifetime use of the EPEAT registered products purchased in the 41 countries covered by EPEAT in 2010, compared to products that do not meet the EPEAT criteria. Full methodology for both collection of sales data and clauclation of the benefits results is detailed in Appendix A.

The tables on the following pages illustrate the environmental benefits of EPEAT purchasing by geography. The results reported in Table 4: Estimated Environmental Benefits of 2010 Worldwide EPEAT Purchasing are based on evaluation of the environmental impacts resulting from total unit sales of more than 93 million EPEAT-registered products worldwide in 2010. (See Table 3 above for specific unit sales figures in each product category.)

Tables 5 and 6 show the benefits specific to the US and to the broad category "Rest of World"—which in EPEAT 2010 terms means Canada, all EU and EFTA countries, Japan, China, Singapore, Taiwan, Australia, New Zealand, Brazil and Mexico. Regional benefits calculations have been pulled out of the aggregated "Rest of World" to begin to better track benefits across regions with greater and lesser uptake of EPEAT purchasing.

It is important to note that the benefits enumerated in these tables accrue over the full product lifecycle. When purchasers specify and buy EPEAT registered notebooks, desktops, and monitors rather than "conventional products" that do not meet EPEAT criteria, environmental benefits are realized over the lifetime of those products and at a variety of endpoints.

For instance, when a purchaser selects a computer containing less toxic materials, fewer toxic substances extracted through mining are used, fewer will be used in manufacturing (where they could result in worker exposure to health hazards), and fewer will be released into the environment at the end of the product's life to impact wildlife or human health, or to pollute natural resources.

Similarly, when a consumer buys a computer that (like all EPEAT registered products) meets ENERGY STAR energy efficiency specifications, the user benefits from reduced power consumption and reduced energy costs over the life of the product, and that reduced energy consumption also contributes to lowering the upstream material inputs and the emissions associated with power generation.

Because EPEAT's underlying standard (IEEE 1680.1) was designed to reduce duplicative effort and streamline environmental reporting, a number of EPEAT's environmental criteria align with the requirements of other programs or regulatory schemes, such as ENERGY STAR® and the EU's WEEE regulations. Therefore not every change in product design and delivery that enables EPEAT registration results from EPEAT alone. However, every EPEAT registered product purchase results in environmental benefits specific to that purchase. This report measures those benefits.

ESTIMATED EPEAT ENVIRONMENTAL BENEFITS BY REGION, 2010

NOTE on benefits calculations adjustments for 2010: 1) To eliminate any double counting of benefit, we have removed all toxics and hazardous waste reduction benefits from European calculations because products sold in the EU must meet RoHS. 2) Because cost savings calculations in the current version of the EEBC are based on US factors, in the interest of accuracy we have only included cost benefits for the US sales. Similar cost benefits undoubtedly accrue to the rest of the countries covered by EPEAT, and we expect to regionalize the calculator to be able to better account for them by the 2011 reporting year.

TABLE 4: Estimated Environmental Benefits from 2010 Worldwide EPEAT Purchasing

Metric	Reductions	Equivalents
Electricity	9 million megawatt hours	The annual electricity consumption of 757,416 average US households
Primary Materials	16 million metric tons	The weight of 48 Empire State Buildings
Air Emissions (including greenhouse gases)	36 billion kg	36,263,127 Metric Tons
Greenhouse Gas Emissions	1.6 million MTCE*	Removing 1,127,114 average US passenger cars from the road for a year
Water Emissions	77 million kg	77,054 metric tons
Toxic Materials (incl Hg)	1,156 metric tons	The weight of 192 elephants, including enough mercury to fill 437,048 household mercury fever thermometers
Solid Waste	31,992 metric tons	Annual solid waste generation of 16,052 US households
Hazardous Waste	59,525 metric tons	The weight of 4 Eiffel Towers

*METRIC TONS CARBON EQUIVALENT

TABLE 5: Estimated Environmental Benefits from 2010 United States EPEAT Purchasing

Metric	Reductions	Equivalents
Electricity	4.7 million megawatt hours	The annual electricity consumption of 389,201 average US households
Primary Materials	8.1 million metric tons	The weight of 24 Empire State Buildings
Air Emissions (including greenhouse gases)	18.5 billion kg	18,571,226 metric tons
Greenhouse Gas Emissions	860 thousand MTCE	Removing 577,711 average US passenger cars from the road for a year
Water Emissions	40 million kg	40,000 metric tons
Toxic Materials (incl Hg)	791 metric tons	The weight of 137 elephants, including enough mercury to fill 251,917 household mercury fever thermometers
Solid Waste	17,571 metric tons	Annual solid waste generation of 8,816 US households
Hazardous Waste	42,001 metric tons	The weight of 2 Eiffel Towers
Lifecycle cost savings to Manufacturers and end users	**$440,533,109.74**	

TABLE 6: Estimated Environmental Benefits from 2010 Rest of World EPEAT Purchasing

Metric	Reductions	Equivalents		
Electricity	4.4 million megawatt hours	The annual electricity consumption of	368,215	average US households
Canada	385 thousand megawatt hours		32,169	
Europe	2.5 million megawatt hours		214,695	
Latin America	265 thousand megawatt hours		22,200	
Asia/PAC	1.2 million megawatt hours		99,127	
Primary Materials	7.7 million metric tons	The weight of	23	Empire State Buildings
Canada	666 thousand metric tons		2	
Europe	4.5 million metric tons		14	
Latin America	465 thousand metric tons		1	
Asia/PAC	2.1 million metric tons		6	
Air Emissions (including greenhouse gases)	17.7 billion kg		17,691,901	metric tons
Canada	1.5 billion kg		1,535,086	
Europe	10.3 billion kg		10,358,049	
Latin America	1.0 billion kg		1,071,628	
Asia/PAC	4.7 billion kg		4,725,968	

NOTE on EPEAT Regional Coverage:

Europe includes: All EU and EFTA Countries

Asia/PAC includes: China, Japan, Singapore, Taiwan, Australia, New Zealand

Latin America includes: Brazil, Mexico

Metric	Reductions	Equivalents					
Greenhouse Gas Emissions	818 thousand MTCE	Removing	549,403	average US passenger cars from the road for a year			
Canada	71 thousand MTCE		47,752				
Europe	478 thousand MTCE		321,397				
Latin America	49 thousand MTCE		33,252				
Asia/PAC	218 thousand MTCE		146,967				
Water Emissions	37.4 million kg		37,435	metric tons			
Canada	3.2 million kg		3,275				
Europe	21.2 million kg		21,872				
Latin America	2.2 million kg		2,268				
Asia/PAC	10 million kg		10,019				
Toxic Materials (incl Hg)	365 metric tons	The weight of	55	elephants	Including enough mercury to fill	163,678	household mercury fever thermometers
Canada	66 metric tons		11			21,453	
Europe			–			–	
Latin America	35.0 metric tons		6			6054	
Asia/PAC	218 metric tons		38			77,214	

NOTE on EPEAT Regional Coverage:

Europe includes: All EU and EFTA Countries

Asia/PAC includes: China, Japan, Singapore, Taiwan, Australia, New Zealand

Latin America includes: Brazil, Mexico

Metric	Reductions	Equivalents		
Solid Waste	14,420 metric tons	Annual solid waste generation of	7,236	US households
Canada	1,451.0 metric tons		728	
Europe	7,270.0 metric tons		3,649	
Latin America	714.0 metric tons		358	
Asia/PAC	4,983 metric tons		2,500	
Hazardous Waste	17,524 metric tons	The weight of	2	Eiffel Towers
Canada	3,463 metric tons		0	
Europe			–	
Latin America	1,734 metric tons		0	
Asia/PAC	12,325 thousand metric tons		1	

NOTE on EPEAT Regional Coverage:

Europe includes: All EU and EFTA Countries

Asia/PAC includes: China, Japan, Singapore, Taiwan, Australia, New Zealand

Latin America includes: Brazil, Mexico

ESTIMATED EPEAT ENVIRONMENTAL BENEFITS BY PRODUCT CATEGORY, 2010

EPEAT environmental benefits estimation in the EEBC is calculated by product type, based on the specific characteristics of desktops, notebooks and displays. The following tables illustrate the worldwide benefits for each product type sold in 2010, as another way of measuring EPEAT's positive environmental impact.

TABLE 7: Estimated Environmental Benefits from 2010 Worldwide EPEAT Desktop Purchasing

Metric	Reductions	Equivalents
Electricity	4.5 million megawatt hours	The annual electricity consumption of 382,691 average US households
Primary Materials	8.1 million metric tons	The weight of 25 Empire State Buildings
Air Emissions (including greenhouse gases)	18.7 billion kg	18.7 million metric tons
Greenhouse Gas Emissions	864,037 MTCE	Removing 580,245 million average US passenger cars from the road for a year
Water Emissions	39 million kg	39,272 metric tons
Toxic Materials (incl Hg)	390 metric tons	The weight of 43 elephants (No significant Hg contained in Desktops)
Solid Waste	5,041 metric tons	Annual solid waste generation of 2,530 US households
Hazardous Waste	13,123 metric tons	The weight of 1 Eiffel Tower

TABLE 8: Estimated Environmental Benefits from 2010 Worldwide EPEAT Notebook Purchasing

Metric	Reductions	Equivalents
Electricity	4.2 million megawatt hours	The annual electricity consumption of 35,133 average US households
Primary Materials	539,000 metric tons	The weight of 2 Empire State Buildings
Air Emissions (including greenhouse gases)	1.2 billion kg	1.2 million metric tons
Greenhouse Gas Emissions	59,133 MTCE	Removing 39,711 million average US passenger cars from the road for a year
Water Emissions	2.62 million kg	2,619 metric tons
Toxic Materials (incl Hg)	568 metric tons	The weight of 77 elephants, including enough mercury to fill 305,145 household mercury fever thermometers
Solid Waste	17,336 metric tons	Annual solid waste generation of 8,699 US households
Hazardous Waste	45,136 metric tons	The weight of 4 Eiffel Towers

TABLE 9: Estimated Environmental Benefits from 2010 Worldwide EPEAT Display Purchasing

Metric	Reductions	Equivalents
Electricity	4.1 million megawatt hours	The annual electricity consumption of 340,918 average US households
Primary Materials	7.1 million metric tons	The weight of 21 Empire State Buildings
Air Emissions (including greenhouse gases)	16.3 billion kg	16.3 million metric tons
Greenhouse Gas Emissions	758,189 MTCE	Removing 509,162 million average US passenger cars from the road for a year
Water Emissions	35 million kg	35,299 metric tons
Toxic Materials (incl Hg)	520 metric tons	The weight of 72 elephants, including enough mercury to fill 132,427 household mercury fever thermometers
Solid Waste	9,634 metric tons	Annual solid waste generation of 4,834 US households
Hazardous Waste	19,670 metric tons	The weight of 2 Eiffel Towers

EPEAT CUMULATIVE SALES AND BENEFITS – 2006-2010

Since July 2006, nearly 411 million EPEAT registered products have been sold worldwide. Table 10 below shows the year-to-year and cumulative total reported sales of EPEAT registered products since the system's inception.

The environmental benefits of EPEAT purchasing have also burgeoned over time—and will continue to be realized throughout the life of all products sold since 2006. Table 11 shows the cumulative benefits of all reported EPEAT sales.

TABLE 10: Year-to-Year and Cumulative EPEAT Unit Sales Worldwide 2006–2010

Year	Desktops	Notebooks	Displays	Integrated Systems	Total
2006	12,100,081	8,858,208	15,602,431	Recorded w/ Desktops	36,560,720
2007	35,865,425	24,156,128	48,709,354	1,196,680	109,927,587
2008	19,512,831	31,671,055	38,612,720	1,146,067	90,942,673
2009*	7,904,561	40,298,554	30,617,703	1,629,802	80,450,620
2010*	8,021,529	61,694,686	20,115,100	3,532,100	93,363,415
Cumulative Total	**83,404,427**	**166,678,631**	**153,657,308**	**7,504,649**	**411,245,015**

*Changes in reporting took place in 2009; sales reporting was restricted to only actively registered products sold in covered countries (from 200+ countries reporting prior to 2009 to 40 reporting in 2009 and 41 in 2010).

TABLE 11: Total Estimated Benefits from Reported EPEAT Purchases 2006–2010*

Metric	Reductions	Equivalents
Electricity	78.6 million megawatt hours	The annual electricity consumption of 6,570,250 average US households
Primary Materials	139.0 million metric tons	The weight of 421 Empire State Buildings
Air Emissions (including greenhouse gases)	320 million kg	320,966,305 million metric tons
Greenhouse Gas Emissions	14.8 million MTCE	Removing 9,934,527 million average US passenger cars from the road for a year
Water Emissions	673 million kg	673,143 metric tons
Toxic Materials (incl Hg)	8,357 metric tons	The weight of 1,438 elephants, including enough mercury to fill 1,331,120 household mercury fever thermometers
Solid Waste	116 thousand metric tons	Annual solid waste generation of 58,531 US households
Hazardous Waste	320 thousand metric tons	The weight of 36 Eiffel Towers

*2009 and 2010 benefits were calculated using ratings tier - improving accuracy of benefits estimates. The 2010 toxicity and hazardous waste calculations and benefits were adjusted to remove European toxicity benefits associated with RoHS.

NOTE ON EEBC BENEFITS ESTIMATES

The EEBC is an excellent tool and has been carefully reviewed by the US EPA and other independent scientists. However, like any lifecycle impact calculator, the EEBC tool employs methodological and data assumptions that are open to argument and improvement. In addition, data culled from the EEBC can be interpreted in a wide variety of ways. We encourage readers to carefully review the methodology described In Appendix A and in the EEBC itself in order to correctly interpret the results.

In addition, the EEBC only addresses a portion of the benefits that result from EPEAT purchasing. Some of the significant environmental benefits resulting from individual EPEAT criteria (such as ease of product disassembly, corporate performance requirements, or the required product takeback option) are not easily quantified and therefore are simply not addressed. Given these omissions, the real environmental benefits of the EPEAT system may actually be greater than those reflected in our calculations.

Finally, several points provide general context for the environmental benefits reported here:

1) As noted earlier, manufacturers report their total sales of EPEAT-registered products—not only the sales to purchasers that required EPEAT.
2) Because EPEAT's underlying standard was designed to reduce duplicative effort and streamline environmental reporting, certain of EPEAT's environmental criteria are also requirements of other programs or regulatory schemes, including ENERGY STAR and the EU's RoHS and WEEE regulations. Therefore not all the environmental benefits reported here can be characterized as resulting solely from EPEAT.
3) We continue to refine the precision of our calculations. With the adjustment this year of the environmental benefits attributed to products sold in Europe, we have increased the accuracy of the benefits estimate; in future years we expect to continue such refinement with increasingly precise attribution of benefit.
4) EPEAT's role is to serve as a channel to aggregate purchaser demand for environmentally preferable products, not as a creator of those products in itself. Credit for the development of products that meet EPEAT's environmental performance criteria lies with researchers who have developed enabling technologies, environmental advocates and purchasers who have demanded more environmentally responsible products, and manufacturers who have designed and manufactured greener products.
5) The environmental benefits reported here come from the purchase of EPEAT-registered products but accrue from all phases of the life of the products themselves. So, the reported benefits are the result of an informed purchase decision, yet may be realized over time and in multiple places. Many other benefits not assessed in this report may result when purchasers take advantage of management options such as power management software, virtualization, refurbishment and resale or donation programs, and responsible recycling.

EPEAT brings many strands of innovation and environmental improvement together into a single tool that is easily used and that clearly lays out an overall scheme for product and service design—that is the system's value in the marketplace and its role in motivating the environmental benefits enumerated in this report.

STRENGTHS OF THE EPEAT MODEL

Reviewing the speed and thoroughness with which EPEAT has become the most successful and fast-growing environmental purchasing tool for electronics raises the important question of why this scheme, among the many applied in this space, has outperformed the rest.

Judging by observation and purchaser and manufacturer feedback, this success and rapid worldwide uptake appear to arise from six fundamental attributes of the system:

Stakeholder Participation: The IEEE 1680 standards underlying EPEAT's ratings are developed via an ANSI accredited, open, consensus-based process with extensive participation from an increasingly global group of stakeholders based on wide-ranging stakeholder knowledge, consensus and global best practice, and subject to continual updates. Though such a process can be arduous, its outcome, when successful, is informed by multiple perspectives and embraced by many different interest groups.

Manufacturer Participation: 54 manufacturers of all sizes currently register products in EPEAT. The system's annual fee model (as opposed to per-product charges) encourages manufacturers to register multiple products in their line while the accessibility of the registration system and sliding scale fee assessment reduces barriers to participation. This ensures an adequate supply of registered products to meet end users' needs, and easy access through a central registry enables all interested parties in a purchasing transaction to vet the available options.

Geographic Scope: EPEAT's combination of geographic reach and country-specific declaration offers electronics purchasers the opportunity to use a single standard worldwide and the assurance that product claims will be verified locally. This makes it an ideal system for use by global enterprise.

Centralized Product Data: EPEAT's central registry, and the accessibility of registry data through detailed searches (on optional attributes met, countries and dates of registration, ratings tiers and more) offers purchasers the ability to find the products they need across companies and countries. It also enables manufacturers to compete head to head on environmental grounds with their peers.

Ongoing Verification: Continual policing of claims across the system and transparent public reporting of any failures to conform to the criteria claimed for a product enable purchasers to be confident about the accuracy of product declarations. (See Appendix A for a discussion of EPEAT's unique method of third party verification and its particular relevance to the electronics sector.)

Transparency: As noted above, the IEEE 1680 working group processes which develop the underlying standards for EPEAT product assessment are open to all interested parties(see above). But beyond that openness, EPEAT's operating procedures, verification processes, criteria and conformance requirements, stakeholder participation processes and Board of Advisors meetings and deliberations are all fully public and accessible. The organization's efforts are all intended to be open to comment, critique, and improvement by knowledgeable observers and participants in the electronics marketplace.

Because EPEAT was developed by and is managed in consultation with stakeholders, it simply works well for them. Purchasers find it a simple and accessible system that they can use to adjust existing contracts or develop new ones. Manufacturers are able to register conforming products with no delay in time to market, and to know that the system will provide access to significant sales opportunities to reward their environmental efforts. Resellers and retailers are able to access the product registry data to identify EPEAT registered products by tier on their web portals and other materials—making it easy for customers to access the information at point of purchase.

But more than any of these specific attributes, it increasingly appears that the transformational characteristic of EPEAT is that it is a web-based tool that offers open access to the information it contains by anyone anywhere for any purpose. Because of this web-based openness the EPEAT system provides more than a traditional eco-label's top down "seal of approval". In a sense EPEAT's key function has been to provide a direct interface between those seeking environmental benefit and those creating it. This direct access enables purchasers to easily find and use EPEAT, and to reward those products that meet their specific environmental priorities, be they toxics reduction or recycled content. It also has the potential to foster competition among manufacturers as they observe each other's success in meeting new criteria and know that customers are seeing it. And it has led to international growth with almost no marketing intervention by its very small supporting staff, particularly after the country-specific registrations offered purchasers clear access to products available locally. Five years into the system, the core strength that the central, web-based registry provides is more and more evident, and testifies to the genius of successful stakeholder consensus.

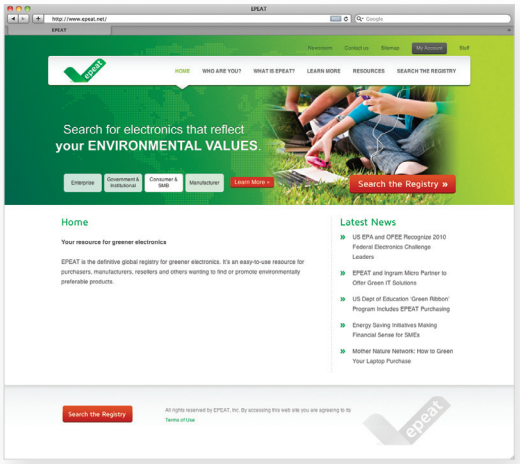
LOOKING FORWARD

New Graphic Identity

In 2011 EPEAT launched a new graphic identity and website to bring the program into a more consumer-friendly posture and enable Channel Partners to better communicate the value of EPEAT to their enterprise and SME customers. Over 2012 we will continue to upgrade the brand identity, and to deploy it in additional settings, with increasing focus on using EPEAT ratings to help consumers choose more environmentally responsible products.

Before

After



Update of 1680.1 Standard

Study group and work group processes will address update of the existing PC and Display standard in 2012. The new criteria developed in this process will raise the bar for EPEAT inclusion, and support leadership and accomplishment in environmental performance improvements.

Expansion of Product Coverage

In 2011, drafts of the Imaging Equipment (1680.2) and Television (1680.3) standards that will underlie EPEAT's next round of registry expansion moved out of the Working Group stage of their development and on to balloting by general IEEE Standards Association membership. Publication of one or both standards is now expected in early 2012.

More than 300 stakeholders from all interest groups participated in the Working Group processes- manufacturers, environmental NGOs, recyclers, private and public purchasers, researchers, government representatives, suppliers and others. Participation was international, with stakeholders from the UK, China, Taiwan, Canada and the United States involved.

Working group approval of the draft standards required a 75% favorable vote, not once but twice—first from subgroups tasked with developing sets of criteria and then, after lengthy discussion, revisions and negotiation, from the entire working group—to enable it to move forward to the "balloting" stage.

As soon as the standards are approved, EPEAT will move to register products in the two newly covered product categories.

Geographic Expansion

Demand for EPEAT registered products continues to grow around the globe—with contract specifications and requests for information regularly reaching EPEAT from all corners of the globe. In 2012, we intend to implement a streamlined country addition process to ensure that those purchasers who want to use EPEAT can do so within the established country-coverage framework. We anticipate this will create additional county coverage in 2012 to complement our increase in covered product categories.

CONCLUSION

In its five years of existence EPEAT has demonstrated the value of a convenient, credible, centralized tool for measuring products' environmental performance. A tool like EPEAT enables purchasers to confidently select products for superior environmental performance, without having to master all the complexities of the environmental impact of the electronics supply chain, or to simply take suppliers' word for their products' preferability. Every year since 2006 has seen EPEAT increasing market share of rated products purchased and increasing environmental benefit.

Because electronics are manufactured, used and disposed globally, purchasing choices have an enormous impact around the world. Choices made regarding product design and engineering impact the entire supply chain, including extraction, processing, and transportation of materials, components and finished products. In addition, design affects energy consumption during use, and the efficiency and efficacy of end-of-life recovery.

Manufacturers respond to purchaser demand. When purchasers use a centralized tool like EPEAT in lieu of individualized specifications, aggregated demand for a specific set of environmentally preferable attributes can set a clear direction and drive change more effectively. When that tool, like EPEAT, is available to purchasers across regions and market segments, but also grounded in local compliance and support, the impact is even stronger.

By confirming that purchasers (whether institutional buyers or individual consumers) care about electronic products' environmental attributes, use of EPEAT to select products supports manufacturers' commitment to and expansion of environmental design and innovation efforts. The level of purchasing power demonstrated by purchasers of EPEAT registered products in 2010 indicates a clear and continuing trend in favor of responsibly designed and managed electronics.

The EPEAT system encourages manufacturers to design their products to last longer, contain less hazardous material, to be more energy efficient, and easier to upgrade and recycle. In this, it resembles numerous other ecolabels that address electronic products. But EPEAT's unique characteristics—comprehensive criteria, international coverage, level of manufacturer participation, country-specific detail, breadth of participation and central web-based product registry—together with its ongoing and transparent policing of manufacturer declarations mean that using the EPEAT system drives those changes more effectively through a broader segment of the IT market than using any other system.

In its fifth year of operation the EPEAT system continued to serve a significant global role in motivating and measuring reduction of electronic products' environmental impact. That constructive role will continue and increase as EPEAT expands to additional geographies and product types in 2012 and beyond.

APPENDIX A: METHODOLOGY AND ASSUMPTIONS

How EPEAT Sales Data is Gathered and Reported

As part of their annual agreement with EPEAT, manufacturers who register products in the system—known as EPEAT Subscribers—are required to report unit sales of their EPEAT registered products (notebook computers, desktop computers, integrated desktop systems, and computer displays) to EPEAT. To preserve confidentiality around specific companies' sales and market share data, the Information Technology Industry Council (ITI), an industry trade association, acts as a data consolidator for this process. ITI preserves the confidentiality of each manufacturer's individual data, and forwards the aggregated sales data to the Green Electronics Council, which manages the EPEAT system.

Manufacturers report total sales of their EPEAT registered products—not only the sales to purchasers that required EPEAT, or the sales directly attributable to EPEAT. Though contract specifications and policies requiring EPEAT are now very widespread, and interested consumers have begun to use EPEAT registration as a criterion in their purchasing, many sales still occur without such intentional selection of EPEAT registered products. However the environmentally preferable design of EPEAT registered products and related services have environmental benefits, whether or not purchasers intentionally selected them.

The EPEAT sales data collected through manufacturer reporting is entered into the Electronics Environmental Benefits Calculator (EEBC – see more below)—a tool to assess the comparative environmental impact of products qualifying for EPEAT registration against products that do not meet the EPEAT criteria.

Recent Improvements

In 2009, significant changes to the data collection methodology were implemented that have improved the accuracy of both sales and benefits assessment. Beginning in 2009 and in subsequent reporting years, all Subscribers are required to report their worldwide sales of EPEAT registered products by country and tier for each country in which they have actively registered products (as opposed to reporting sales from the entire world, as was the practice prior to 2009).

This change significantly reduced the territory for which manufacturers report sales, making comparison of data prior pre- and post- 2009 challenging. However the current system will provide more accurate assessment of the real world impacts of EPEAT than in previous years, because reporting is only completed for those territories where Subscribers are actively registering and supporting products as EPEAT registered.

Since the EEBC calculations used to estimate the environmental impact of EPEAT sales are based on tier-specific attributes, the tier-specific reporting in effect since 2009 also increases the accuracy of benefits calculations. (Before 2009 sales reporting did not include tiers, so EPEAT environmental benefits were calculated based on an assumed Silver status for all products.)

Finally, reporting by country allows for adjustment of environmental benefits calculations to accommodate different conditions by geography. For example, as noted in the next section—we have subtracted all toxics reduction benefits related to the Regulation of Hazardous Substances (RoHS) Directive from the EU country benefits, since products sold in the EU would already have to meet this regulation. EEBC revisions planned for the future will enable benefits calculations based on geographically adjusted formulas ; in the meantime the new reporting data enables this sort of correction and increased accuracy.

Electronics Environmental Benefits Calculator

The Electronics Environmental Benefits Calculator (EEBC) is a tool developed to support and evaluate purchases of EPEAT and other environmentally preferable electronics, and to provide information on the benefits of different practices in the use and end-of-life phases of electronics products' lifecycle. The tool was originally developed by the University of Tennessee Center for Clean Products with funding from the US EPA, and was revised significantly in 2008-2009.[1] The EEBC measures quantifiable benefits (such as greenhouse gas reductions, waste avoided, pounds of mercury eliminated) of specific EPEAT (and other electronics) purchases over the purchase of comparable conventional products that do not meet EPEAT's criteria. The EEBC tool estimates environmental benefits for eight metrics:

- Energy savings
- Greenhouse gas reduction
- Solid waste reduction
- Primary material savings
- Hazardous waste reduction
- Toxic material reduction
- Air emissions
- Water emissions

The EEBC can be viewed and downloaded at http://isse. utk.edu/ccp/projects/benefitscalculator/elecbenecalc.html. The tool contains a detailed discussion of how each benefit type is calculated, the underlying assumptions for each product tier and for "conventional products" and much more.

The EEBC's primary data input is the number, type and tier of EPEAT registered products. The tool calculates the environmental benefits resulting from the purchase of a specific number of EPEAT registered products at a specific tier, based on a comparison of EPEAT product attributes, such as material composition and energy consumption, to the average attributes of a composite conventional product that does not meet EPEAT requirements.[2]

The calculations include impacts from raw material extraction and processing, product manufacture, and product use and disposition, depending on the specific metric involved.[3] Data for greenhouse gas reduction, primary material savings, and air and water emissions may be proportionally greater than other metrics because they include inputs and outputs from all phases of product life, including those from upstream processes.

The EEBC explicitly outlines all the assumptions for EPEAT and "conventional" products so that users can review all data inputs. (See the EEBC itself—Sheets 5b and 8 a-f—for a detailed explanation of the benefits calculations and their linkage to specific criteria.)

Assumptions and Procedures

The 2010 environmental benefits detailed in this report were obtained by entering the total number of EPEAT registered products sold in 41 covered countries, as reported by subscribing manufacturers, into the EEBC.

- Products were reported and entered by tier. (As noted above, this allows more precise calculation than the previous Silver assumption.)
- We used the generic assumptions for each EPEAT product tier,[4] because the breadth and variety of products reported prevents accurate apportionment of individual attributes.
- For the purposes of calculation, each Integrated System (e.g. a product where the CPU and monitor are part of a single unit) was counted as one notebook. (For the purposes of market share analysis they are counted as desktops.)
- To obtain overall benefits within countries, the benefits results from all product categories/tiers were summed at the country level.
- To obtain regional and global environmental benefits figures, the country benefits totals were summed across countries.
- We have subtracted from the EU country benefits all toxics reduction and hazardous waste benefits related to the Regulation of Hazardous Substances (RoHS) Directive (see Note below).
- Although EPEAT includes a mandatory requirement for manufacturers to provide end-of-life takeback and responsible recycling of all registered products, we do not have sufficiently specific data on end of life disposition of EPEAT registered products to assess recycling motivated by EPEAT. Therefore we do not calculate any environmental benefits related to end of life management—despite the likelihood that many EPEAT purchasers take advantage of the end of life services required by EPEAT.
- Because the cost savings benefits calculations are based on US cost factors, we have not reported them as part of the worldwide or non-US benefits estimates. No doubt there are cost savings at a similar scale, and as part of our efforts to continually improve reporting and analysis, we anticipate having regionalized cost calculations for the 2011 benefits report.

1 See EPEAT 2008 Environmental Benefits report for detail on the revisions and impact.

2 For an explanation of how the "conventional product" model was developed, see the Calculator itself at Sheet #8a Assumptions—Baseline.

3 The use of lifecycle data in benefits calculations varies depending on the metric and EPEAT criterion. For a complete summary of benefits calculations, see the EEBC tool itself at http://isse.utk.edu/ccp/projects/benefitscalculator/ elecbenecalc.html.

4 For the specific criteria assumptions for each EPEAT tier, see the EEBC tool itself at http://isse.utk.edu/ccp/projects/benefitscalculator/elecbenecalc.html.

Specific Calculations

- **Worldwide Benefits** were calculated by summing all countries' reported sales by product category and tier (e.g. Gold notebooks, Silver desktops), then entering those sums into the EEBC. Benefits results were calculated by product category, using specific tier information (e.g. All Gold notebooks, all Silver notebooks, all Bronze notebooks). Results of these product category calculations were then summed to obtain overall results.
- **US Benefits** were calculated by product category, using specific tier information (e.g. Gold notebooks, Silver notebooks, Bronze notebooks). Results of these product category calculations were then summed to obtain overall results.
- **Rest of World Benefits** were calculated by summing the 40 non-US countries' reported sales by product category and tier (e.g. Gold notebooks, Silver desktops), then entering those sums into the EEBC. Benefits results were calculated by product category, using specific tier information (e.g. all Gold notebooks, all Silver notebooks, all Bronze notebooks). Results of these product category calculations were then summed to obtain overall results.

RoHS Adjusment Note:

One of EPEAT's required criteria for all registered products is compliance with the final requirements of the EU's Reduction of Hazardous Substances (RoHS) Directive, which restricts the use of certain hazardous substances in electronic equipment including cadmium, mercury, lead, hexavalent chromium and certain brominated flame retardants.

Because computers and displays sold in Europe would already have to meet these criteria to be eligible for sale, we subtracted from our benefits totals all RoHS-related toxics reduction and hazardous waste benefits from the sale of computers and displays in Europe.

This more precise calculation is a refinement in the methodology that more accurately represents the environmental benefits that are directly attributable to EPEAT

ENERGY STAR Conformity and Calculation

The EEBC tool currently measures the benefits of the EPEAT ENERGY STAR requirement as a comparison between a product registered at the ENERGY STAR 4.0 specification for computers and the ENERGY STAR 4.1 specification for displays, and a "conventional product" registered at the previous applicable ENERGY STAR 3.0 standard.

All products registered in EPEAT at any time during 2009 were required to meet ENERGY STAR 5.0 specifications (The effective dates for these ENERGY STAR specifications were July 2009 for computers and October 31 for displays).[5] Using the 4.0 to 3.0 basis of comparison, as the EEBC does, may underestimate the benefits calculated. These underestimations may reduce the number of kilowatt hours saved, the air and water emissions reductions and the greenhouse gas reductions calculated, as well as cost savings figures. However the underestimation is likely offset by the portion of the non-EPEAT products on the market that may meet ENERGY STAR 4.0 or 4.1, performing more efficiently than the generic "conventional product" assumed by the EEBC.

5 Because the original IEEE 1680 standard allowed products to stay on the registry for a six month grace period following an ENERGY STAR update, a portion of EPEAT registered products remained registered at the previous ENERGY STAR specification level after the 2009 effective dates for new specifications. This grace period was eliminated in the revision of the IEEE 1680.1 standard adopted in December 2009, but products registered at 4.0 or 4.1 could remain on the registry in 2009 following the new ENERGY STAR effective date until that revision.

APPENDIX B: EPEAT SYSTEM DETAILS

EPEAT®, (the Electronic Product Environmental Assessment Tool) is a system for identifying environmentally preferable electronics.

Development

EPEAT was developed over three years by a large group of stakeholders including environmental advocacy organizations, institutional purchasers, electronics manufacturers, the US EPA and other government officials, electronics recyclers, researchers, and others, in a process facilitated by an independent nonprofit organization, the Zero Waste Alliance, under an EPA grant. The draft EPEAT criteria and system developed by this working group were balloted, revised and accepted by the Institute of Electrical and Electronic Engineers (IEEE) through an American National Standards Institute (ANSI) accredited process, becoming IEEE Standard 1680 for the Environmental Assessment of Personal Computer Products.

In 2009, that original standard was split into two parts—IEEE 1680, which governs the operation of the registry, declarations of conformance to the standard and product verification, and IEEE 1680.1, which contains the environmental performance criteria for computer products. Future standards, such as the IEEE 1680.2 Imaging Equipment standard and IEEE 1680.3 Televisions standard currently under development, will contain product-specific criteria, and will be numbered consecutively. Application of individual product standards is governed by the 1680 "umbrella" standard.

Registered Products

EPEAT registered products are high-performance business-class computers that cost no more on the whole than comparable products that do not meet EPEAT's criteria. Compared to traditional computer equipment, however, all EPEAT registered computers have reduced levels of cadmium, lead, mercury and problematic flame retardants, to better protect human health and the environment. They are more energy efficient (meeting ENERGY STAR specifications), which reduces power consumption and related emissions of greenhouse gases, and they are also easier to upgrade and recycle.

Environmental Criteria

The EPEAT program currently rates computer desktops, notebooks, and monitors based on their conformance with 51 environmental criteria across eight performance categories:

- Reduction/elimination of environmentally sensitive materials;
- Materials selection;
- Design for end of life;
- Product longevity/lifecycle extension;
- Energy conservation;
- End of life management;
- Corporate performance; and
- Packaging.

Based on the IEEE 1680.1 Standard, all EPEAT-registered products must meet a minimum of 23 environmental performance criteria, placing them at the "Bronze" level. Required criteria include compliance with the current applicable ENERGY STAR standard, compliance with the EU's RoHS Directive (which requires reduction or elimination of four toxic heavy metals and two classes of brominated flame retardants) and provision of a takeback and recycling program for the product by the manufacturer.

For a more detailed discussion of the IEEE 1680.1 criteria, see www.epeat.net/learn-more/criteria-discussion/

Ratings Tiers

An additional 28 optional criteria across the environmental performance categories are used to determine whether products earn higher level EPEAT Silver or Gold recognition. Manufacturers select among the optional criteria to achieve higher EPEAT ratings, as follows:

- **Bronze** – product meets all 23 required criteria.
- **Silver** – product meets all required criteria plus at least 50% of the optional criteria.
- **Gold** – product meets all required criteria plus at least 75% of the optional criteria.

Verification

EPEAT is based on self-declaration by manufacturers that their products meet the criteria of the IEEE 1680/1680.1 Standard, but this declaration is supplemented by rigorous, ongoing audits of the registry to assure the accuracy of declarations. The EPEAT approach requires active and tough auditing of the registered product set both on a random and on a "for cause" basis, with public disclosure of the verification results, to assure that the Registry is accurate.

Product declarations are not pre-certified; however manufacturers must be able upon request at any time following product registration to produce the required supporting evidence spelled out in the IEEE standard. In order to maintain the credibility of the system, EPEAT regularly selects a batch of products and criteria from the registry and verifies that they meet the criteria as declared. All criteria declared by all products on the registry are subject to verification at any time; specific products to be investigated are selected at random unless there is reason to believe a specific manufacturer is not in conformance.

EPEAT Verification is conducted by expert independent contractors and reviewed by a three member panel—the Product Verification Committee (PVC)—also composed of independent contractors, who are blind to the identity of the products and Subscribers involved. There is no advance warning of verification, since manufacturers must be able to provide verification information at any time upon request.

Criteria are selected for investigation by the PVC based on the expectation that a criterion may be challenging to meet or highly significant in terms of environmental impact. EPEAT's verification system is designed to include multiple levels of scrutiny of manufacturer declarations, including strategic investigation of especially difficult-to-meet criteria across the entire registered product set, individual verification of criteria declarations that appear questionable, and regular rounds of verification addressing selected subsets of the criteria.

There are two types of verification—those based on evidence provided by the manufacturer and/or their suppliers, and those based on examination of an independently purchased product, which may include detailed laboratory analysis or destructive disassembly. While EPEAT will work with manufacturers to correct or clarify a nonconforming declaration, if a manufacturer is found over time to be an untrustworthy user, they may be barred from using the EPEAT system.

Why Not Precertify?

EPEAT's unconventional approach—product declaration by the manufacturer, followed by registry surveillance and ongoing verification investigation—was decided upon by the stakeholders during development of the original IEEE 1680 standard.

The group very carefully considered the most effective way to maintain the credibility of the Registry based on the unique characteristics of these high-tech products:

- Very rapid technology development,
- Very short time to market,
- Very complex and continually morphing global supply chains, and
- Very high variability in the configurations of individual products (components from totally different suppliers in different locations, with different processes, may be found inside of the "same product" over time).

Electronic and computer products experience continual changes in sourcing of components and materials, suppliers, and other elements, from the original product launch through the commercial life of a given model. Given this rate of change, a precertification based on a one-time investigation before a product is on the market is fundamentally inadequate to assess IT equipment as it will be delivered to the purchaser. Stakeholders recognized that ongoing and randomly timed surveillance is the best way to identify potential problems.

Therefore, in accordance with to the IEEE 1680 standard, EPEAT has developed rigorous and transparent post-declaration verification procedures based on unannounced and very in-depth investigations, and on public exposure in case of non-conformances. The system is designed to make nonconformance publicly embarrassing, and to maintain the constant likelihood of investigation at any time.

To review all EPEAT Verification investigations, including the plans, findings and corrective actions, as well as the contractors who perform various investigative functions, visit www.epeat.net/learn-more/verification/.

International Application Details

Since inception, EPEAT has been used by purchasers worldwide who find its credibility, transparency and rigor, ease of use, central product registry, and ongoing verification optimal for their needs. However, a single global registry could not differentiate where products were available, or enable accurate verification of specific claims country by country. To achieve these goals and more, EPEAT's stakeholder Board of Advisors authorized the establishment of a country-specific international registry system in 2009.

The country-specific registry implemented in 2009:

- Avoids the assumption that a complex standard declaration will necessarily be met equally in all geographies, without ongoing surveillance of conformity in different geographies.
- Enables purchasers to compare and contrast products available in their country with registrations that accurately reflect country-specific names, configurations and environmental attributes.
- Allows manufacturers to accurately communicate, and gain recognition for, the environmental attributes of their products as they are implemented in recognized countries.
- Enables EPEAT to accurately target verification investigations to specific claims made in particular geographies.
- Allows the EPEAT registry to be an accurate and complete resource for stakeholders globally to research the status of manufacturers' environmental programs and product offerings in different countries.

The system requires conformity with the vast majority of criteria (more than 40) everywhere a registered product is sold (including outside EPEAT covered countries). It then allows a few criteria to be met flexibly in different geographies—for example a battery takeback program that is accomplished through retail drop-off in one geography may be provided by a mail-in service in another, and this difference noted in the registry.

Finally a very small number of optional criteria may be met in one geography before they are met in others—for example, a manufacturer might establish a packaging takeback and recycling program in one area that it is not prepared to roll out in every country until demand and capacity grow. (This variable declaration can also eliminate program duplication where it might be environmentally unsound—for example establishing packaging recycling where the material would have to be shipped to a remote location for processing—consuming energy and producing carbon emissions in the process.)

For a succinct overview of EPEAT's international application, see the short presentation available on http://www.epeat.net/learn-more/country-specific-registration/.

Financial Support

EPEAT management activities include maintenance of the website and registry, EPEAT promotion through direct assistance to purchasers, in person and media outreach, verification program management, support of EPEAT's Board of Advisors (a stakeholder group that guides the system's operations and development), and responding to all inquiries by purchasers, manufacturers, government agencies and other interested parties.

EPEAT received start-up funding from the US EPA to establish the systems and tools needed to begin to sign on OEM Subscribers, but since 2007 has been supported entirely by annual fees paid by participating manufacturers to register their qualified products in the EPEAT system, supplemented by a small amount of private foundation funding and membership fees from Channel Partners who use EPEAT to support their customers green IT initiatives.

EPEAT Subscriber fees are annual payments, rather than per-product registration fees. The Subscriber fee is independent of the number of products registered for two reasons: 1) to eliminate direct linkage between numbers of products registered and system income, avoiding the potential conflict of interest where program income depends on maintaining and increasing numbers of registered products; and 2) to promote the registration of as many conforming products as possible, since the direct cost per product to manufacturers is reduced with every additional registration.

Following implementation of the country-specific registry system, Subscriber fees were split into two geographic coverage areas: US-Canada and "Rest of World" covering the other registry countries. Subscribers may now pay for either or both of these territories annually. The current manufacturer fee schedule may be reviewed at www.epeat.net/documents/subscriber-resources/epeat-sub-fee-sched.11-0127.pdf.

EPEAT Boards

EPEAT is substantially guided by the EPEAT Board of Advisors, a volunteer advisory board whose membership is a balanced representation of the stakeholders who developed EPEAT: environmental advocates, institutional purchasers, manufacturers, government policy professionals, researchers and electronics recyclers. EPEAT staff manages day-to-day operations of the system but all significant decisions about system operation and expansion are taken in consultation with representatives of all affected constituencies.

The current members of the EPEAT Board of Advisors may be viewed at www.epeat.net/who-is-epeat/board-members/.

The EPEAT Board of Directors, an independent fiduciary board, represents the general public and ensures proper legal and financial management of EPEAT. Members may be viewed at http://www.epeat.net/epeat-board-of-directors/.

For much more detail on EPEAT including sample contract language, media coverage, manufacturer and purchaser lists, detailed criteria and more, visit **www.epeat.net**.

APPENDIX C: 2010 EPEAT SUBSCRIBERS

EPEAT Participating Manufacturers Worldwide – 2010

Ace Computers	GETAC	On Line Datensysteme Gmbh
Acer Inc.	Grace Global, Inc.	Oracle America Inc.
Action S.A.	Hewlett-Packard	Panasonic
Apple Inc.	Howard Technology Solutions, A Division of Howard	PC Factory S.A.
Arquimedes Automacao e Informatica Ltda	Hyundai IT America Corp.	PDS
ASUSTeK Computer Inc.	Ilhaservice Servicos de Informatica Ltda.	Positivo Informática S.A.
BenQ	Incom S.A.	Procomp
CIARA-TECH	Itautec S.A. - Grupo Itautec	Samsung Electronics America
Corporativo Lanix, S.A. de C.V	Lenovo	SIA Sonex Technologies Latvia
CTL Corporation	LG Electronics USA, Inc.	Sony Electronics Inc.
Cybernet Manufacturing, Inc.	Login Informatica	Tangent, Inc.
Daten Tecnologia Ltda	M&A Technology, Inc.	TH ALPLAST
Dell, Inc.	MDG Computers Canada Inc.	THEIS-Computer GmbH
Ecomnets, Inc.	MMD Taiwan Ltd.	Toshiba
EIZO NANAO Corporation	NCS Technologies, Inc.	TPV Technology Limited
Fujitsu Limited	NEC Display Solutions, Inc.	Transource
Gammatech Computer Corporation	Northern Micro Inc.	ViewSonic Corporation
General Dynamics Itronix	NTT System S.A.	Wyse Technology, Inc.

APPENDIX D: EPEAT PRODUCT REGISTRATIONS BY PRODUCT TYPE AND TIER - 2010

EPEAT Total Registrations by Tier as of January 1, 2010 – Worldwide

Product Type	Bronze	Silver	Gold	Totals
Desktops	14	390	868	**1,272**
Displays	1	1,721	776	**2,498**
Notebooks	59	3,467	1,519	**5,045**
Integrated Desktop Computers	-	203	46	**249**
Workstation Desktops	1	78	211	**290**
Thin Clients	-	375	-	**375**
Workstation Notebooks	-	27	2	**29**
Totals	**75**	**6,261**	**3,422**	**9,758**

EPEAT Total Registrations by Tier as of June 1, 2010 – Worldwide

Product Type	Bronze	Silver	Gold	Totals
Desktops	12	897	1,212	2,121
Displays	-	1,741	912	2,653
Notebooks	80	5,463	2,934	8,477
Integrated Desktop Computers	2	344	84	430
Workstation Desktops	1	234	301	536
Thin Clients	-	427	-	427
Workstation Notebooks	-	43	22	65
Totals	**95**	**9,149**	**5,465**	**14,709**

EPEAT Total Registrations by Tier as of December 1, 2010 – Worldwide

Product Type	Bronze	Silver	Gold	Totals
Desktops	12	1,036	1,501	2,549
Displays	-	2,464	1,330	3,794
Notebooks	87	6,440	3,235	9,762
Integrated Desktop Computers	1	539	112	652
Workstation Desktops	-	288	331	619
Thin Clients	-	548	114	662
Workstation Notebooks	-	45	22	67
Totals	**100**	**11,360**	**6,645**	**18,105**

APPENDIX E: 2010 EPEAT REGISTERED PRODUCT SALES BY COUNTRY AND PRODUCT TYPE

Country	Notebooks	Desktops	Displays	Integrated Systems	Totals
US	32,628,963	3,340,172	12,474,055	2,612,388	51,055,577
Canada	2,556,857	253,628	1,097,152	304,475	4,212,112
Mexico	87,525	53,259	63,636	-	204,420
Brazil	1,188,329	294,770	226,749	-	1,709,848
Austria	229,802	64,423	89,668	-	383,893
Belgium	281,450	64,626	82,816	-	428,892
Denmark	342,773	63,376	71,239	-	477,388
Finland	273,274	68,771	72,362	-	414,407
France	2,181,876	517,874	669,686	198,282	3,567,717
Germany	1,936,254	711,058	935,514	186,381	3,769,207
Greece	24,487	12,769	34,919	-	72,175
Iceland	-	-	-	-	-
Ireland	89,423	23,450	29,973	-	142,846
Italy	1,185,313	245,359	328,871	-	1,759,543
Liechtenstein	-	-	-	-	-
Luxembourg	335,188	33,843	46,844	-	415,875
Malta	70,870	5,408	7,409	-	83,688
Netherlands	548,784	124,414	206,017	-	879,214
Norway	39,332	35,756	43,052	-	118,140
Portugal	148,076	19,171	29,758	-	197,005
Spain	1,109,696	128,557	209,179	-	1,447,432

Country	Notebooks	Desktops	Displays	Integrated Systems	Totals
Sweden	659,741	138,894	200,864	-	999,498
Switzerland	416,341	87,215	145,111	-	648,667
United Kingdom	2,505,185	447,921	495,422	230,574	3,679,102
Bulgaria	51,060	3,522	16,296	-	70,878
Cypress	24,922	7,627	12,002	-	44,551
Czech Republic	206,018	44,471	91,491	-	341,980
Estonia	12,119	1,855	1,822	-	15,795
Hungary	90,143	14,598	37,437	-	142,179
Latvia	11,056	914	1,271	-	13,240
Lithuania	6,686	2,844	15,718	-	25,248
Poland	363,690	44,569	74,524	-	482,783
Romania	64,592	6,592	23,343	-	94,527
Slovakia	57,896	7,020	12,109	-	77,026
Slovenia	37,451	6,881	14,880	-	59,213
China	9,534,050	629,923	1,432,487	-	11,596,460
Japan	1,178,530	291,623	304,757	-	1,774,909
Singapore	22,021	-	15,873	-	37,894
Taiwan	170,321	42,199	64,653	-	277,173
Australia	872,705	155,692	359,393	-	1,387,790
New Zealand	151,887	26,486	76,748	-	255,121
Total	**61,694,686**	**8,021,529**	**20,115,100**	**3,532,100**	**93,363,415**

APPENDIX F: 2009-2010 GROWTH IN REGISTRATIONS BY COUNTRY

EPEAT Product Registrations

Country	As of January 1, 2010	As of July 1, 2010	As of December 1, 2010
Australia	233	330	362
Austria	250	413	465
Belgium	256	419	471
Brazil	281	391	428
Bulgaria	154	248	277
Canada	472	852	1110
China	246	385	431
Cypress	204	333	369
Czech Republic	159	419	471
Denmark	159	413	465
Estonia	197	320	360
Finland	256	419	471
France	324	512	595
Germany	312	523	591
Greece	159	258	301
Hungary	256	419	471
Iceland	10	14	21
Ireland	256	419	471
Italy	295	484	532
Japan	207	343	373
Latvia	206	328	360
Liechtenstein	10	14	21
Lithuania	133	206	241
Luxembourg	199	321	360
Malta	81	121	138
Mexico	53	60	90
Netherlands	295	458	510
New Zealand	211	316	355
Norway	159	258	301
Poland	249	379	424
Portugal	256	419	471
Romania	204	333	374
Singapore	0	60	75
Slovakia	204	333	373
Slovenia	197	320	360
Spain	295	466	526
Sweden	256	419	471
Switzerland	256	419	471
Taiwan Region of PRC	214	361	399
United Kingdom	188	447	502
United States	1406	1784	2219
Total	**9758**	**15736**	**18076**

APPENDIX G: 2010 MANUFACTURER PARTICIPATION BY COUNTRY

EPEAT Product Registrations

Country	January 2010	July 2010	December 2010
Australia	5	6	6
Austria	4	5	6
Belgium	4	5	6
Brazil	8	13	10
Bulgaria	2	3	4
Canada	15	19	19
China	3	5	6
Cypress	3	4	5
Czech Republic	4	5	6
Denmark	4	5	6
Estonia	3	4	5
Finland	4	5	6
France	6	7	9
Germany	7	10	11
Greece	4	5	6
Hungary	4	5	6
Iceland	1	2	3
Ireland	4	5	6
Italy	5	6	6
Japan	3	3	4
Latvia	5	6	5

Country	January 2010	July 2010	December 2010
Liechtenstein	1	2	3
Lithuania	4	4	5
Luxembourg	3	4	5
Malta	2	3	4
Mexico	2	3	4
Netherlands	5	6	7
New Zealand	3	4	5
Norway	4	5	6
Poland	10	9	9
Portugal	4	5	6
Romania	3	4	5
Singapore	0	2	3
Slovakia	3	4	5
Slovenia	3	4	5
Spain	5	6	7
Sweden	4	5	6
Switzerland	4	5	6
Taiwan Region of PRC	2	4	6
United Kingdom	5	6	7
United States	33	34	33
Total