Environmental Benefits of 2009 EPEAT® Purchasing

Green IT Rating System's Influence, Impact Continue to Grow

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EXECUTIVE SUMMARY

Information technology has enabled significant improvements in the standard of living of much of the world, and through its contributions to greater transport efficiency, improved design, reduced materials consumption and other shifts in current practices, may offer a key to long term sustainability. However, the production, purchase, use and disposal of electronic products such as personal computers and monitors also can have significant negative environmental impacts.

The EPEAT® (Electronic Product Environmental Assessment Tool) system for greener electronics purchasing addresses many of these issues, with a lifecycle environmental standard that spurs improvements in product design and enables purchasers to reduce the lifecycle impacts of their product choices. This is the fourth annual report on the environmental benefits resulting from the purchase of electronic products registered and evaluated under the EPEAT program.

The EPEAT® System

EPEAT's environmental performance criteria, registration and verification processes, embodied in the International Electrical and Electronic Engineers (IEEE) 1680 and 1680.1 standards, were developed through an open, consensus-based, multi-stakeholder process supported by U.S. Environmental Protection Agency (US EPA) that 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.

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. The system also provides manufacturers with guidance for development of environmentally preferable products that will meet market demand. And 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.

Growth of the EPEAT program

In the short time since its inception, EPEAT is transforming the marketplace for greener 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 also motivated EPEAT's gradual entry into the consumer market, and international demand has expanded the system's geographic reach.

In its first four years, the EPEAT program has evolved from three participating manufacturers — known as EPEAT Subscribers — to nearly 50 Subscribers and from 60 registered products to more than 2,000 unique products registered and sold worldwide.

International usage has spread rapidly, with purchasers in Asia, Latin America and European markets increasingly using EPEAT to identify and specify green IT products. In addition, IEEE work group processes are underway to expand the universe of EPEAT products with new 1680 standards for imaging devices (printers, faxes, copiers, etc.) and televisions.

EPEAT Internationalization

EPEAT has been used by hundreds of IT purchasers around the world since the system's debut. However, for the first few years of system operation it was challenging to match individual registered products to the geographies where they were available for purchase, or to verify claims in specific geographies, because no sales territory was identified in the registry.

To remedy this situation, EPEAT instituted a country-specific registry enhancement in August 2009. The new registry system enables manufacturer Subscribers to clearly communicate, and IT purchasers to easily evaluate, products' specific environmental performance and service offerings in the individual countries where they are sold, under locally recognized names.

The international registry launched in August 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. By December 2009 there were nearly ten thousand individual product registrations, including more than 3,700 individual Gold registrations, outside the US. (Since registrations are by country, these figures include multiple registrations of the same products worldwide, but are a useful indicator of the overall numbers, and proportion of Gold products, available outside North America.)

A Country Addition process is open to all countries where manufacturers, purchasers or governments wish to use the system.

The international registry launched in August 2009 with 40 covered countries. By December 2009 there were nearly ten thousand individual product registrations, outside the U.S.

2009 EPEAT Registry Growth

2009 witnessed significant growth in manufacturer participation and EPEAT product registrations, with very rapid growth in Gold product registrations.

In November 2008 the EPEAT registry contained 975 total product registrations from 30 manufacturers, with 217 Gold rated products.

By July 2009, there were 1,278 registered products in total, with 33 manufacturers participating, and 412 products registered at the Gold level.

By the end of December 2009, 37 manufacturers had registered some 1,400 products in the US, including 483 Gold products, and there were over 8300 product registrations outside the US.

2009 Sales Reporting Changes

EPEAT's manufacturer Subscribers must annually report on their sales of all EPEAT qualified products. The lifecycle environmental benefits of those 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 US EPA. (See Methodology section for more detail.)

Several significant changes were made to the reporting system in 2009 that impact this year's reporting results:

- Sales are now only reported for the countries currently covered by the EPEAT system — reducing the number of countries reported on from more than 200 to 40 in 2009
- Subscribers must report sales by country, for all countries where they have registered products. (To ensure consistency in 2009, Subscribers only reported sales for those countries where they were actively registering products as of December 31, 2009)
- Subscribers are now required to report sales figures by EPEAT Tier — Bronze, Silver or Gold — to enable more precise evaluation of environmental benefits
- Subscribers are now required to report all sales to the US Federal Government, by tier

NOTE: The significant reduction in geographies reported on, as well as the restriction to countries where a given Subscriber is actively registering, means that reported sales for territories outside North America ("Rest of World") show a reduction in 2009 in comparison with previous EPEAT Environmental Benefits reports. However this reduction is largely a reporting artifact due to the increased specificity of reporting and reduction in covered territories.

2009 EPEAT Purchasing Volume and Benefits

Reported unit sales of EPEAT registered products in 2009 were very strong, despite the fact that 2009 reporting covered only 40 countries:

- Unit sales of EPEAT registered products in the US grew by 10%, to a total of 48.5 million products. In Canada, sales increased by more than 25% to over 3 million EPEAT registered units.
- Combined unit sales of EPEAT registered notebooks and desktops (including integrated systems) constituted close to 17% of sales of notebooks and desktops worldwide, and 42% of combined product sales in the US.
- EPEAT rating continues to play a significant role in the notebook space, with EPEAT registered products constituting more than 50% of notebooks sold in the US and nearly a quarter (23.46%) of notebook sales worldwide

Combined 2009 purchases of EPEAT registered notebooks and desktops constituted close to 42% of total US sales and approximately 17 percent of worldwide desktops and notebooks unit sales.

The lifecycle environmental benefits linked to EPEAT purchasing reached remarkable levels in 2009. Over their lifetime, compared to products that do not meet EPEAT criteria, EPEAT registered notebooks, desktops, and monitors purchased worldwide in 2009 will:

- **Reduce use of primary materials by 19 million metric tons, equivalent to the weight of more than 148 million refrigerators**
- **Reduce use of toxic materials, including mercury, by 1537 metric tons, equivalent to the weight of 768,000 bricks**
- **Eliminate use of enough mercury to fill 372,000 household fever thermometers**
- **Avoid the disposal of 72,000 metric tons of hazardous waste, equivalent to the weight of 35 million bricks.**
- **Eliminate the equivalent of more than 14,500 US households' annual solid waste — over 29,000 metric tons of waste**

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 10 billion kWh of electricity — enough to power 900,000 US homes for a year**
- **Avoidance of 44 million metric tons of air emissions (including greenhouse gas emissions) and over 93,000 metric tons of water pollutant emissions**
- **Reduction of over 2 million metric tons of greenhouse gas emissions — equivalent to taking nearly 1.4 million US passenger cars off the road for a year**

Because EPEAT's underlying standard (IEEE 1680.1) was designed to reduce duplicative effort and streamline environmental reporting, many of EPEAT's environmental criteria align with the requirements of other programs or regulatory schemes, such as ENERGY STAR® and the EU's RoHS regulations. While some of the changes in product design and delivery that enable EPEAT registration may thus not result from EPEAT alone, each EPEAT registered product purchase results in environmental benefits specific to that purchase. This report measures those benefits.

Conclusion

In 2009 the EPEAT system, newly enhanced with country specific registration, 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 2010 and 2011.

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.

Information technology has enabled significant improvements in the standard of living of much of the world, and through its contributions to greater transport efficiency, improved design, reduced materials consumption and other shifts in current practices, may offer a key to long term sustainability. However, the production, purchase, use and disposal of electronic products such as personal computers and monitors also can have significant negative environmental impacts.

The EPEAT (Electronic Product Environmental Assessment Tool) system for greener electronics purchasing addresses many of these issues, with a lifecycle environmental standard that spurs improvements in product design and enables purchasers to reduce the lifecycle impacts of their product choices. This is the fourth annual report on the environmental benefits resulting from the purchase of electronic products registered and evaluated under the EPEAT program

Background

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. As a result, 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's environmental performance criteria, registration and verification processes, embodied in the International Electrical and Electronic Engineers (IEEE) 1680 and 1680.1 standards, were developed through an open, consensus-based, multi-stakeholder process supported by U.S. Environmental Protection Agency (US EPA) that 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.

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. The system also provides manufacturers with guidance for development of environmentally preferable products that will meet market demand. And 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. (See Appendix A for more details on EPEAT.)

Growth of the EPEAT program

In the short time since its inception, EPEAT is transforming the marketplace for greener 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, 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.

In its first four years, the EPEAT program has evolved from three participating manufacturers — known as EPEAT Subscribers — to nearly 50 Subscribers, and from 60 registered products to more than 2,000 registered products sold worldwide, with more than 14,000 individual, country-specific registrations as of June 2010.

TABLE 1: Epeat Participating Manufacturers – December 31, 2009

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

Demand from international users for an EPEAT registry that reflected product status outside the North American market resulted in launch of a country-specific international registry. (See below.)

Additional standards — for Imaging Devices (printers, fax machines, copiers) and Televisions — are in development through the Institute of Electrical and Electronic Engineers (IEEE) stakeholder Standards Development Working Group process, and will come on line in 2011 — further expanding EPEAT's impact. (For information on the standards workgroups, including how to participate, see www.epeat.net/StandardsDevelopment.aspx)

Internationalization of EPEAT

The EPEAT system's user friendly design, which offers purchasers the capacity to compare products and supplier performance head to head, has made it the tool of choice for hundreds of IT purchasers around the world since the system's debut. However, for the first few years of system operation it was challenging to match individual registered products to the geographies where they were available for purchase, because no sales territory was identified in the registry.

To remedy this situation, and to ensure that EPEAT's ongoing verification processes could adequately police claims made for products in different countries, EPEAT instituted a country-specific registry enhancement in August 2009. The new registry system enables manufacturer Subscribers to clearly communicate, and IT purchasers to easily evaluate, products' specific environmental performance and service offerings in the individual countries where they are sold.

The international registry launched 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. (In February 2010 Singapore joined the system as the 41st covered country, through the Country Addition process open to all potential users.)

The establishment of country-specific registries has supported increased manufacturer participation in EPEAT — with more than a dozen regional manufacturers — in Brazil, Lithuania, Mexico and Poland — joining the system to register products in their sales territories. This growth in mid-sized to small regional participants is consistent with EPEAT's original development stakeholders' intent to encourage participation, and related environmental performance improvement, by companies of all sizes.

TABLE 2: EPEAT Covered Countries – 2009

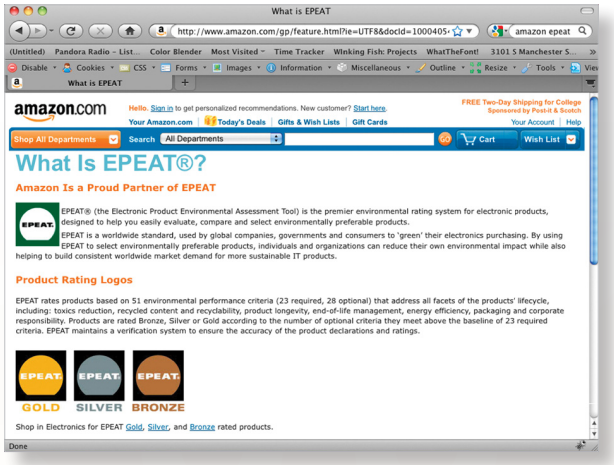
United States	Denmark	Japan	Poland
Australia	Estonia	Latvia	Portugal
Austria	France	Lithuania	Romania
Belgium	Finland	Liechtenstein	Slovakia
Brazil	Germany	Luxembourg	Slovenia
Bulgaria	Greece	Malta	Spain
Canada	Hungary	Mexico	Sweden
China	Iceland	Netherlands	Switzerland
Cypress	Ireland	New Zealand	Taiwan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

The new system impacts unit sales reporting this year — as the system now restricts such reporting to only the 40 countries covered in 2009 and limits each Subscriber to reporting sales only in those countries where they actively register products. (See below for more detail on reporting changes.)

EPEAT Use

In addition to standards and country expansion processes, EPEAT's user base expands continuously as large numbers of public and private purchasers, and individual consumers, turn to EPEAT to help meet their environmental goals:

- **US Federal government:** EPEAT is a required US federal government purchasing criterion embedded in Section 23.705 of the Federal Acquisition Regulations (FAR), which requires all agencies to purchase 95% or higher EPEAT registered products.
- **Other National Governments**[i]: Australia, Canada, France, New Zealand, Poland, and Singapore
- **States and Provinces**: including California, Maine, Massachusetts, Minas Gerais (Brazil), Minnesota, New York, Nova Scotia, Ontario, Oregon, Pennsylvania, Quebec and Wisconsin, as well as the Western States Contracting Association (WSCA — with 38 states participating in a contract requiring EPEAT)
- **Cities** such as Culver City, CA Los Angeles County, Keene, NH, Portland, OR, Phoenix, San Francisco, San Jose, Seattle, Vancouver BC as well as Leeds and Warwickshire County, UK
- **Enterprise Purchasers** such as the HDR architecture firm, health care nonprofit Kaiser Permanente, hospitality giants Marriott International and Fairmount Hotel Group, international consulting firm KPMG, Fortune 500 health services company McKesson, and healthcare Group Purchasing Organization Premier Health Alliance.
- **Educational Institutions** such as Arizona State University, the University of California system, Cornell, Harvard, Universite Laval, Michigan State, Penn State, the State University of New York, University of Pittsburgh, Yale[ii], as well as growing numbers of K-12 school districts in the US and Canada
- **Online Retail:** Consumer retail giant Amazon.com began displaying products' EPEAT status on their US website in 2009 (see below), with ongoing plans to expand coverage to additional geographies and products. Buy.com, Best Buy for Business and TechDepot.com also provide customers with EPEAT ratings information on line, as do hundreds of other retail and small business web catalogs served by CBS Interactive's CNet Content Solutions product data service.



Leading Resellers and Distributors have also joined with EPEAT to integrate EPEAT ratings information and educational outreach into their electronics marketing materials to help their customers meet organizational requirements for EPEAT or simply to 'green' their purchasing. (See Appendix G for participants in EPEAT's growing Partner programs.)

i Universal government requirement or individual agencies of national government

ii A recent survey indicates that 222 universities and colleges use EPEAT for product selection — and at least 70 purchase only EPEAT-registered products (Source: College Sustainability Report Card – http://www.greenreportcard.org/)

2009 Sales Reporting Changes

EPEAT's manufacturer Subscribers must annually report on their sales of all EPEAT qualified products. The life-cycle environmental benefits of those 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 US EPA. (See Methodology section for more detail.)

Several significant changes were made to the reporting system this year that impact 2009 reporting results:

- Sales are now only reported for the countries currently covered by the EPEAT system (see list in Appendix C), reducing reported sales data from global (more than 200 countries) to 40 countries.
- Subscribers must report sales by country,
- Subscribers must report sales for all countries (and only those countries) where they have registered products. (To ensure consistency in 2009, Subscribers only reported sales for those countries where they were actively registering products as of December 31, 2009)
- Subscribers are now required to report sales figures by EPEAT Tier — Bronze, Silver or Gold, to enable more precise evaluation of environmental benefits
- Subscribers are now required to report all sales to the US Federal Government, by tier

These reporting changes are a significant improvement over the previous system, and will ensure more solid data.

NOTE: The significant reduction in geographies reported on, as well as the restriction to countries where a given Subscriber is actively registering, means that reported sales for territories outside North America ("Rest of World") show an overall reduction in 2009 in comparison with previous EPEAT Environmental Benefits reports. However this reduction is largely a reporting artifact.

Throughout this report we have tried to note those areas where the reduction in reporting scope is reflected in lower numbers -particularly in the "Rest of World" category most significantly impacted by the changes.

EPEAT 2009 Reported Unit Sales

Reported unit sales of EPEAT registered products in 2009 were very strong, despite the fact that 2009 reporting, explicitly covered only 40 countries. (Appendix H contains specific purchase volumes for each product category and region.)

TABLE 3: 2009 Unit Sales of EPEAT Registered Products

Region	Desktops	Notebooks	Monitors	Integrated Systems	TOTAL
USA	4,735,905	23,499,428	18,938,387	1,358,947	48,532,667
Canada	401,091	1,625,515	1,090,099	35,748	3,152,453
Rest Of World*	2,767,565	15,173,611	10,544,217	235,107	28,720,500
Total	**7,904,561**	**40,298,554**	**30,617,703**	**1,629,802**	**80,450,620**

* Reported Rest of World sales are restricted to those countries out of 40 covered by EPEAT in 2009 where a manufacturer Subscriber was actively registering products.

- EPEAT sales in the US grew by 10% to a total of 48.5 million products. In Canada sales increased by more than 25%, to over 3 million EPEAT registered units.
- EPEAT rating continues to play a significant role in the notebook space, with EPEAT registered products constituting more than 50% of notebooks sold in the US and nearly a quarter (23.46%) of notebook sales worldwide.
- Combined 2009 purchases of EPEAT registered notebooks and desktops (including integrated systems) constituted close to 42% of total sales in the US (29,594,280 of 69,983,000) and approximately 17 percent of worldwide desktops and notebooks shipped in 2009 (49,832,917 of 295,994,000).[iii]
- Growth of EPEAT registered product sales was rapid in the notebook segment — with a year over year increase from 2008 to 2009 of 40% for the US, more than 100% in Canada, and increased sales reported worldwide despite much more restrictive reporting rules. Worldwide, sales of EPEAT registered notebooks increased by more than 25% overall.

iii This number is almost certainly an underestimation because EPEAT reporting excludes many countries where sales are reported by IDC — so the IDC worldwide unit sales denominator is out of scale with EPEAT's 40-country reporting territory.

Lifecycle Environmental Benefits

Using the Electronics Environmental Benefits Calculator (EEBC), developed as a means to assess the benefits of purchasing EPEAT registered products, we are able to estimate the total reductions in environmental impact connected to the lifetime use of the EPEAT registered products purchased in the US40 countries covered by EPEAT in 2009, compared to products that do not meet the EPEAT criteria.[iv]

The results reported in Table 4: Estimated Environmental Benefits of 2009 Worldwide EPEAT Purchasing are based on evaluation of the environmental impacts resulting from total unit sales of 80,450,620 EPEAT-registered products worldwide in 2009. (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 2009 terms means Canada, all EU and EFTA countries, Japan, China, Taiwan, Australia, New Zealand, Brazil and Mexico.

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," 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 of these substances will be extracted through mining, 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 pollute natural resources.

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

Because EPEAT's underlying standard (IEEE 1680.1) was designed to reduce duplicative effort and streamline environmental reporting, many of EPEAT's environmental criteria align with the requirements of other programs or regulatory schemes, such as ENERGY STAR® and the EU's RoHS regulations. While some of the changes in product design and delivery that enable EPEAT registration may thus not result from EPEAT alone, each EPEAT registered product purchase results in environmental benefits specific to that purchase. This report measures those benefits.

iv For a detailed explanation of how the benefits reported here are assessed, please see the Methodology section and the Calculator itself – at http://isse.utk.edu/ccp/projects/benefitscalculator/elecbenecalc.html.

TABLE 4: Estimated Environmental Benefits from 2009 Worldwide EPEAT Purchasing

Metric	Reductions	Equivalents
Electricity	10.9 million megawatt hours	The annual electricity consumption of 913,459 average US households
Primary Materials	19 million metric tons	The weight of 148,020,197 refrigerators
Air Emissions (including greenhouse gases)	44 billion kg	44 million metric tons
Greenhouse Gas Emissions	2 million MTCE	Removing 1.37 million average US passenger cars from the road for a year
Water Emissions	93 million kg	93,482 metric tons
Toxic Materials (incl Hg)	1537 metric tons	The weight of 768,734 bricks, including enough mercury to fill 371,876 household mercury fever thermometers
Solid waste	29,127 metric tons	Annual solid waste generation of 14,615 US households
Hazardous Waste	71,724 metric tons	The weight of 35.9 million bricks
Lifecycle cost savings to Manufacturers and end users	$1,033,934,622.45	

TABLE 5: Estimated Environmental Benefits from 2009 United States EPEAT Purchasing

Metric	Reductions	Equivalents
Electricity	6.7 million megawatt hours	The annual electricity consumption of 558,339 average US households
Primary Materials	11.7million metric tons	The weight of 90,370,545 refrigerators
Air Emissions (including greenhouse gases)	27 billion kg	27 million metric tons
Greenhouse Gas Emissions	1.24 million MTCE	Removing 834,865 average US passenger cars from the road for a year
Water Emissions	57 million kg	57,000 metric tons
Toxic Materials (incl Hg)	935 metric tons, including 143 kg of mercury	The weight of 467,435 bricks, including enough mercury to fill 124,186.household mercury fever thermometers
Solid waste	18,174 metric tons	Annual solid waste generation of 1,393,204 average US households
Hazardous Waste	43,395 metric tons	The weight of 21.7 million bricks
Lifecycle cost savings to Manufacturers and end users	$631,978,722.18	

TABLE 6: Estimated Environmental Benefits from 2009 Rest of World (39 countries) EPEAT Purchasing

	Reductions	Equivalents
Electricity	4.2 million megawatt hours	The annual electricity consumption of 355,120 average US households
Primary Materials	7.4 million metric tons	The weight of 57,649,642 refrigerators
Air Emissions (including greenhouse gases)	17.1 billion kg	17.1 million metric tons
Greenhouse Gas Emissions	790 thousand metric tons	Removing 532,173 average US passenger cars from the road for a year
Water Emissions	36 million kg	36 thousand metric tons
Toxic Materials (incl Hg)	602 metric tons	The weight of more than 300,000 bricks, including enough mercury to fill 136,868 household fever thermometers
Solid waste	10,952 metric tons	The annual waste generation of 5,496 average US households
Hazardous Waste	28 thousand metric tons	The weight of over 14 million bricks
Lifecycle cost savings to Manufacturers and end users	$401,955,853	

Growth in EPEAT registration and participation

2009 witnessed significant growth in manufacturer participation and EPEAT product registrations, with very rapid growth in Gold product registrations.

In November 2008 the EPEAT registry contained 975 total product registrations from 30 manufacturers, with 217 Gold rated products. By July 2009, there were 1,278 registered products in total, with 33 manufacturers participating, and 412 products registered at the Gold level.

By the end of December 2009, 37 manufacturers had registered some 1,400 products in the US, including 483 Gold products, with more than 8300 individual product registrations, including 2939 individual Gold registrations, outside the US. (Since registrations are by country, these figures include multiple registrations of the same products worldwide, but are a useful indicator of the overall numbers, and proportion of Gold products available outside North America.)

TABLE 7: EPEAT Growth since Inception

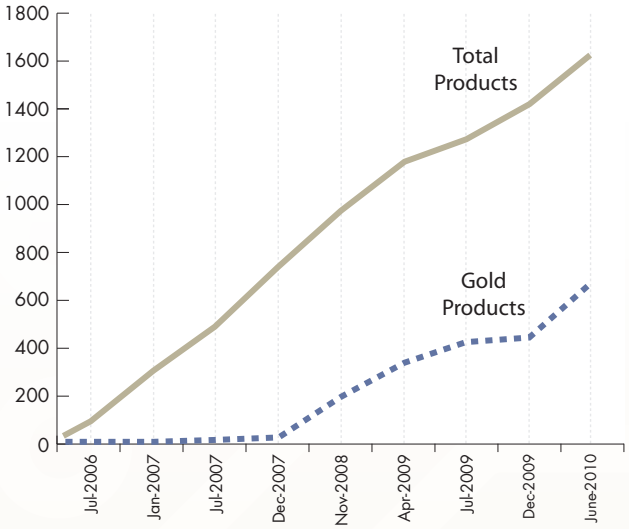
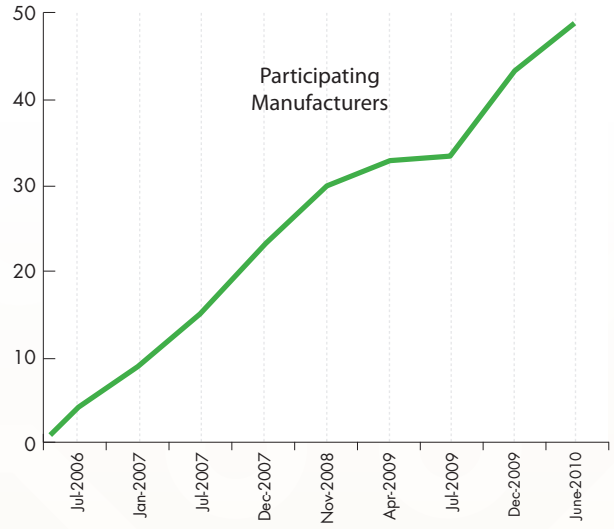


TABLE 8: Participating Manufacturers



International registrations, by existing and new manufacturer Subscribers, grew rapidly over the last half of 2009, and have continued to do so into 2010. See Appendix E for individual countries' product registration and manufacturer participation numbers from July 2009 to April 2010.

EPEAT Cumulative Sales and Benefits – 2006-2009

Since July 2006, nearly 318 million EPEAT registered products have been sold worldwide. Table 9 below shows the year to year and cumulative total reported sales of EPEAT registered products since the system's inception.

Since EPEAT's launch halfway through 2006, purchasers have bought more than 317 million EPEAT registered products.

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

TABLE 9: Year to Year and Cumulative EPEAT Unit Sales – Worldwide 2006-2009

Year	Desktops	Notebooks	Displays	Integrated Systems	TOTAL
2006	12,100,081 (incl. Integrated Systems)	8,858,208	15,602,431	Not recorded separately	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
Cumulative Total	**75,382,898**	**104,983,945**	**133,542,208**	**3,972,549**	**317,881,600**

* Decline in overall 2009 numbers is linked to changes in reporting. Sales reporting is now restricted to only those products sold in covered countries (from 200+ countries reported before 2009 to 40 covered countries reported in 2009) and to those countries where a manufacturer Subscriber is actually registering products. This creates a significant drop in reported sales for "Rest of World" based on changes in the reporting rules, not necessarily reflecting a change in actual worldwide sales of products that meet the EPEAT criteria.

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

TABLE 10: Total Estimated Benefits From Reported EPEAT Purchases 2006 – 2009*

Metric	Reductions	Equivalents
Electricity	70.2 billion megawatt hours	The annual electricity consumption of 5,863,365 average US households
Primary Materials	124 million metric tons	The weight of 962,049,565 refrigerators
Air Emissions *(including greenhouse gases)*	286 billion kg	286 million metric tons
Greenhouse Gas Emissions	13.2 million metric tons	Removing 8.8 million average US passenger cars from the road for a year
Water Emissions	599 million kg	599 thousand metric tons
Toxic Materials *(incl Hg)*	8000 metric tons	The weight of 4,027,046 bricks, including enough mercury to fill 1,054,304.00 household mercury fever thermometers
Solid waste	109 thousand metric tons	The annual solid waste generation of 55,076 average US households
Hazardous Waste	329 thousand metric tons	The weight of 164,397,213 bricks
Lifecycle cost savings to Manufacturers and end users	$6,636,678,419	

* Figured using sum total of reported sales, assuming all Silver rated, including IS with Notebooks

Strengths of the EPEAT Model

EPEAT is not the only environmental rating or labeling scheme for electronics, yet it appears to be the most successful and fast-growing environmental purchasing tool for this product category. Judging by purchaser and manufacturer feedback, this success and rapid worldwide uptake appear to arise from 5 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:** Close to 50 manufacturers of all sizes currently register products In EPEAT. The system's annual fee model (as opposed to per-product charges) encourages all manufacturers to register multiple products in their line while the accessibility of the registration system reduces barriers to registration.
- **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.
- **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.)

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.

METHODOLOGY

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.

Starting with the 2009 reporting round, 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. (To ensure consistency of reporting for this first year, when country registration only began in August, Subscribers were required to report for all countries where they had active product registrations as of December 31, 2009.)

Manufacturers report total sales of their EPEAT-registered products — not only the sales to purchasers that required EPEAT, or the sales because of 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 use of EPEAT. However the redesign of registered products and related services have environmental benefit, whether or not purchasers understood at the point of purchase that they were selecting environmentally preferable products.

As noted above, the new rules for EPEAT sales reporting impact the data received in two ways:

1) They significantly reduce the territory for which manufacturers report sales — to only those countries covered by the EPEAT system where a manufacturer is actively registering products (from the entire world previously).
2) Because reporting is now required for all covered countries (instead of allowing voluntary reporting of sales in some regions)more accurate data should result
3) Because reporting data is now provided by product registration tier, benefits calculation can be tier-specific

Electronics Environmental Benefits Calculator

The Electronics Environmental Benefits Calculator (EEBC) is a tool developed to support and evaluate purchase 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[v]. The EEBC measures quantifiable benefits (such as green house 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.

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

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, based on a comparison of EPEAT product attributes, such as material composition and energy consumption, to the average attributes of a composite conventional product.[vi]

The calculations include impacts from raw material extraction and processing, product manufacture, and product use and disposition, depending on the specific metric involved.[vii] 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 detailed[viii] explanation of the benefits calculations and their linkage to specific criteria.)

Report Assumptions

The environmental benefits detailed in this report were obtained by entering the total number of EPEAT registered products sold in 40 covered countries, as reported by subscribing manufacturers, into the EEBC by product category and tier.

- This year products were reported and entered by tier. Previously we did not receive tier information and therefore assumed EPEAT Silver registration for all product types. Though the tier reporting contains some level of estimation (some manufacturers can pull specific EPEAT rating data by unit sold, but others based reporting on percentages estimated by sales staff in different regions) it allows us to calculate more precisely than with the previous Silver assumption.
- Since we do not have sufficiently detailed information about the exact composition of the individual products purchased to apportion individual attributes accurately, we used the generic assumptions for each EPEAT product tier.[ix]
- 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.) Given the small market share of integrated systems and the close similarity of these products to notebooks, we do not expect this to skew results significantly.

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

vii The use of life cycle 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

viii http://isse.utk.edu/ccp/projects/benefitscalculator/elecbenecalc.html

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

- Finally, 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 sufficient information about the actual end-of-life disposition of EPEAT-registered products to assess those benefits. In addition, some products are purchased in regions with mandatory takeback and recycling programs already in place. Therefore the EEBC includes no environmental benefits specifically related to the method of end of life management — despite the likelihood that many EPEAT purchasers take advantage of the end of life services required by EPEAT.

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** results 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 39 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.

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 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 ES 4.0 and many met ENERGY STAR 5.0 specifications after the effective date for new ENERGY STAR standards (July 2009 for computers and October 31 for displays).[x] . Using the 4.0 to 3.0 basis of comparison, as the EEBC does, may underestimate the benefits calculated for the 1,200 registered products that met the 5.0 specification between July and December 2009. 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 STR 4.0 or 4.1, performing more efficiently than the generic 'conventional product' assumed by the EEBC.

x 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.

Important Notes

The EEBC is an excellent tool and has been carefully reviewed by 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 to 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 here and in the EEBC itself in order to correctly interpret the results.

In addition, some of the significant environmental benefits resulting from individual EPEAT criteria (such as ease of product disassembly, corporate performance criteria, and providing a product take back option which may or may not be used by the purchaser) are not easily quantified and therefore are simply not addressed by the EEBC. 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) In addition, because EPEAT's underlying standard was designed to reduce duplicative effort and streamline environmental reporting, many 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 the environmental benefits reported here cannot be characterized as resulting solely from EPEAT — though without EPEAT many of the benefits might not have been realized in geographies not covered by specific regulatory or labeling schemes.
3) EPEAT's role is 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, with environmental advocates and purchasers who have demanded more environmentally responsible products, and with manufacturers who have designed and manufactured greener products.
4) 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 may accrue if purchasers take advantage of management options such as unified power management software, virtualization, refurbishment and resale or donation programs, and responsible recycling. Such activities, however, are not assessed in this report.

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.

CONCLUSION

EPEAT is the definitive global registry for greener electronics, currently covering thousands of computer and display products from a wide range of manufacturers. EPEAT combines comprehensive science-based criteria for design, production, energy use and recycling with ongoing independent verification of manufacturer claims.

Choices made regarding product design and engineering impact the supply chain, including extraction and processing production and transportation of materials, components and finished products. In addition, design affects energy consumption during use, and the efficiency of end-of-life recovery.

By specifying environmentally preferable products, purchasers can send a strong signal to encourage manufacturers to design and manufacture greener products, with a resultant impact throughout the supply chain. By using 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, the impact is even stronger.

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 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.

The annual EPEAT Environmental Benefits Report is intended to answer the basic question whether growth in EPEAT product registration and increases in purchasers specifying and buying greener electronic products through use of EPEAT have helped move the market towards environmentally preferable alternatives and had a beneficial environmental impact. The answer is a definite "Yes."

APPENDIX A: EPEAT DETAILS

EPEAT®, (the Electronic Product Environmental Assessment Tool) is a system for identifying environmentally preferable personal computers and monitors.

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 non-profit 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 global warming 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/life cycle 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 4 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/criteria.aspx

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.

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 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 http://www.epeat.net/Docs/EPEATInternational.pdf.

Financial Support

The Green Electronics Council's 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.

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 38 registry countries. Subscribers may now pay for either or both of these territories annually. The current manufacturer fee schedule may be reviewed at http://www.epeat.net/docs/EPEAT%202010-2011%20Subscriber%20Fee%20Schedule.pdf .

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 precertified; 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, or 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.

Verifications are of two types — 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/verification.aspx.

Board of Advisors

EPEAT is primarily overseen by the EPEAT Board of Advisors, a volunteer 12-person 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. Green Electronics Council 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 http://www.epeat.net/Docs/BofA%20Members.pdf.

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 B: 2009 EPEAT SUBSCRIBERS

EPEAT Participating Manufacturers – December 31, 2010

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

APPENDIX C: 2009 EPEAT COUNTRY COVERAGE

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

APPENDIX D: 2009 ENVIRONMENTAL BENEFITS BY PRODUCT CATEGORY

Estimated Environmental Benefits from 2009 Worldwide EPEAT Desktop Purchasing

Metric	Reductions	Equivalents
Electricity	45 million megawatt hours	The annual electricity consumption of 377,056 average US households
Primary Materials	8 million metric tons	The weight of 62,065,711 refrigerators
Air Emissions (including greenhouse gases)	18 billion kg	18 million metric tons
Greenhouse Gas Emissions	851 thousand metric tons carbon equivalent (MTCE)	Removing 572 thousand average US passenger cars from the road for a year
Water Emissions	38 million kg	38 thousand metric tons
Toxic Materials (incl. Hg)	384 thousand kg	The weight of 192,082 bricks
Solid waste	4,878 metric tons	Annual solid waste generation of 2448 average US households
Hazardous Waste	12,932 metric tons	The weight of 6,465,960 bricks
Lifecycle cost savings to Manufacturers and end users	$426,785,897	

Estimated Environmental Benefits from 2009 Worldwide EPEAT Notebook Purchasing

Metric	Reductions	Equivalents
Electricity	269,543 megawatt hours	The annual electricity consumption of 22,528 average US households
Primary Materials	346 thousand metric tons	The weight of 2,688,067 refrigerators
Air Emissions (including greenhouse gases)	769 billion kg	769 million metric tons
Greenhouse Gas Emissions	37,974 metric tons carbon equivalent	Removing 25,502 average US passenger cars from the road for a year
Water Emissions	1.68 million kg	1683 metric tons
Toxic Materials (incl. Hg)	384 metric tons	The weight of 182,834 bricks, including enough mercury to fill 171,399 household fever thermometers
Solid waste	11,104 metric tons	Annual solid waste generation of 5,572 average US households
Hazardous Waste	29,014 metric tons	The weight of 14,507,211 bricks
Lifecycle cost savings to Manufacturers and end users	$25,498,836.67	

continued >>

Estimated Environmental Benefits from 2009 Worldwide EPEAT Display(Monitor) Purchasing

Metric	Reductions	Equivalents
Electricity	6 million megawatt hours	The annual electricity consumption of 513,875 average US households
Primary Materials	10.7 million metric tons	The weight of 83 million refrigerators
Air Emissions (including greenhouse gases)	24.8 billion kg	24.8 million metric tons
Greenhouse Gas Emissions	1.1 million metric tons carbon equivalent	Removing 769,763 average US passenger cars from the road for a year.
Water Emissions	53,089,181 kg	53,089 metric tons
Toxic Materials (incl. Hg)	787 metric tons	The weight of 393,818 bricks, with enough mercury to fill 200,477 household fever thermometers
Solid waste	13,144 metric tons	Annual solid waste generation of 6,595 average US households
Hazardous Waste	29,777 metric tons	The weight of 14,888,911 bricks
Lifecycle cost savings to Manufacturers and end users	$581,649,888	

APPENDIX E: 2009-2010 GROWTH IN REGISTRATIONS AND SUBSCRIBER PARTICIPANTS BY COUNTRY

EPEAT Registered Products

Country	As of August 15, 2009	As of December 31, 2009	As of April 29, 2010
Australia	85	233	283
Austria	105	251	363
Belgium	105	257	369
Brazil	47	281	329
Bulgaria	103	154	207
Canada	292	472	719
China	75	246	334
Cypress	103	205	288
Czech Republic	57	160	366
Denmark	57	160	233
Estonia	103	198	277
Finland	105	257	369
France	131	325	433
Germany	230	313	401
Greece	57	160	233
Hungary	105	257	369
Iceland	0	10	7
Ireland	105	257	369
Italy	105	296	416
Japan	108	207	300
Latvia	103	207	284
Liechtenstein	0	10	7
Lithuania	57	134	187

continued >>

EPEAT Registered Products (continued)

Country	As of August 15, 2009	As of December 31, 2009	As of April 29, 2010
Luxembourg	105	199	277
Malta	103	81	103
Mexico	23	53	47
Netherlands	105	296	408
New Zealand	82	211	270
Norway	57	160	233
Poland	105	250	337
Portugal	105	257	369
Romania	103	205	288
Slovakia	55	205	288
Slovenia	103	198	277
Spain	105	296	408
Sweden	105	257	369
Switzerland	105	257	369
Taiwan	61	214	311
United Kingdom	83	189	391
United States	1328	1406	1551
Total	**4971**	**9551**	**13466**

EPEAT Subscribers Registering in 2009, by Country

Country	As of August 15, 2009	As of December 31, 2009	As of April 29, 2010
Australia	3	5	6
Austria	3	4	4
Belgium	3	4	4
Brazil	0	8	10
Bulgaria	2	2	2
Canada	5	15	18
China	3	3	4
Cypress	2	3	3
Czech Republic	3	4	4
Denmark	3	4	4
Estonia	2	3	3
Finland	3	4	4
France	3	6	6
Germany	5	7	7
Greece	3	4	4
Hungary	3	4	4
Iceland	1	1	1
Ireland	3	4	4
Italy	3	5	5
Japan	3	3	3
Latvia	2	5	5
Liechtenstein	1	1	1
Lithuania	2	4	4
Luxembourg	3	3	3

continued >>

EPEAT Subscribers Registering in 2009, by Country (continued)

Country	As of August 15, 2009	As of December 31, 2009	As of April 29, 2010
Malta	2	2	2
Mexico	1	2	3
Netherlands	3	5	5
New Zealand	2	3	4
Norway	3	4	4
Poland	2	10	9
Portugal	3	4	4
Romania	2	3	3
Slovakia	2	3	3
Slovenia	2	3	3
Spain	3	5	5
Sweden	3	4	4
Switzerland	3	4	4
Taiwan	3	2	3
United Kingdom	3	5	5
United States	33	33	33

APPENDIX F: 2009 REGISTRATION BY PRODUCT TYPE AND TIER

EPEAT Registrations by Tier as of July 1, 2009

Product Type	Bronze	Silver	Gold	Totals
Desktops	12	58	94	164
Displays	1	456	67	524
Notebooks	17	285	228	530
Integrated Desktop Computers	0	30	6	36
Workstations	0	7	17	24
Totals	**30**	**836**	**412**	**1278**

EPEAT Registrations by Tier as of December 31, 2009 – United States

Product Type	Bronze	Silver	Gold	Totals
Desktops	4	32	62	98
Displays	1	385	93	479
Notebooks	31	430	302	763
Integrated Desktop Computers	0	31	11	42
Workstation Desktops	1	0	14	15
Thin Clients	0	9	0	9
Workstation Notebooks	0	1	1	2
Totals	**37**	**888**	**483**	**1408**

EPEAT Registrations by Tier as of December 31, 2009 – Rest of World

Product Type	Bronze	Silver	Gold	Totals
Desktops	10	384	806	1200
Displays	0	1336	683	2019
Notebooks	28	3037	1217	4282
Integrated Desktop Computers	0	172	35	207
Workstation Desktops	0	78	197	275
Thin Clients	0	366	0	366
Workstation Notebooks	0	26	1	27
Totals	**38**	**5399**	**2939**	**8376**

APPENDIX G: 2009 RESELLER AND DISTRIBUTOR PARTNERS

Amazon Services LLC

asi

Buy.com

CAMPUS COMPUTER STORE

Capital City Technology

Compugen, Inc.

CONTROL GROUP

COUPONS DEALUXE

DFX DESIGNS OF EXCELLENCE

ecorate.com

EN POINTE TECHNOLOGIES

FrankParsons

GRACE GLOBAL INC
Enterprise Infrastructure Systems & Management

GREENTREE TECHNOLOGY PARTNERS

GroupMobile

INGRAM MICRO
Partner Smart

itvertigo

Management Technology, Inc.

MicroTech

MOORING TECH

Need These

Premier Suppliers

PEYAK SOLUTIONS, INC.

the Second Leaf
GREEN OFFICE SUPPLY & TECHNOLOGY

sierra
IT solutions

SNVC

softchoice

SUPRTEK

SYNNEX CORPORATION

Tech Data
The Difference in Distribution

Techfirst, Inc.

uniguest

VALIANT

ZONES

APPENDIX H: 2009 EPEAT REGISTERED PRODUCT SALES BY COUNTRY AND PRODUCT TYPE

Country	Notebooks	Desktops	Displays	Integrated Systems	Total
United States	23,499,428	4,735,905	18,938,387	1,358,947	**48,532,667**
Canada	1,625,515	401,091	1,090,099	35,748	**3,152,453**
Mexico	0	18,157	67,155	0	**85,312**
Brazil	298,066	276,202	564,786	0	**1,139,054**
Austria	205,407	55,335	131,176	0	**391,918**
Belgium	226,727	49,529	133,131	0	**409,387**
Bulgaria	33,367	2,163	12,278	0	**47,808**
Cyprus	4	32	40	0	**76**
Czech Republic	142,696	26,061	128,901	0	**297,659**
Denmark	78,227	55,929	126,126	0	**260,282**
Estonia	11,099	1,437	1,494	0	**14,030**
France	1,510,545	436,794	911,724	80,702	**2,939,764**
Finland	206,760	53,442	89,086	0	**349,288**
Germany	1,311,601	384,745	877,992	73,987	**2,648,324**
Greece	8,035	16,226	51,397	0	**75,658**
Hungary	57,747	11,443	20,318	0	**89,508**
Iceland	0	0	0	0	**0**
Ireland	97,326	25,230	32,382	0	**154,938**
Italy	958,907	131,625	332,459	0	**1,422,990**
Latvia	5,471	312	1,978	0	**7,760**
Lithuania	4,503	880	3,397	0	**8,780**
Liechtenstein	37	5	0	0	**42**
Luxembourg	864	217	221	0	**1,302**
Malta	0	0	36	0	**36**
Netherlands	423,673	106,651	322,882	0	**853,206**
Norway	32,326	31,932	97,831	0	**162,088**
Poland	218,309	23,015	111,127	0	**352,451**

continued >>

Country	Notebooks	Desktops	Displays	Integrated Systems	Total
Portugal	197,154	34,171	191,093	0	**422,417**
Romania	35,457	3,200	15,262	0	**53,919**
Slovakia	53,352	8,720	48,326	0	**110,398**
Slovenia	30,793	3,399	8,194	0	**42,386**
Spain	792,550	103,916	311,762	0	**1,208,228**
Sweden	515,219	117,448	234,521	0	**867,188**
Switzerland	362,030	67,131	190,446	0	**619,607**
United Kingdom	1,627,538	335,176	813,486	80,418	**2,856,618**
China	4,471,127	164,013	3,775,819	0	**8,410,959**
Japan	695,035	36,306	354,607	0	**1,085,948**
Taiwan	118,290	29,609	109,727	0	**257,625**
Australia	368,991	131,125	384,913	0	**885,029**
New Zealand	74,379	25,989	88,145	0	**188,513**
Total	**40,298,553**	**7,904,562**	**30,572,703**	**1,629,802**	**80,405,620**

ABOUT THE GREEN ELECTRONICS COUNCIL

The Green Electronics Council is a program of the International Sustainable Development Foundation which is a 501(c)(3) not-for-profit organization located in Portland Oregon. The GEC was established in 2006 with a mission to inspire and support the effective design, manufacture, use and recovery of electronic products to contribute to a healthy, fair and prosperous world.

Through partnerships with the electronics industry and environmental organizations, government agencies, manufacturers and other interested stakeholders, the GEC aims to:

- Implement market-driven systems to recognize and reward environmentally preferable electronic products; and
- Build the capacity of individuals and organizations to design and manage the life cycle of electronic products to improve their environmental and social performance.

EPEAT is currently GEC's major project. In September of 2008, in partnership with the Yale Center for Green Engineering and Green Chemistry, GEC hosted a forum to develop a vision and definition of "Sustainable Information and Communications Technology." In addition, GEC also conducts and publishes research related to electronics and the environment.

For more information, see www.greenelectronicscouncil.org.