

Data Sources Underlying the Computer Electronics Environmental Benefits Calculator - Cathode Ray Tube Monitor (CRT) Data

The full criteria can be found online at <https://www.epeat.net/resources/criteria-2/>

Baseline Assumptions for Conventional Products for Purchasing				
Reduced Toxicity				
Criteria	Attribute	Value	Reference*	Notes
4.1.1.1	Average lead content per unit	30.7 g	Socolof et al., 2001; CIWMB, 2006.	Calculated based on the ratio of mass of CRT/LCD printed wire boards (Socolof et al., 2001) applied to CIWMB (2006) manufacturer reported data. Does not include CRT glass.
	Average mercury content (not including lamps) per unit	0 g	Brady et al., 2003; Socolof et al., 2001.	Only referenced source of mercury in personal computers is in backlights of LCD monitors and notebooks.
	Average cadmium content per unit	0.05876 g	CIWMB, 2006.	
	Average hexavalent chromium content per unit	0.139 g	CIWMB, 2006.	
	Average PBB content per unit	0 g		PBB is no longer manufactured (AEAT, 2001; BSEF, 2000).
	Average PBDE content per unit	0 g	WA State Department of Ecology, 2006; BSEF, 2010.	The manufacture of Penta-PBDE and Octa-PBDE was discontinued in 2004 (WA State Department of Ecology, 2006). Deca-BDE use in electronics was added to the the RoHS restricted substances in the European Union, starting 2008, and several U.S. states have prohibited its use in computers and other products. Further, member companies of the BSEF are voluntarily phasing out the production and use of Deca-BDE in the U.S. market by the end of 2012 (BSEF, 2010).
Material Use				
Criteria	Attribute	Value	Reference*	Notes
4.2.1.1-3	Percent recycled content of plastic (resin) in product	0% %	EPEAT Registry, 2012.	Computer products do not routinely use post-consumer recycled content resins. See other product types in Sheet 8a for more information.
	Average amount of plastic in product	3.66 kg	Swico Recycling, 2010.	Average of >295,000 products.
	Average amount of recycled plastic (resin) content in product	0 kg	Calculated.	Calculated using % recycled content of plastic and average amount of plastic in product. See rows above.
4.2.2.1-2	Percent renewable/biobased material in product	0% %	EPEAT Registry, 2012.	Computer products do not routinely use biobased content resins. See other product types in Sheet 8a for more information.
	Average amount of molded plastic parts in product	3.66 kg	Swico Recycling, 2010.	Assumption; same as total plastic in product.
	Average amount of renewable/biobased material in molded plastic in product	0 kg	Calculated.	Calculated using % renewable/biobased content of plastic and average amount of plastic in product. See rows above.

Packaging				
Criteria	Attribute	Value	Reference*	Notes
4.8.3.1-2	Percent recycled content of corrugated packaging	0 %		This baseline value is assumed to be 0%, thus providing full credit for recycled content of packaging.
	Average amount of corrugated per unit package	2.05 kg	Company published product environmental profiles and declarations. (EEBC Version 2 research)	Average based on 2 products offered by 2 manufacturers.
	Average amount of recycled content of corrugated packaging	0 kg	Calculated.	Calculated using % recycled content and average amount of corrugated in packaging. See rows above.
	Percent recycled content of plastic/foam packaging	0 %		This baseline value is assumed to be 0%, thus providing full credit for recycled content of packaging.
	Average amount of plastic/foam per unit package	0.7 kg	Company published product environmental profiles and declarations. (EEBC Version 2 research)	Average based on 2 products offered by 2 manufacturers.
	Average amount recycled content of plastic/foam packaging	0 kg	Calculated.	Calculated using % recycled content and average amount of plastic in packaging. See rows above.
	Percent recycled content of other packaging	0 %		This baseline value is assumed to be 0%, thus providing full credit for recycled content of packaging.
	Average amount of other packaging per unit package	0.03 kg	Company published product environmental profiles and declarations. (EEBC Version 2 research)	Average based on 2 products offered by 2 manufacturers.
	Average amount of recycled content of other packaging	0 kg	Calculated.	Calculated using % recycled content and average amount of other packaging. See rows above.
4.8.5.1	Packaging avoided per unit by packaging reuse	0 kg		This baseline value is assumed to be 0, thus providing full credit for packaging reuse.
	Average amount of packaging per product	2.78 kg	Calculated.	Assumption. Sum of all packaging types. See rows above.
Baseline Assumptions for Use and End-of-Life				
Criteria	Attribute	Value	Reference*	Notes
USE	Percentage of units with power management features enabled	81 %	ENERGY STAR, 2012a.	
USE	Average lifetime of unit	54 months	FEC, 2012.	This baseline value is for the initial user.
EOL	Average weight of product	18.4 kg	Swico Recycling, 2010.	Average of >295,000 products.
EOL	Average hazardous waste content in unit	10.202 kg	Calculated.	Sum of leaded glass, printed wire boards and insulation resin (plastic) on wire and cable. See rows below. Assumes printed wire boards and cables contain lead.
EOL	Average weight of printed wire boards	1.674 kg	Swico Recycling, 2010.	Calculated based on Swico's weight for CRTs and their percent content for PWBs.
EOL	Average weight of leaded glass	8.05 kg	Swico Recycling, 2010.	Calculated based on Swico's weight for CRTs and their percent content for glass.

EOL	Average weight of resin (plastic) in wire and cable	0.4784 kg	Swico Recycling, 2010.	Calculated based on Swico's weight for CRTs and their percent content for cables. Assumes the weight of cables is the weight of the resin.
EOL	% material collected for recycling that is recycled	100 %		EPA assumption.
EOL	% material collected for recycling that is reused	0% %		EPA assumption.

EPEAT Default Assumptions for Purchasing, Use, and End-Of-Life

Reduced Toxicity

As of November 2011, there are no EPEAT registered CRT displays.

EPEAT Registration Tier Assumptions for Purchasing

As of November 2011, there are no EPEAT registered CRT displays.

Distribution of Products Used in Government

	Product Type	Distribution	Reference	Notes
USE	CPU	30.3%	FEC, 2012.	Products reported in use during FY2011.
USE	CRT	0.1%	FEC, 2012.	Products reported in use during FY2011.
USE	LCD	47.0%	FEC, 2012.	Products reported in use during FY2011.
USE	Notebook	22.7%	FEC, 2012.	Products reported in use during FY2011.
USE		100%		

ENERGY INFORMATION

Criteria	Attribute	Value	Reference*	Notes
USE	Electricity cost	0.103 \$/kWh	ENERGY STAR, 2014.	National average: US Department of Energy, Annual Energy Outlook 2013 (Early Release edition), (converted from 2011 to 2012 dollars)
USE	Discount rate	4 %	ENERGY STAR, 2014.	A real discount rate of 4 percent is assumed, which is roughly equivalent to the nominal discount rate of 7 percent (4 percent real discount rate + 3 percent inflation rate).
USE	Hours per day	24 hours/day		
USE	Days per week	7 days/week		
USE	Days per year	365 days/year		
USE	Hours per workday	8 hours/day	ENERGY STAR, 2012a.	Assumption, used in ENERGY STAR power management calculators.
USE	Workdays per week	5 days/week	ENERGY STAR, 2012a.	Assumption, used in ENERGY STAR power management calculators.
USE	Nonworking days per year	22.5 days/year	ENERGY STAR, 2012a.	Assumption, used in ENERGY STAR power management calculators.
USE	% of units turned off at night	18 %	ENERGY STAR, 2013.	Assumption, used in ENERGY STAR power management calculators.
USE	% power managed	81 %	ENERGY STAR, 2013.	Assumption, used in ENERGY STAR power management calculators.
USE	% of time in sleep during workday	56 %	ENERGY STAR, 2013.	Assumption, used in ENERGY STAR power management calculators.
USE	Time in "active" or "idle" mode	847 hours/year	Calculated.	
USE	Time in "sleep" mode	1,059 hours/year	Calculated.	

USE	Time in "off" mode	6,854 hours/year	Calculated.	
Non-ENERGY STAR (Conventional) Units				
Criteria	Attribute	Value	Reference*	Notes
USE	Average power in "active" or "idle" mode	73.4 watts	ENERGY STAR, 2012b.	
USE	Average power in "sleep" mode	3.4 watts	ENERGY STAR, 2012b.	
USE	Average power in "off" mode	1.1 watts	ENERGY STAR, 2012b.	
USE	UEC, power managed, turned off	95.8 kWh/y	Calculated.	
USE	UEC, power managed, not turned off	111.9 kWh/y	Calculated.	
USE	UEC, not power managed, turned off	147.2 kWh/y	Calculated.	
USE	UEC, not power managed, not turned off	643.3 kWh/y	Calculated.	
USE	Weighted average UEC	436.0 kWh/y	Calculated.	
ENERGY STAR 5.* Qualified Units				
As of November 2011, there are no EPEAT registered CRT displays.				
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