

Facts and Figures on E Waste and Recycling

This is a summary of available statistics that quantify the problems of electronic waste and e-waste recycling efforts. Each item includes its source and link to the original documents (where available), to make it easy for reporters to confirm data back to the original source.

We assembled these statistics primarily for media and for legislators and advocates of e-waste policies. This list will be updated periodically as new statistics are released.

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How Much E-waste is Being Discarded?

Whether trashed or recycled, what are we getting rid of each year in the US? (See next section for what we stockpile.)

E-Waste in 2007 – Was it Trashed or Recycled				
Products	Total disposed**	Trashed	Recycled	Recycling Rate
	(million of units)	(million of units)	(million of units)	(by weight)
Televisions	26.9	20.6	6.3	18%
Computer Products*	205.5	157.3	48.2	18%
Cell Phones	140.3	126.3	14	10%

*Computer products include CPUs, monitors, notebooks, keyboards, mice, and "hard copy peripherals", which are printers, copiers, multi's and faxes.
 **These totals don't include products that are no longer used, but stored.

Source: EPA ¹

41.1 million desktops & laptops

The EPA (in report summarized above) estimates that 29.9 million desktops and 12 million laptops were discarded in 2007. That's over 112,000 computers discarded per day!

31.9 million computer monitors

The EPA report (above) estimates that 31.9 computer monitors were discarded in 2007 – both flat panel and CRTs.

400 million units of e-waste

In a 2006 report, the International Association of Electronics Recyclers projects that with the current growth and obsolescence rates of the various categories of consumer electronics, (a broader list than the EPA used above, including DVDs, VCRs, mainframes) somewhere in the neighborhood of 3 billion units will be scrapped during the rest of this decade, or an average of about **400 million units a year.**²

2.9 million tons of e-waste disposed in 2006 in USA

In 2006, we generated **2.9 million tons of e-waste in the US.** Of this amount, only 330,000 tons or 11.4% was recycled, according to the EPA. The rest was trashed – in landfills or incinerators.

Selected consumer electronics include products such as TVs, VCRs, DVD players, video cameras, stereo systems, telephones, and computer equipment.³

Note: EPA's 2007 data is expected in November or December 2008.

¹ "Electronic Waste Management in the United States, Approach 1" Table 3.1 EPA530-R-08-009 US Environmental Protection Agency, July 2008. <http://www.epa.gov/osw/conserve/materials/ recycling/docs/app-1.pdf>

² International Association of Electronics Recyclers Industry Report, 2006. Available at <http://www.iaer.org/communications/indreport.htm>

³ "Municipal Solid Waste Generation, Recycling, and Disposal in the United States: Facts and Figures for 2006." United States Environmental Protection Agency, Office of Solid Waste (5306P) EPA-530-F-07-030, November 2007. Data is from Characterization Data Tables 12 – 14. Report: <http://epa.gov/epawaste/nonhaz/municipal/pubs/msw06.pdf>
 Data tables: <http://epa.gov/epawaste/nonhaz/municipal/pubs/06data.pdf>

E-Waste Facts and Figures

20 to 50 million metric tons of e-waste disposed worldwide each year

“Some **20 to 50 million metric tonnes** of e-waste are generated worldwide every year, comprising more than 5% of all municipal solid waste. When the millions of computers purchased around the world every year (183 million in 2004) become obsolete they leave behind lead, cadmium, mercury and other hazardous wastes. In the US alone, some 14 to 20 million PCs are thrown out every year. In the EU the volume of e-waste is expected to increase by 3 to 5 per cent a year. Developing countries are expected to triple their output of e-waste by 2010.”⁴

E-waste is still the fastest growing municipal waste stream in the US

The category of “selected consumer electronic products” grew by almost 8.6% from 2005 to 2006, from 2.67 million tons to 2.90 million tons.⁵ While it’s not a large part of the waste stream, e-waste shows a **higher growth rate than any other category** of municipal waste in the EPA’s report. Overall, between 2005 and 2006, total volumes of municipal waste increased by only 1.2%, compared to 8.6% for e-waste.

Only 11.4% of disposed e-waste is recycled

Only 11.4% of the consumer electronic products generated into the municipal waste stream (meaning, that people tossed out) were “recovered” for recycling in 2006, down from 12.5% in 2005. This compares to the overall recovery rate of all categories of municipal waste was 32.5% in 2006. A total of 330,000 tons were recovered in 2006.⁶

How Much Electronic Waste Gets Stored or Stockpiled?

68% of consumers stockpile

“**68 percent** of consumers stockpile used or unwanted computer equipment in their homes.”⁷

235 million units in storage as of 2007, including **99 million TVs**

The EPA estimates the following quantities of electronics were in storage by 2007 (not including cell phones)

Televisions: 99.1 million
Desktop computers: 65.7 million
Desktop monitors: 42.4 million
Notebook computers: 2.1 million
Hard copy peripherals: 25.2 million (printers, copiers, faxes, multi’s)
TOTAL: 234.6 million units in storage⁸

⁴ Press Release, “Basel Conference Addresses Electronic Wastes Challenge.” November 27, 2006, United Nations Environment Programme (UNEP). Available at:

<http://www.unep.org/Documents.Multilingual/Default.asp?DocumentID=485&ArticleID=5431&l=en>

⁵ “Municipal Solid Waste Generation, Recycling, and Disposal in the United States: Facts and Figures for 2006.” United States Environmental Protection Agency, Office of Solid Waste (5306P) EPA-530-F-07-030, November 2007. Data is from Characterization Data Tables 12 – 14.

Report: <http://epa.gov/epawaste/nonhaz/municipal/pubs/msw06.pdf>

Data tables: <http://epa.gov/epawaste/nonhaz/municipal/pubs/06data.pdf>

⁶ Ibid. Table 13 page 69. Note: See page 34 of report for definitions of generation and recovery.

⁷ HP Fact Sheet, Earth Day 2005.

http://www.hp.com/hpinfo/newsroom/press_kits/environment/earthday-fs.pdf

⁸ “Electronic Waste Management in the United States, Approach 1” Table 3.1 EPA530-R-08-009 US Environmental Protection Agency, July 2008, Table 3.4 on page 25. <http://www.epa.gov/osw/conservematerials/recycling/docs/app-1.pdf>

Sales in Electronics - How Much Electronics Are Being Sold

Note: Many statistics on sales are expressed in terms of "units shipped" from the manufacturers into their various sales channels.

Consumer Electronics

500 million units in 2008 in US

According to the Consumer Electronics Association (CEA), consumers are expected to purchase **500 million units** of consumer electronics in the US in 2008. US households spend about **\$1407 per year** on hardware.⁹

Computer Sales

Almost 268 million computers were sold in 2007 worldwide. The US bought over 67 million of them.

According to IDC's Worldwide Quarterly PC Tracker, **manufacturers shipped 267.7 million computers worldwide in 2007**, up from 235 million in 2006, up 14.3%. They sold 67 million of these in the US.¹⁰

PCs include Desktops, Notebooks, Ultra Portables, and x86 Servers and do not include handhelds

Computer sales projections:
426 million worldwide by 2012

Industry analysts predict that in 2008, 302 million computers will be sold worldwide, with 71.7 million of those in the US. These numbers will increase to 426 million sold worldwide in 2012, with 85 million of those sold in the US in 2012.¹¹

PCs include Desktops, Notebooks, Ultra Portables, and x86 Servers and do not include handhelds

Television Sales

3.9 MILLION TVs bought for
superbowl 2008

We Americans are expected to buy 3.9 million TVs just for this year's 2008 SUPERBOWL, according to the National Retail Federation.¹² That's up more than 50% from the 2.5 million we bought for last year's superbowl. We bought 1.7 in 2006.

32 million digital TVs in 2008

The Consumer Electronics Association (CEA) predicts that in 2008, we will buy 32 million digital TVs in the US. More than 50% of US households now own a digital television (as of Dec 2007).¹³

⁹ Consumer Electronics Association, Presentation by Parker Brugge to E-Scrap Conference, Sept 17, 2008.

¹⁰ IDC Press Release, "PC Market Is Expected To Continue Double-Digit Growth Despite Increasing Economic Concerns, According to IDC", March 12, 2008, IDC Worldwide Quarterly PC Tracker. Available at <http://www.idc.com/getdoc.jsp?containerId=prUS21138308>,

¹¹ IBID

¹² Press Release from National Retail Federation: "As Super Bowl Sales Near \$10 Billion, Retailers Plan Big Promotions, According to RAMA," January 213, 2008. Available at: http://www.nrf.com/modules.php?name=News&op=viewlive&sp_id=461

¹³ Press Release from Consumer Electronics Association, Dec 28, 2007. http://www.ce.org/Press/CurrentNews/press_release_detail.asp?id=11425

E-Waste Facts and Figures

Manufacturers earned over \$25 BILLION selling digital TVs in 2007.

“According to new CEA sales projections, manufacturers will post 11 percent revenue growth, to over \$25 billion, from sales of digital televisions in 2007. CEA also forecasts 13 percent revenue and 17 percent unit sales growth for digital television in 2008.”¹⁴

138 million TVs sold worldwide

Market research firm iSupply predicts that TV makers will sell 138.97 million digital TVs worldwide in 2008, up from 117.7 in 2007. They predict the number will grow to 252.7 million DTVs sold by 2012.¹⁵

North America accounts for 83% of the 50"+ TV market

We are buying BIG TVs. While the average TV size in North America is 29.5 inches, North America accounted for 83% of the 50"+ market and 52% of the 40"+ market¹⁶

Cell Phone Sales

Over one billion cell phones sold worldwide in 2006

“The worldwide mobile phone market reached a new milestone at the close of 2006, with more than one billion units shipped worldwide over the year. According to IDC's Worldwide Quarterly Mobile Phone Tracker, vendors shipped a total of 1.019 billion units in 2006, or 22.5% more than the 832.8 million units they shipped in 2005. For the quarter ending December 31, 2006, vendors shipped a total of 294.9 million units, or 19.7% more than the 246.4 million units they shipped during 4Q05. This also marked a record shipment volume for a single quarter.”¹⁷

When will we reach 2 BILLION cell phone users worldwide?

The UN says in 2008:

By 2008 the number of cell phone users around the world is projected to reach some **two billion**.¹⁸

The USGS says 2009:

“In the United States, the number of cell phone subscribers increased from 340,000 in 1985 to 180 million in 2004. Worldwide, cell phone sales have increased from slightly more than 100 million units per year in 1997 to an estimated 779 million units per year in 2005. **Cell phone sales are projected to exceed 1 billion**

¹⁴ IBID

¹⁵ “DTV Market Booming, Despite or Because of Economy: iSupply,” *This Week in Consumer Electronics*, citing research from iSupply. September 4, 2008. <http://www.twice.com/article/CA6592913.html?industryid=23106>

¹⁶ DisplaySearch press release, November 27, 2006; “DisplaySearch Report Indicates Samsung Takes the Top Position in Global TV Units and Revenues,” <http://www.displaysearch.com/press/?id=1014>

¹⁷ IDC Press Release, “Record-Setting Fourth Quarter Shipments Propel Worldwide Mobile Phones Past One Billion Unit Mark, Says IDC,” January 25, 2007, IDC. Available at http://www.idc.com/getdoc.jsp?containerId=pr2007_01_17_133455

¹⁸ Press Release, “Basel Conference Addresses Electronic Wastes Challenge.” November 27, 2006, United Nations Environment Programme (UNEP). Available at:

<http://www.unep.org/Documents/Multilingual/Default.asp?DocumentID=485&ArticleID=5431&l=en>

¹⁹ U.S. Geological Survey Fact Sheet 2006-3097: Recycled Cell Phones—A Treasure Trove of Valuable Metals, by Daniel E. Sullivan. Last accessed on the web on October 31, 2006 at <http://pubs.usgs.gov/fs/2006/3097/>

E-Waste Facts and Figures

units per year in 2009, with an estimated 2.6 billion cell phones in use by the end of that year.”¹⁹

Consumer Electronics Sales in General

US buys \$160 BILLION in consumer electronics

“Over 14 percent of the nearly \$160 billion spent on consumer electronics (CE) over the previous 12 months was spent online, up from 5 percent in 2005, according to a study released today by the Consumer Electronics Association (CEA).”²⁰

Worldwide consumers buy \$618 BILLION in consumer electronics annually.

Digital TV Conversion Statistics

Will there be an E-Waste Tsunami?

We believe a large numbers of TVs are being disposed of in conjunction with the digital conversion (now and in the future). Consumers have a lot of TVs in storage (not used, ready for disposal). Once the digital conversion happens, any expectations of someday reusing or donating these analog TVs will disappear, since few people will want analog TVs. Here are some statistics.

26.9 million televisions disposed in 2007

The EPA estimates that in 2007, we got rid of 26.9 million TVs – either by trashing or recycling them.²¹ That’s equivalent to 910,600 tons.

99 million TVs stockpiled

The EPA estimates that by the end of 2007, there were over 99 million TVs stockpiled or stored in the US.²²

Over 35% of US households are affected by digital transition

According to the federal Government Accountability Office, 15% of households rely solely on over the air TV signal – the signal that will be unavailable if you don’t have a digital TV or converter box. Another 21% of households have at least one TV that receives over the air signal.²³ With about 110 million households in the US, that means that approximately 40 million TVs may be affected.

How many TVs will be discarded?

There is no good data available for this question. We estimate tens of millions, but have no exact number.

²⁰ Consumer Electronics Association Press Release, Nov 16, 2007.

http://www.ce.org/Press/CurrentNews/press_release_detail.asp?id=11404

²¹ “Electronic Waste Management in the United States, Approach 1” Table 3.1 EPA530-R-08-009 US Environmental Protection Agency, July 2008. <http://www.epa.gov/osw/conservation/materials/recycling/docs/app-1.pdf>

²² IBID. Page 25.

²³ Digital Television Transition. Testimony before the House Subcommittee on Telecommunications and the Internet, June 10, 2008. Mark Goldstein, Government Accountability Office (GAO). P11 <http://www.gao.gov/new.items/d08881t.pdf>

Resource Recovery from Recycling Electronics

Gold recovery from e-waste recycling

“One metric ton (t) of electronic scrap from personal computers (PC’s) contains more gold than that recovered from 17 t of gold ore. In 1998, the amount of gold recovered from electronic scrap in the United States was equivalent to that recovered from more than 2 million metric tons (Mt) of gold ore and waste.”²⁴

Resources Used in Electronics Manufacturing

To manufacture one computer and monitor, it takes 530 pounds of fossil fuels, 48 pounds of chemicals, and 1.5 tons of water.

“Finally, the production of electric and electronic devices is a very resource-intensive activity. The environmental burden due to the production of electrical and electronic products (“ecological baggage”) exceeds by far the one due to the production of other household materials. A UN study found that the manufacturing of a computer and its screen takes at least 240 kg (530 pounds) of fossil fuels, 22 kg (48 pounds) of chemicals and 1.5 tonnes of water - more than the weight of a rhinoceros or a car (Kuehr and Williams, 2003).”²⁵

Jobs and Reuse

Reuse Creates More Jobs

Compared to disposal, computer reuse creates 296 more jobs per for every 10,000 tons of material disposed each year.²⁶

²⁴ USGS Fact Sheet FS-060-01 July 2001. <http://pubs.usgs.gov/fs/fs060-01/>

²⁵ “E-waste, the hidden side of IT equipment’s manufacturing and use,” Environment Alert Bulletin, United Nations Environment Programme, January 2005. Available at: http://www.grid.unep.ch/product/publication/download/ew_ewaste.en.pdf
Quote references a compilation called, “Computers and the Environment. Understanding and managing their impact.” Eric Williams and Ruediger Kuehr, Editors, United Nations University, October 2003.

²⁶ Institute For Local Self Reliance, “Recycling Means Business,” 1997. <http://www.ilsr.org/recycling/recyclingmeansbusiness.html>