

PC Disposition Model

Model adapted from Matthews HS, McMichael FC, Hendrickson CT & Hart DJ (1997) *Disposition and End-of-Life Options for Personal Computers*, Carnegie Mellon University, Pittsburgh.
 Values for Australian conditions adapted from Göi Ö, Heidenrich C & Nafalski A (2000) *Waste from Electrical and Electronic Equipment: a South Australian Perspective* and estimates by industry stakeholders
 SA Environment Protection Authority, Dept for Environment & Heritage, Adelaide.

General Parameters	Units	Value
Original Lifetime of PC	years	3

Parameters for Obsolete Machines

% Obsolete Reused	percent	26
% Obsolete Recycled	percent	1.5
% Obsolete Stored	percent	69
% Obsolete Landfilled	percent	3.5

Parameters for Reused Machines

Lifetime of Reused PC	years	3
% Reused Recycled	percent	20
% Reused Stored	percent	50
% Reused Landfilled	percent	30

Parameters for Stored (Stockpiled) Machines

Time Stockpiled	years	3
% Stored Recycled	percent	20
% Stored Landfilled	percent	80

Market forecasts based on IDC market analysis
 Values in red have been interpolated from average annual growth 1994-2005

"Reused" = Reused, refurbished, resold and/or reassigned
 "Stockpiled" = Stored and/or not used
 "Recycled" = Disassembly and raw material extraction
 Assumption: 10% of recyclable material disposed to landfill

Landfill / Dimension Assumptions

Typical Desktop PC

Weight	23.00	kg
Volume	0.100	cu mtrs

Typical Notebook Computer

Weight	3.50	kg
Volume	0.005	cu mtrs

Weighted Average Computer (80/20)

Weight	19.10	kg
Volume	0.081	cu mtrs

Year	FATE OF OBSOLETE PCs				FATE OF REUSED PCs			FATE OF STORED PCs		ANNUAL TOTALS					LANDFILL VOLUMES (m ³)				
	Sales Of New PCs	Obsolete PCs	Reused	Recycled	Stored	Landfilled	Recycled	Stored	Landfilled	Recycled	Landfilled	Recycled	Landfilled	Stored	In Storage	Available For Takeback	From Landfilled	From Recycled	Total
1980	497,071	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1981	525,919	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1982	556,441	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1983	588,734	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1984	622,902	525,919	136,739	7,889	362,884	18,407	-	-	-	-	-	7,889	18,407	362,884	362,884	381,291	1,490	64	1,554
1985	659,052	556,441	144,675	8,347	383,944	19,475	-	-	-	-	-	8,347	19,475	383,944	746,828	766,303	1,576	68	1,644
1986	697,301	588,734	153,071	8,831	406,227	20,606	-	-	-	-	-	8,831	20,606	406,227	1,153,054	1,173,660	1,668	71	1,739
1987	737,769	622,902	161,954	9,344	429,802	21,802	27,348	68,369	41,022	72,577	290,307	109,268	353,130	498,172	1,288,342	1,641,473	28,580	884	29,464
1988	780,586	659,052	171,354	9,886	454,746	23,067	28,935	72,337	43,402	76,789	307,155	115,610	373,624	527,083	1,431,482	1,805,106	30,239	936	31,174
1989	825,888	697,301	181,298	10,460	481,138	24,406	30,614	76,535	45,921	81,245	324,981	122,319	395,308	557,673	1,582,928	1,978,236	31,994	990	32,984
1990	873,819	737,769	191,820	11,067	509,061	25,822	32,391	80,977	48,586	99,634	398,537	143,092	472,946	590,038	1,674,794	2,147,740	38,277	1,158	39,435
1991	924,532	780,586	202,952	11,709	538,604	27,321	34,271	85,677	51,406	105,417	421,667	151,396	500,393	624,281	1,771,992	2,272,386	40,498	1,225	41,724
1992	978,188	825,888	214,731	12,388	569,863	28,906	36,260	90,649	54,389	111,535	446,138	160,183	529,434	660,512	1,874,831	2,404,265	42,849	1,296	44,145
1993	1,034,957	873,819	227,193	13,107	602,935	30,584	38,364	95,910	57,546	118,008	472,030	169,479	560,160	698,845	1,983,638	2,543,798	45,336	1,372	46,707
1994	1,095,022	924,532	240,378	13,868	637,927	32,359	40,590	101,476	60,886	124,856	499,425	179,315	592,669	739,403	2,098,760	2,691,430	47,967	1,451	49,418
1995	1,214,740	978,188	254,329	14,673	674,949	34,237	42,946	107,365	64,419	132,102	528,410	189,721	627,065	782,315	2,220,563	2,847,629	50,750	1,535	52,286
1996	1,393,611	1,034,957	269,089	15,524	714,121	36,224	45,439	113,596	68,158	139,769	559,076	200,732	663,458	827,717	2,349,435	3,012,893	53,696	1,625	55,320
1997	1,519,870	1,095,022	284,706	16,425	755,565	38,326	48,076	120,189	72,113	147,881	591,523	212,382	701,962	875,754	2,485,786	3,187,748	56,812	1,719	58,531
1998	1,700,065	1,214,740	315,832	18,221	838,171	42,516	50,866	127,164	76,299	156,463	625,852	225,550	744,666	965,335	2,668,806	3,413,473	60,268	1,825	62,094
1999	2,098,001	1,393,611	362,339	20,904	961,592	48,776	53,818	134,544	80,727	165,543	662,174	240,265	791,677	1,096,136	2,937,225	3,728,902	64,073	1,945	66,018
2000	2,219,760	1,519,870	395,166	22,798	1,048,710	53,195	56,941	142,353	85,412	175,151	700,603	254,890	839,211	1,191,063	3,252,534	4,091,745	67,920	2,063	69,983
2001	2,160,000	1,700,065	442,017	25,501	1,173,045	59,502	63,166	157,916	94,750	193,067	772,268	281,734	926,520	1,330,961	3,618,160	4,544,680	74,986	2,280	77,267
2002	2,150,000	2,098,001	545,480	31,470	1,447,621	73,430	72,468	181,169	108,702	219,227	876,909	323,165	1,059,041	1,628,790	4,150,814	5,209,855	85,712	2,615	88,327
2003	2,180,000	2,219,760	577,138	33,296	1,531,634	77,692	79,033	197,583	118,550	238,213	952,851	350,542	1,149,092	1,729,218	4,688,969	5,838,061	93,000	2,837	95,837
2004	2,200,000	2,160,000	561,600	32,400	1,490,400	75,600	88,403	221,008	132,605	266,192	1,064,769	386,996	1,272,974	1,711,408	5,069,416	6,342,390	103,026	3,132	106,158
2005	2,210,000	2,150,000	559,000	32,250	1,483,500	75,250	109,096	272,740	163,644	325,758	1,303,032	467,104	1,541,926	1,756,240	5,196,866	6,738,792	124,793	3,780	128,574
2006	2,220,000	2,180,000	566,800	32,700	1,504,200	76,300	115,428	288,569	173,141	345,844	1,383,374	493,971	1,632,815	1,792,769	5,260,417	6,893,233	132,149	3,998	136,147
2007	2,230,000	2,200,000	572,000	33,000	1,518,000	77,000	112,320	280,800	168,480	342,282	1,369,127	487,602	1,614,607	1,798,800	5,347,809	6,962,416	130,676	3,946	134,622
2008	2,250,000	2,210,000	574,600	33,150	1,524,900	77,350	111,800	279,500	167,700	351,248	1,404,992	496,198	1,650,042	1,804,400	5,395,969	7,046,011	133,543	4,016	137,559
2009	2,260,000	2,220,000	577,200	33,300	1,531,800	77,700	113,360	283,400	170,040	358,554	1,434,215	505,214	1,681,955	1,815,200	5,418,400	7,100,355	136,126	4,089	140,215
2010	2,275,000	2,230,000	579,800	33,450	1,538,700	78,050	114,400	286,000	171,600	359,760	1,439,040	507,610	1,688,690	1,824,700	5,444,300	7,132,990	136,671	4,108	140,780
2011	2,290,000	2,250,000	585,000	33,750	1,552,500	78,750	114,920	287,300	172,380	360,880	1,443,520	509,550	1,694,650	1,839,800	5,479,700	7,174,350	137,154	4,124	141,278
TOTALS	45,969,228			579,707		1,352,650	1,661,252	2,491,878		20,271,975	7,308,953		24,116,504				1,951,829	59,154	2,010,983

Worktable: Estimated & actual shipments

Year	Total PC shipments	Growth
1980	497,071	
1981	525,919	
1982	556,441	
1983	588,734	
1984	622,902	
1985	659,052	
1986	697,301	
1987	737,769	
1988	780,586	
1989	825,888	
1990	873,819	
1991	924,532	
1992	978,188	
1993	1,034,957	
1994	1,095,022	-
1995	1,214,740	9.9%
1996	1,393,611	12.8%
1997	1,519,870	8.3%
1998	1,700,065	10.6%
1999	2,098,001	19.0%
2000	2,219,760	5.5%
2001	2,160,000	-2.8%
2002	2,150,000	-0.5%
2003	2,180,000	1.4%
2004	2,200,000	0.9%
2005	2,210,000	0.5%
2006	2,220,000	0.5%
2007	2,230,000	0.4%
2008	2,250,000	0.9%
2009	2,260,000	0.4%
2010	2,275,000	0.7%
2011	2,290,000	0.7%
Median		5%
Average		6%

Worktable 2 Average market share of desktop and laptop form factors

Year	Desktops	Laptops	Both forms	Desktops	Laptops
1994	924,598	156,881	1,081,479	85%	15%
1995	1,014,450	182,800	1,197,250	85%	15%
1996	1,141,006	229,375	1,370,381	83%	17%
1997	1,243,781	245,006	1,488,787	84%	16%
1998	1,390,974	265,583	1,656,557	84%	16%
1999	1,722,769	318,772	2,041,541	84%	16%
2000	1,764,595	401,440	2,166,035	81%	19%
2001	1,749,600	414,054	2,160,000	81%	19%
2002	1,763,000	387,000	2,150,000	82%	18%
2003	1,787,600	392,400	2,180,000	82%	18%
2004	1,804,000	396,000	2,200,000	82%	18%
2005	1,812,200	397,800	2,210,000	82%	18%
2006	1,820,400	399,600	2,220,000	82%	18%
2007	1,828,600	401,400	2,230,000	82%	18%
2008	1,845,000	405,000	2,250,000	82%	18%
2009	1,853,200	406,800	2,260,000	82%	18%
2010	1,865,500	409,500	2,275,000	82%	18%
2011	1,877,800	412,200	2,290,000	82%	18%
Average				83%	17%