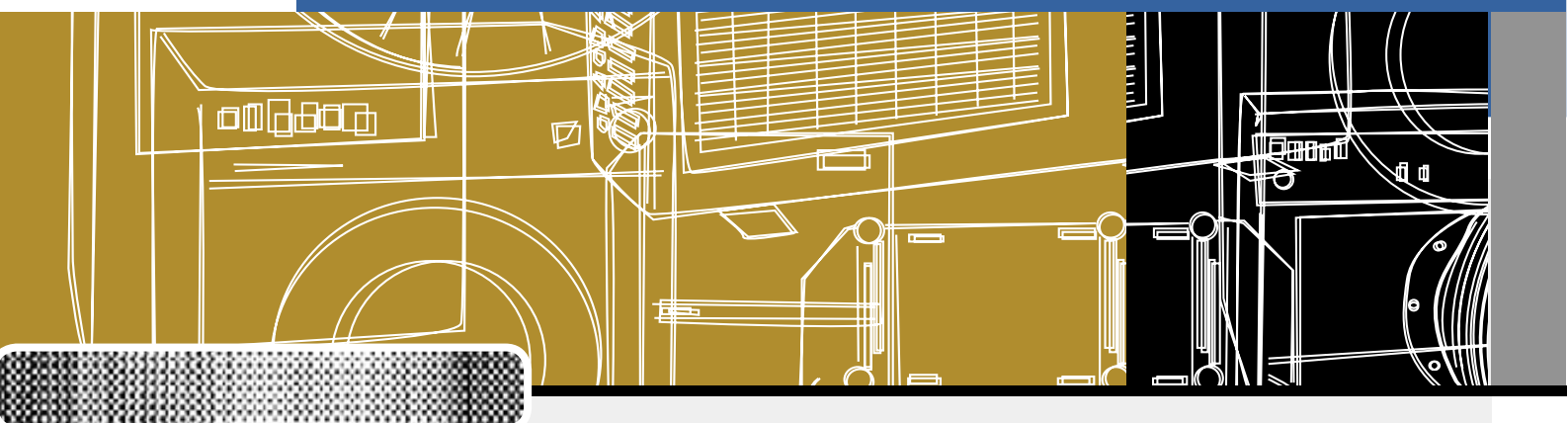


*NATIONAL APPLIANCE AND EQUIPMENT ENERGY EFFICIENCY PROGRAM*

*APPLIANCE STANDBY POWER CONSUMPTION  
STORE SURVEY 2005/2006 - INTERIM REPORT*



JANUARY 2006

AN INITIATIVE OF THE MINISTERIAL COUNCIL ON ENERGY FORMING PART OF THE  
AUSTRALIAN NATIONAL FRAMEWORK FOR ENERGY EFFICIENCY AND  
THE NEW ZEALAND NATIONAL ENERGY EFFICIENCY AND CONSERVATION STRATEGY

# APPLIANCE STANDBY POWER CONSUMPTION: STORE SURVEY 2005/2006 INTERIM REPORT

A project for the Equipment Energy Efficiency (E<sub>3</sub>) Committee

Prepared by EnergyConsult, January 2006

## Overview

This Interim report summarises the results of the in-store standby measurements for some 568 new household appliances that were undertaken in November 2005. This survey constitutes the first half of measurements; the second half of the study is to be completed in May 2006, which will result in a comprehensive report. The current results are summarised by product group and are compared with readings undertaken since 2001 in five similar surveys. These six in-store surveys are part of a long term benchmarking program. It is proposed that the survey process will continue to assess industry progress in reducing standby consumption of appliances.

## Background

In 2000 the Australian Greenhouse Office (AGO) and the National Appliance & Equipment Energy Efficiency Committee<sup>1</sup> (NAEEEC) commissioned the report, *Quantification of Residential Standby Power Consumption in Australia* (Energy Efficient Strategies and EnergyConsult, 2001). This study provides results of an intrusive survey where measurements on 2,500 appliances were undertaken in 64 houses in Melbourne, Sydney and Brisbane. The report also includes results of measurements on 531 new appliances in retail outlets and results of a telephone survey of 801 households in Australia, which documents information on appliance ownership, age and usage patterns. This research revealed that 11.6% of Australia's household electricity consumption is attributed to energy used by appliances and electronic equipment when not performing their primary function (this figure includes some small continuous loads not traditionally classified as "standby"). This "standby" consumption was estimated in 2000 to be costing Australians more than \$500 million per year and generating more than 5 million tonnes of carbon dioxide per annum.

Following the 2000 study, four follow-up store surveys of new appliances have been conducted. The reports titled *Appliance Standby Power Consumption: Store Survey (2002, 2003, 2003/04 & 2004/05)* (Energy Efficient Strategies and EnergyConsult) have measured in excess of 3,500 appliances. This data has been compared with the information recorded in the 2001 report, finding that while there appeared to be a slight decrease in standby power consumption overall, a large proportion of products still consumed more than 1 W in standby and off modes.

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<sup>1</sup> The National Appliance and Equipment Energy Efficiency Committee (NAEEEC) was changed to the Equipment Energy Efficiency (E<sub>3</sub>) Committee in early 2006

## **Objectives of this Study**

The AGO and E<sub>3</sub> commissioned this survey as part of the monitoring of its program to reduce the standby consumption of all electronic appliances to less than 1W. The main objectives of this survey were to:

- Quantify the magnitude of electricity used in standby mode by new appliances offered for sale in the Australian market during the 2005/2006 Financial Year.
- Compare the results from this study with the results of similar studies undertaken in 2001, 2002, 2003, 2003/04 and 2004/05 in order to track the industry's progress in reducing standby power consumption.

Similar studies are proposed in future years to assess progress towards the 1 Watt target.

## **Research Methods**

Four major Melbourne retail stores were approached to take part in the study, in which power measurements on a large range of appliances were undertaken on the shop floor. An accurate metering device was systematically used to measure display stock across 32 appliance types. Power consumption was measured in watts for a range of modes including "in use", "passive and/or active standby" "delay Start" and "off mode", where applicable (only certain modes were measured for each appliance group). Other information recorded included brand, model, power factor, current, crest factor and supply voltage. These results were compared with outcomes from the previous in-store surveys.

For the purposes of this report, "standby" is a general term which refers to the power consumption of a product or appliance that is connected to a power source but does not produce any sound or picture, transmit or receive information or is waiting to be switched "on" by a direct or indirect signal from the consumer. This includes the "off" mode, even where there is no remote control. Unqualified use of the term standby generally means the lowest power consumption when connected to the mains.

A new test method for televisions is currently being developed and as such for the first time this product group was not measured in the store survey. Televisions will be measured in store once the method for testing is agreed to.

The method for calculating average active standby across all product groups was altered for the 2004/05 survey. Historically AV receivers were removed from this calculation as they had significantly higher consumption in this mode than other products and as such distorted the overall results. However due to the dramatic increase in recent years of Home Theatre Products, which generally have high active standby results, to remove the products would cause a greater distortion of the average active standby results. The historical data since 2004/05 differs with those in earlier studies as it has been altered to include all home theatre products that were previously excluded.

## Key Findings

- *All Standby Modes appear to be stable.*

When all products measured in the November 2005 survey are analysed as one group and compared to 2001 data, a statistically significant<sup>2</sup> decline in average consumption was evident for passive, while a significant increase was noted for active standby. For passive standby, the decline in average consumption was significant between 2001 and January 2003 and has remained stable since. Active standby experienced a significant increase in 2002 however this was not sustained in 2003. Since that time however each survey has shown active standby to be statistically significantly greater than the 2001 level, recording similar results to the 2002 survey. Off mode consumption declined significantly from 2001 to 2002 and remained stable in the following surveys. However, interim results reveal off mode consumption has increased back to 2001 levels in 2005. This is a statistically significant increase from the results gained in recent surveys. However, this result is likely to have been affected by the types of products measured in the survey. For example the exclusion of televisions which usually make up a high proportion of products and mostly have no consumption in off mode, would have increased the average off mode consumption overall. Delay start has remained stable for the three years it has been recorded the differences on average consumption having no statistical significance.

It should be noted that the number and mix of products measured in each year of the survey were somewhat different so the results need to be taken as indicative and trends within each product need to be examined separately. Table 1 below summarises the results while Figure 1 graphs average consumption.

Table 1 – Summary of average consumption across all products

	2001	2002	Jan 2003	2003/04	2004/05	Nov 2005
Total readings off	258	380	330	925	782	296
Average off	1.3W	0.8W	0.9W	0.8W	0.7W	1.1W
Total readings passive	440	397	325	682	737	295
Average passive	5.8W	4.1W	3.4W	3.6W	3.7W	3.9W
Total readings active	101	210	216	527	665	333
Average active	11.4W	15.6W	13.9W	14.3W	15.2W	14.7W
Total readings delay start				71	51	28
Average delay start				4.1W	3.5W	4.1W
Total products measured	531	635	573	1431	1313	568

<sup>2</sup> Significant at 95%

Figure 1 – Summary of average consumption across all products

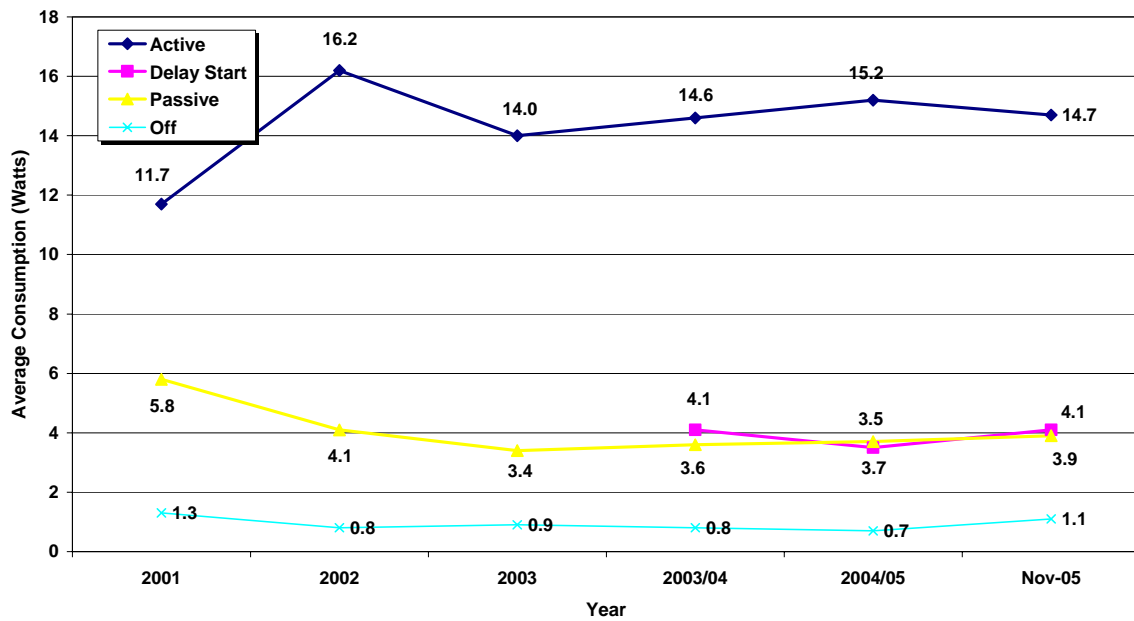
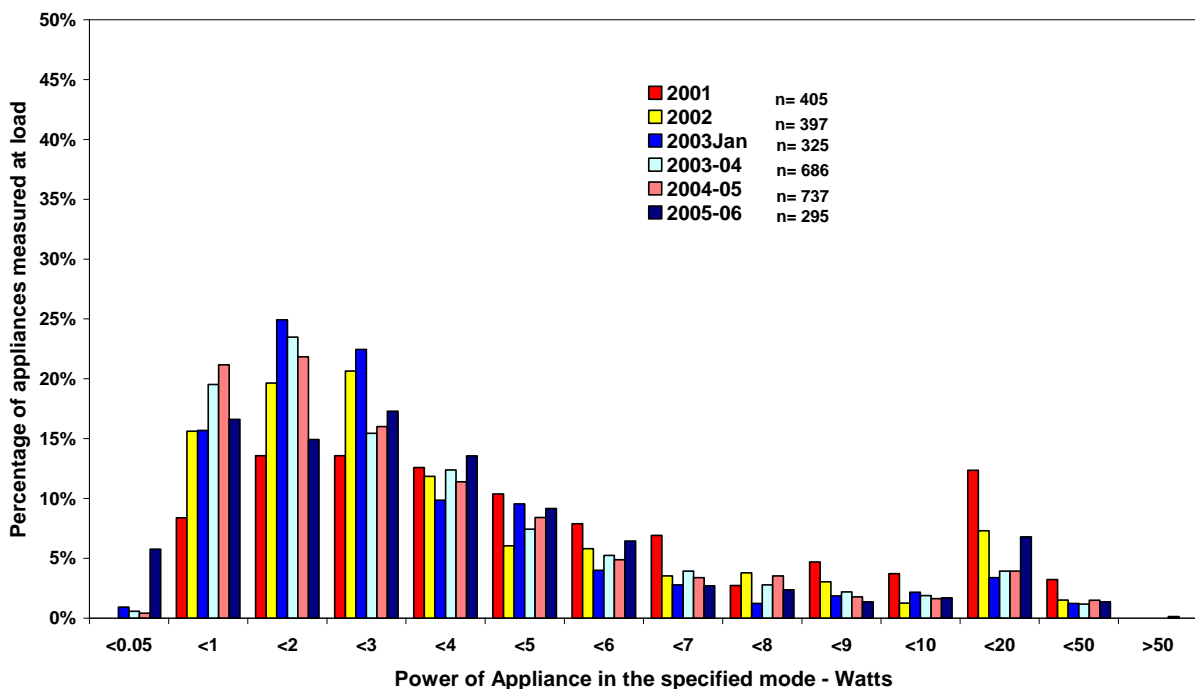


Figure 2 below shows the distribution of measurements taken for all products in passive standby mode. All six years of data are presented on the graph. The graph clearly shows that the distribution of measurements since 2001 has shifted from the higher end (greater than 3W) to measurements less than 3W. In 2001, 35% of all measurements taken in passive standby were less than 3W, while in November 2005, 55% of measurements were recorded under 3W. The latest results show 23% of appliances are now less than 1W in passive standby compared with only 8% in 2001. The change in distribution further supports that passive standby has declined in the appliances measured since 2001.

Figure 2: Distribution of “passive standby mode” power – all products



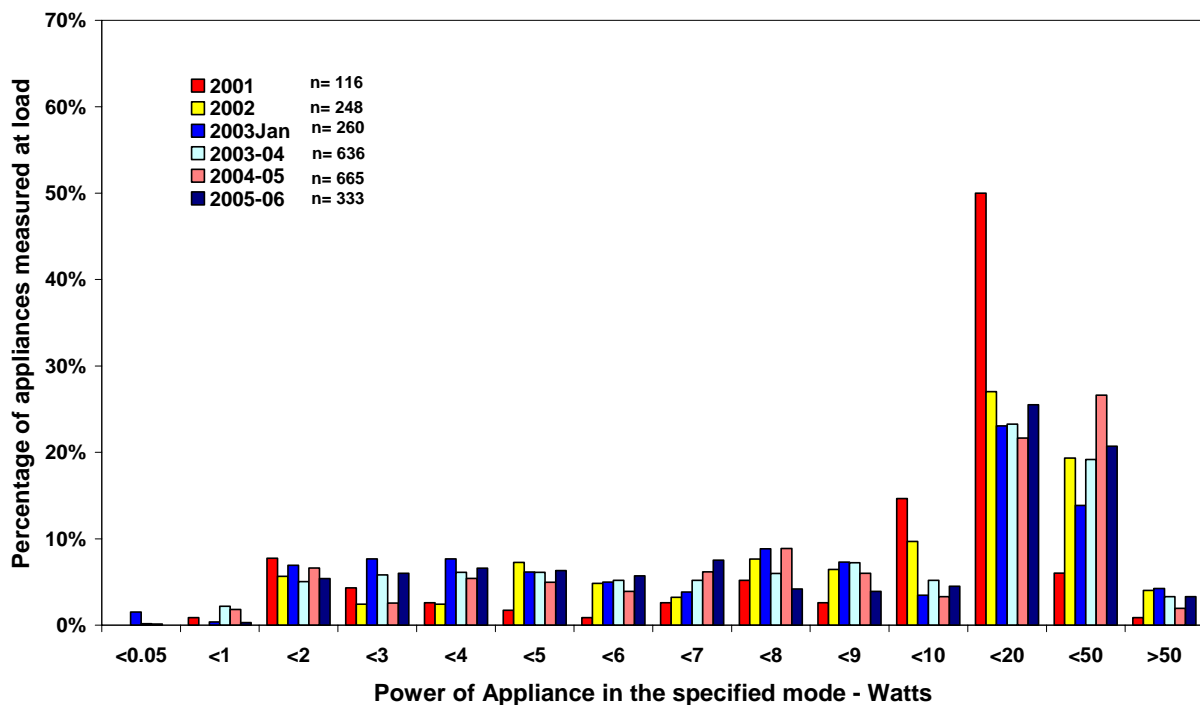
- **The proportion of appliances with active standby consumption appears to be continuing to increase.**

Only 21% of appliances measured in 2001 had an active standby reading. This figure has steadily increased over the years with 58.6% of appliances in the 2005 survey now recording an active standby measurement. This is likely to be due to the increase in the number of home entertainment products available and an increase in the number of white goods using an on/off switch rather than manual dial controls. In 2005 nearly 80% of white goods had an on/off switch compared with 30% in 2003.

- **Most products still consume more than 20W in active standby.**

Active standby measurements have increased across the board since 2001. Fifty percent of active standby readings were greater than 20W in 2005. This represents a significant increase from the 2001 survey. However, the 2005 was consistent with the 2004/05 results putting a halt result did no reflect the continual increase that has been observed since 2003, being. Figure 3 presents the active mode results for the last six surveys.

Figure 3: Distribution of “active mode” power – all products



- **Results indicate that there is an opportunity for many appliances to improve energy consumption in standby and off modes.**

For the products measured, there was generally a wide variance in power consumption in off mode and passive standby mode without any difference in performance or functionality between these products. This tends to suggest that there are substantial opportunities for manufacturers to reduce standby power consumption, probably at low marginal cost.

## Overall results - summary

The power consumption of 568 appliances was measured in four retail stores in November 2005 in Melbourne, Australia. Table 2 provides a summary of the average active/passive standby, off and delay start readings (as applicable) for each of the appliance groups measured.

Table 2 – A summary of power measurements by appliance – 2005 survey

Appliance	Total Number of Appliances	Valid Readings: Off	Average of Off Power (W)	Valid Readings: Passive Standby	Average of Passive Standby Power (W)	Valid Readings: Active Standby	Average of Active Standby Power (W)	Valid Readings: Delay Start	Average of Delay Start Power (W)
Air Conditioner	33	18	0.2	17	1.6			1	3.0
AV Receiver	27	5	0.4	26	1.7	27	47.2		
Breadmaker	12					12	1.8		
Computers - Box	7	7	1.5	2	4.2				
Computers - Home Theatre Box	2	2	4.8	2	5.4				
Computers - Monitor	27	27	0.9						
Computers - Speakers	6	6	4.2			6	7.5		
Dishwasher	10	10	0.0			9	1.9	5	2.3
Dryer	8	8	0.3			2	3.1	1	3.8
DVD player	46	8	0.0	43	2.2	46	8.7		
DVD Recorder	18			18	7.8	18	21.4		
Espresso Machine	19	19	1.3	2	3.9				
Fan	22	20	0.1	2	0.4				
Gas Water Heaters	3			3	7.6				
Hand-held Vac	7			7	1.2	7	4.8		
Hard Disk Recorder	21			20	6.1	21	27.8		
Heater - Electric Portable	18	18	0.4						
Home Entertainment Other	2	2	2.4			2	25.1		
Home Theatre System	20	4	0.0	16	3.0	20	23.2		
Juicer	23	23	0.4						

Microwave	43			43	3.2		
Multi Function Device	20	10	4.1			20	8.2
Printer - Inkjet	16	16	0.9	14	3.4		
Printer - Laser	5	5	0.0	5	7.7		
Set Top Box	24	6	0.0	23	9.5	24	13.2
Stereo Component	8	6	1.5	3	5.0	8	15.4
Stereo - Integrated	30	6	3.6	25	3.6	30	16.5
Stereo - Portable	22	6	1.6	19	2.6	18	7.2
Subwoofer	22	20	2.3	3	1.9	22	10.1
VCR	3			2	2.6	3	7.3
Washer/Dryer	4	4	2.7			4	5.3
Washing Machine	40	40	1.2			34	3.9
<b>Grand Total</b>	<b>568</b>	<b>296</b>	<b>1.1</b>	<b>295</b>	<b>3.9</b>	<b>333</b>	<b>14.7</b>
						<b>28</b>	<b>4.1</b>

Note: Blank cells indicate reading was not applicable to that product group.

Product Summaries, summarising key data and significant trends, are included below. Numbers in brackets indicate the sample size used to determine the average value. It should be noted that where samples are less than five, these products are not reported on below.

### Product Summaries– home entertainment

**DVD Players** Description: Digital Video Disk players (DVD).  
 Number of products measured in 2005: 46  
 Mode = off: average power 0W (8)  
 Mode = passive standby: average power 2.2W (43) 15 less than 1W  
 Mode = active standby: average power 8.7W (46)  
 Notes: All models with off mode recorded 0.0W in this mode. 6 units included a VCR

Figure 4 – Average Power Consumption of DVD Players in Passive Standby Mode

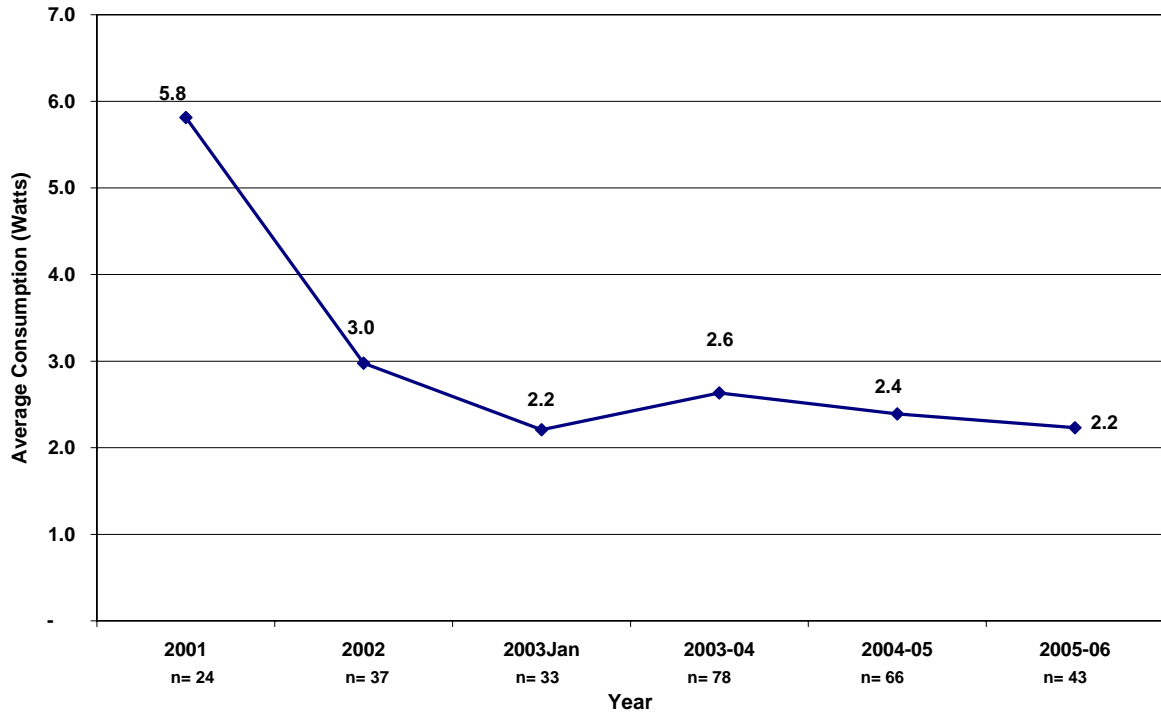


Figure 5 – Power Consumption of DVD Players in Passive Standby Mode

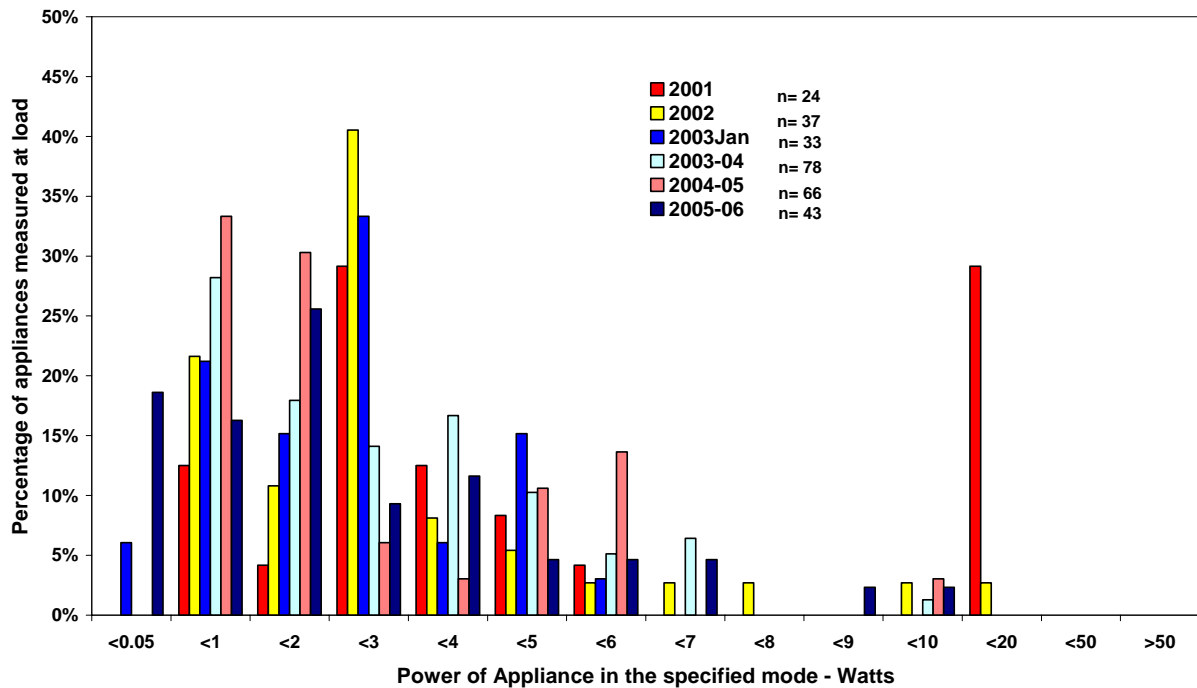


Figure 6 – Average Power Consumption of DVD Players in Active Standby Mode

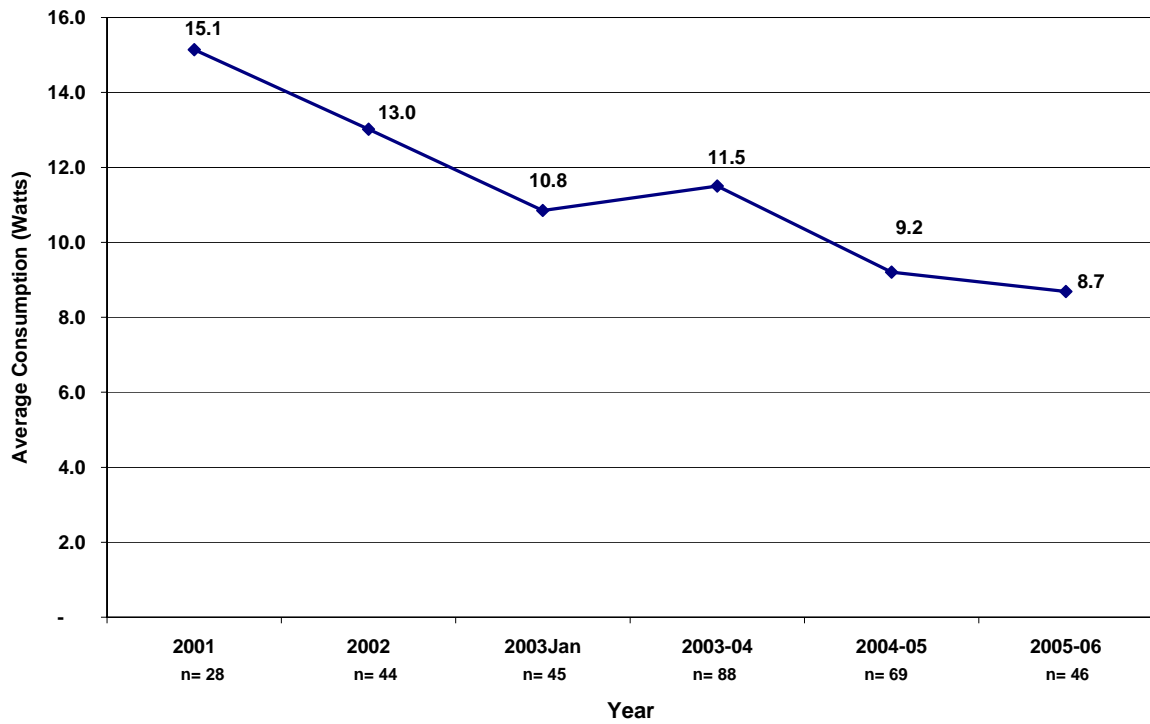
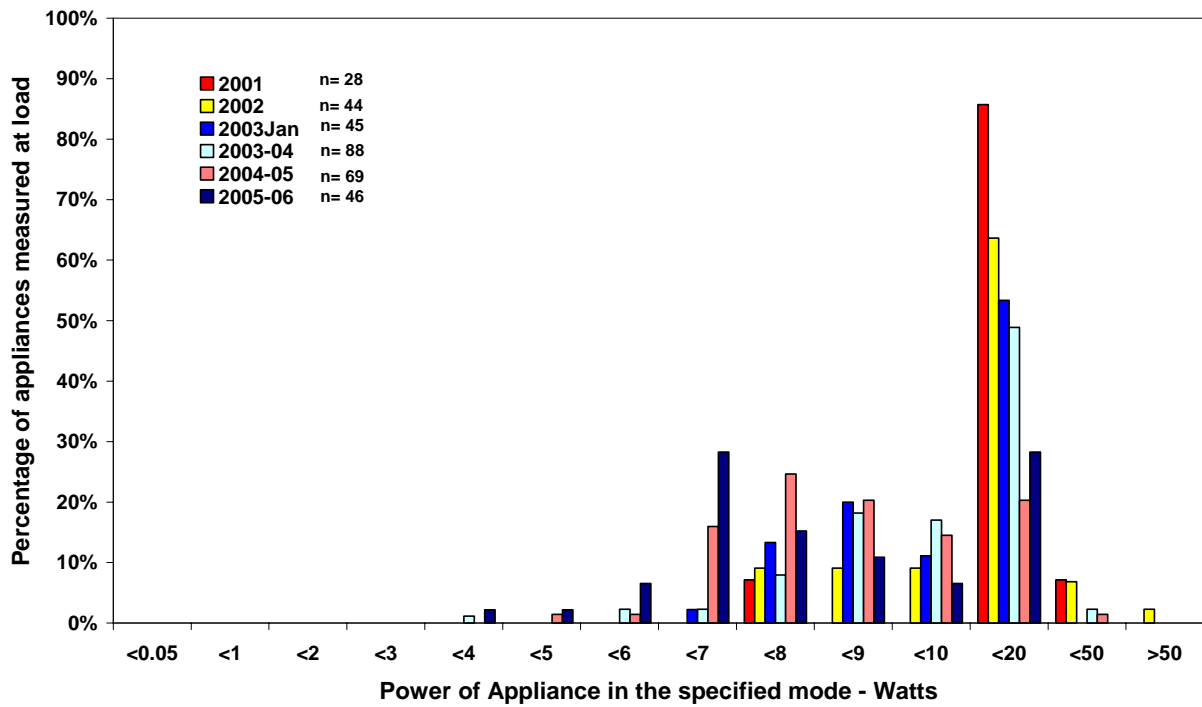


Figure 7 – Power Consumption of DVD Players in Active Standby Mode



**DVD Recorder** Description: Digital Video Disk players with recording capabilities (DVD).  
 Number of products measured in 2005: 18  
 Mode = passive standby: average power 7.8W (18) none less than 1W  
 Mode = active standby: average power 21.4W (18)  
 Notes: No models had off mode. 6 units included a VCR

Figure 8 – Power Consumption of DVD Recorders in Passive Standby Mode

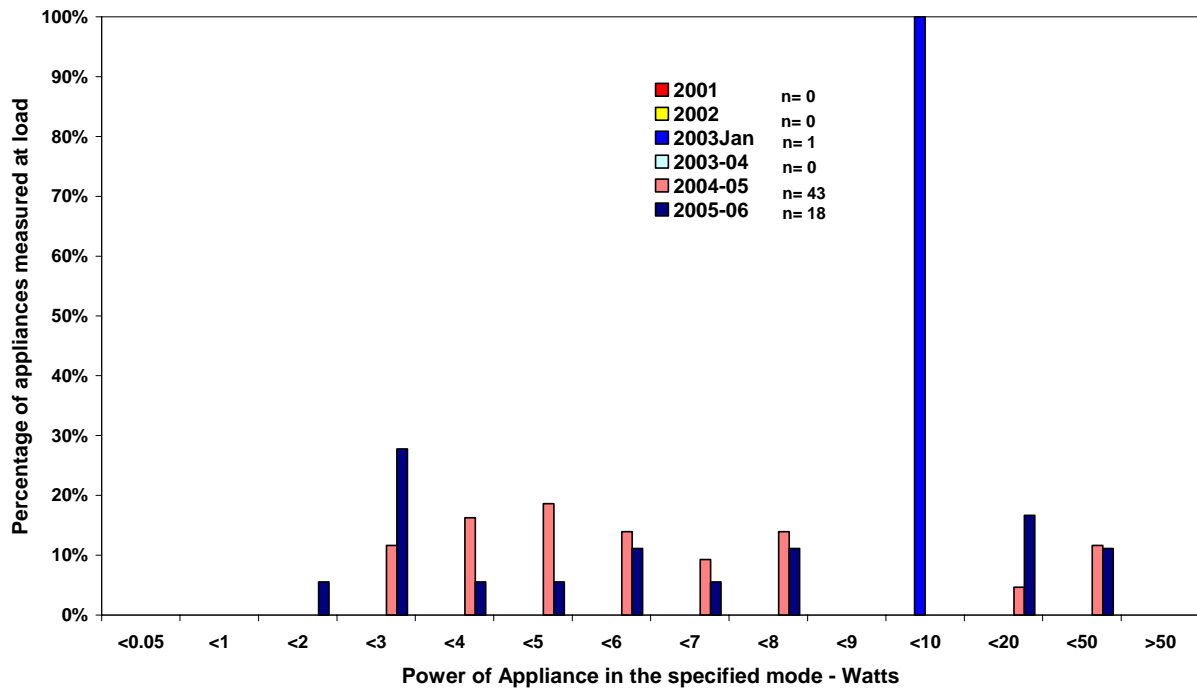
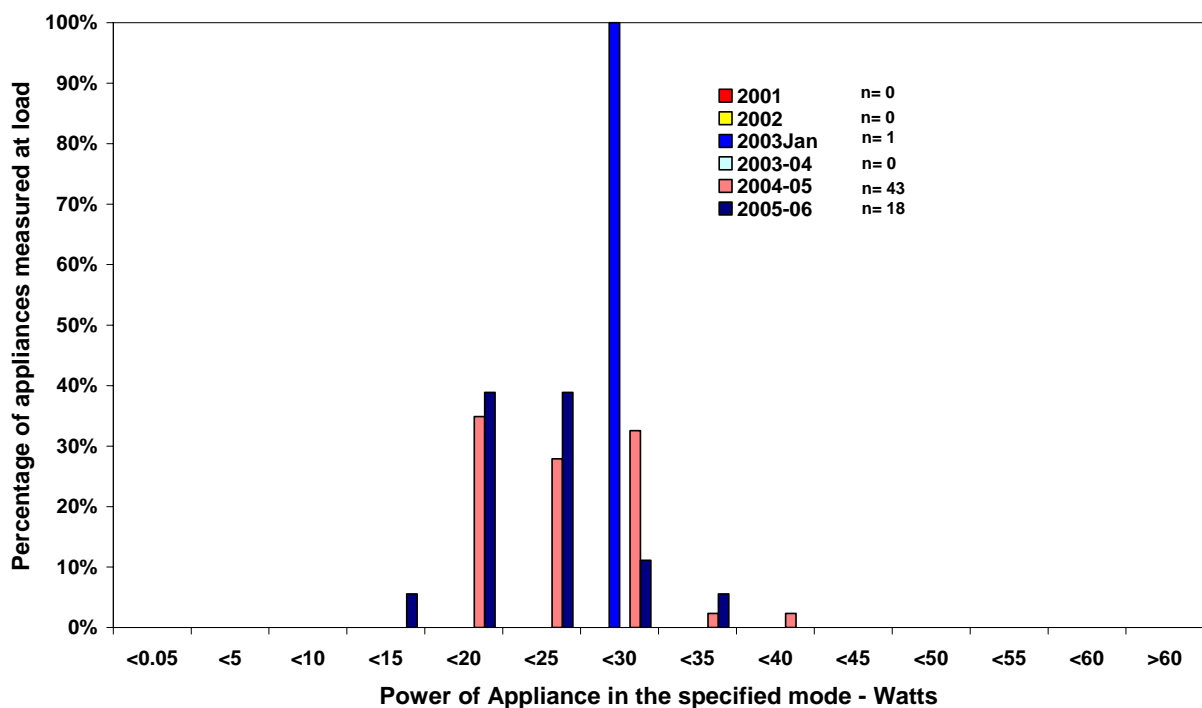


Figure 9 - Power Consumption of DVD Recorders in Active Standby Mode



**DVD/VCR Players** Notes: This product is now included in the DVD player category.

**Hard Disk Recorder** Description: Records video images onto a hard disk  
 Number of products measured in 2005: 21  
 Mode = passive standby: average power 6.1W (20), maximum 24.1W, none less than 1W  
 Mode = active standby: average power 27.8W (21), maximum 38.8W  
 Notes: None of the units measured had an off mode. Most units included DVDR function.

Figure 10 – Power Consumption of Hard Disk Recorders in Passive Standby Mode

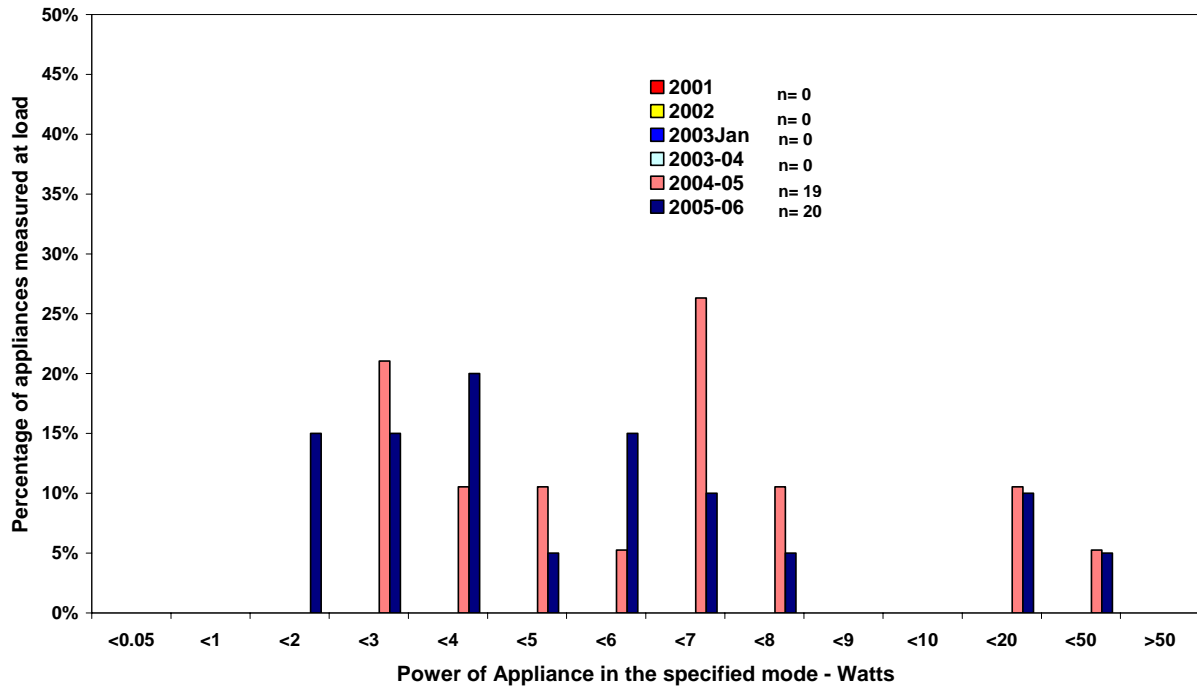
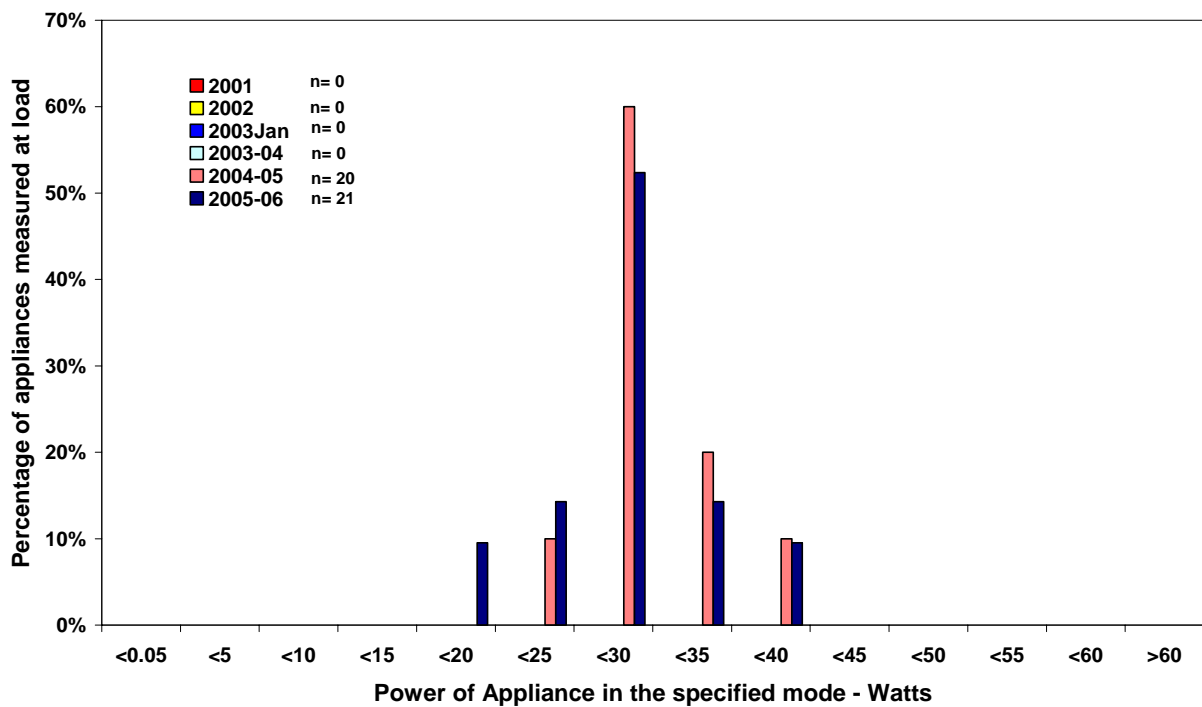


Figure 11 – Power Consumption of Hard Disk Recorders in Active Standby Mode



**VCRs**

*Description:* Conventional VHS video cassette recorders.

*Number of products measured in November 2005:* 3

*Mode = passive standby:* (2), 3.0W & 2.1W

*Mode = active standby:* (3) 8.5W, 7.8W & 5.5W.

*Notes:* None of the units measured had an off mode. This represents a considerable reduction in the number of VCR's available in stores.

Figure 12 – Average Power Consumption of VCRs in Passive Mode

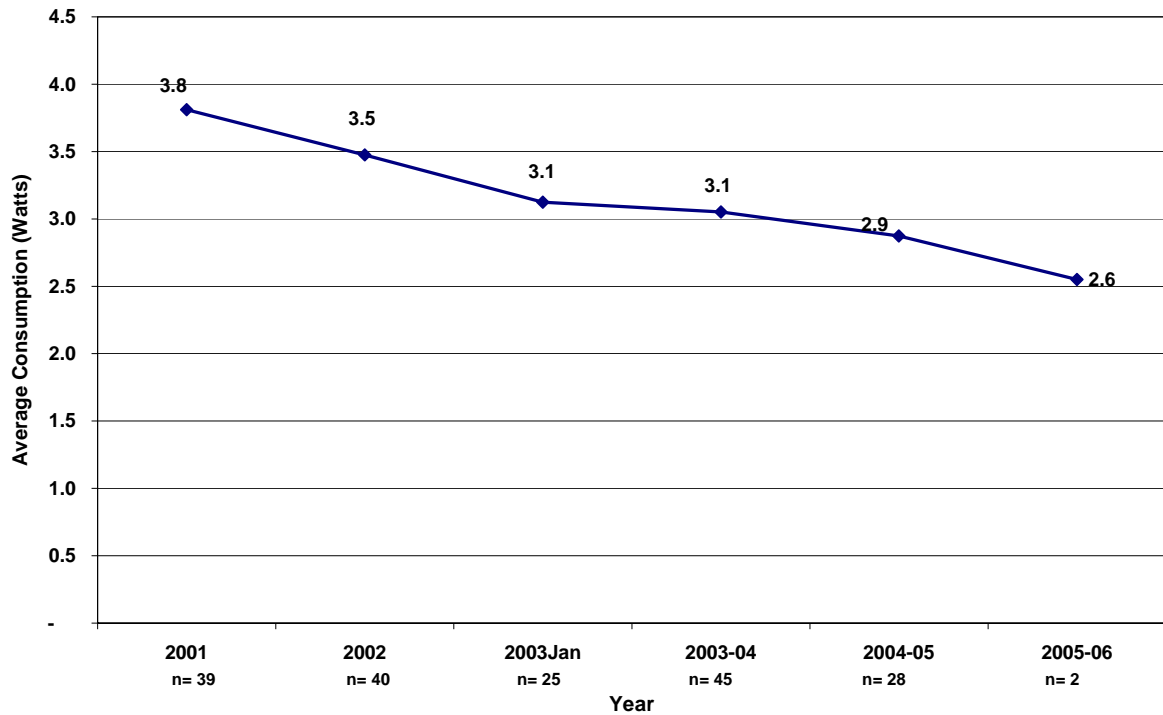


Figure 13 – Power Consumption of VCRs in Passive Mode

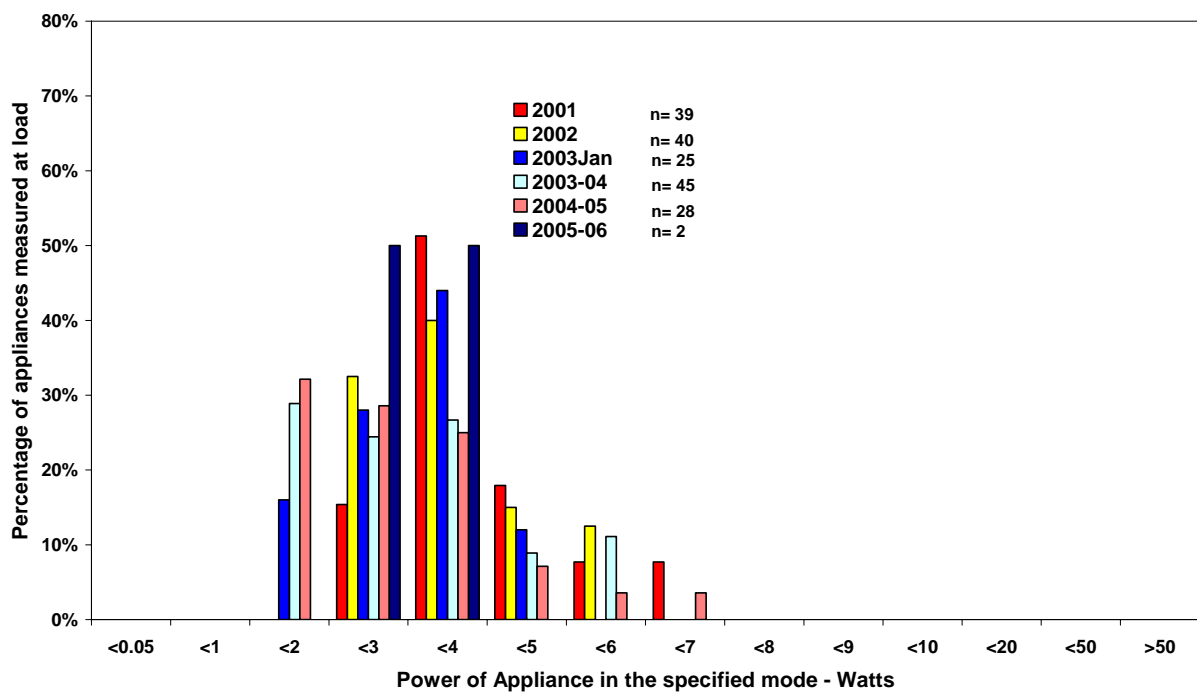


Figure 14 – Average Power Consumption of VCRs in Active Mode

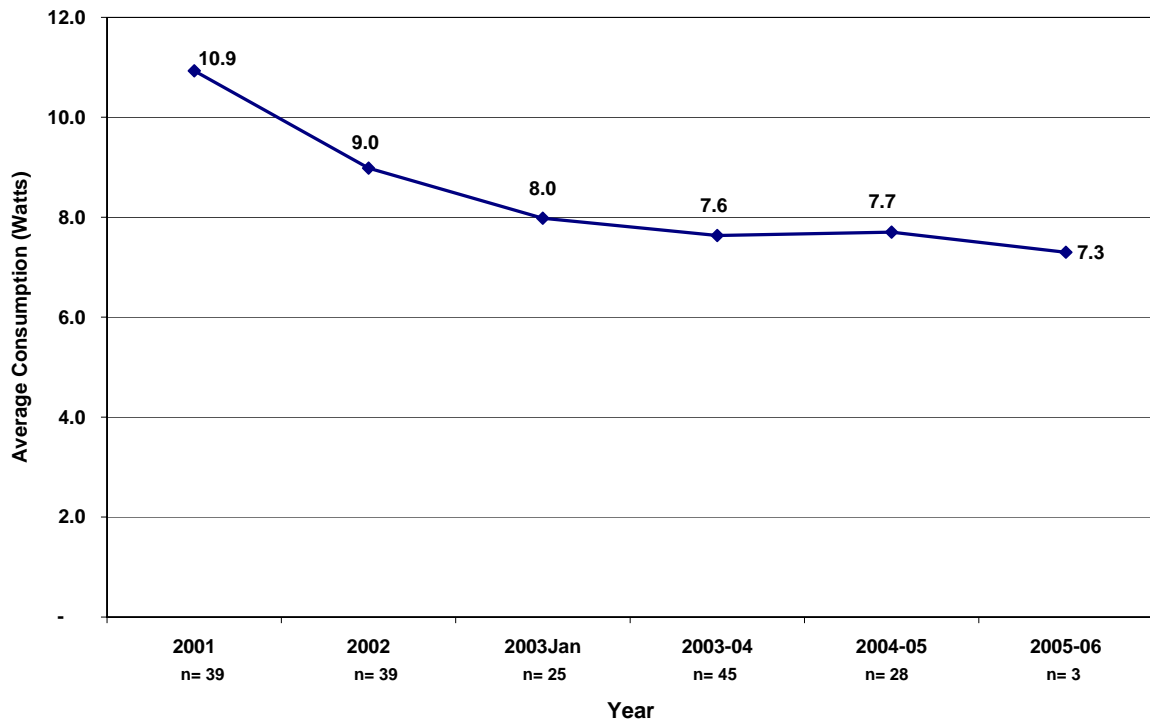
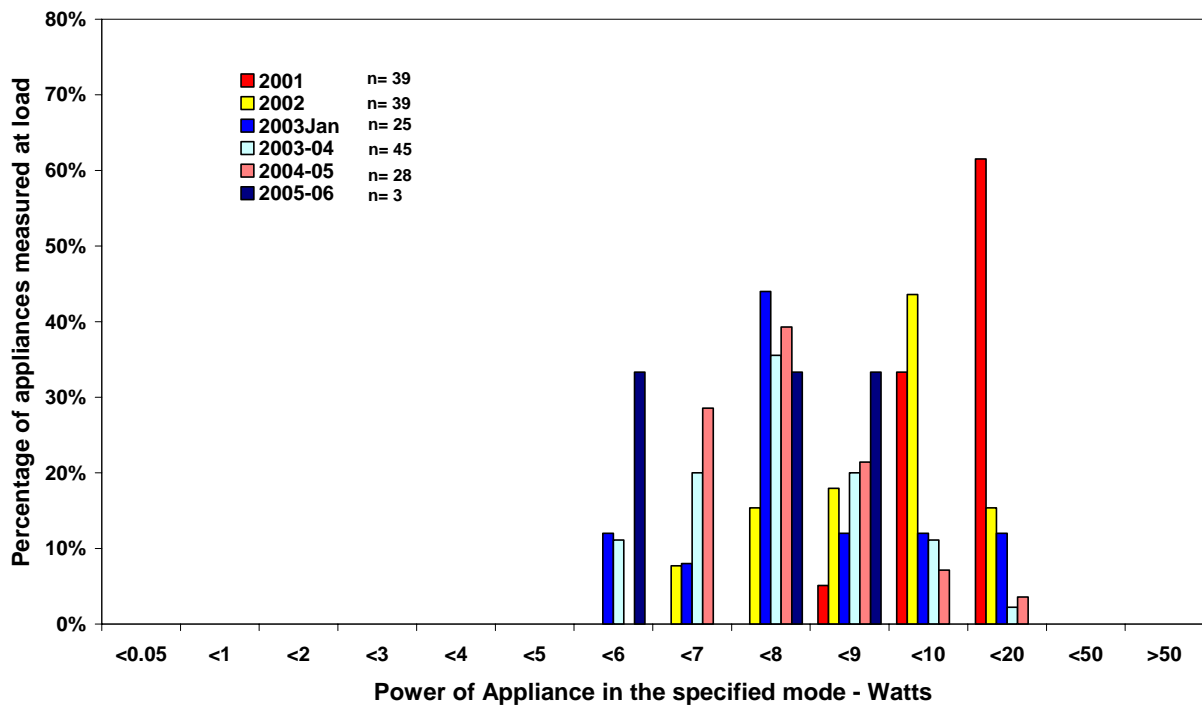


Figure 15 – Power Consumption of VCRs in Active Mode



**Stereos – Integrated** Description: Integrated stereo systems (CD/tape/tuner/amp, non portable).  
 Number of products measured in November 2005: 30  
 Mode = passive standby: average power 3.6W (25), maximum 17.8W.  
 Mode = active standby: average power 16.5W (30).  
 Mode = off mode: average power 3.6W (6).  
 Notes: Almost half use less than 1W in passive standby

Figure 16: Average Power Consumption of Integrated Stereos in Passive Mode

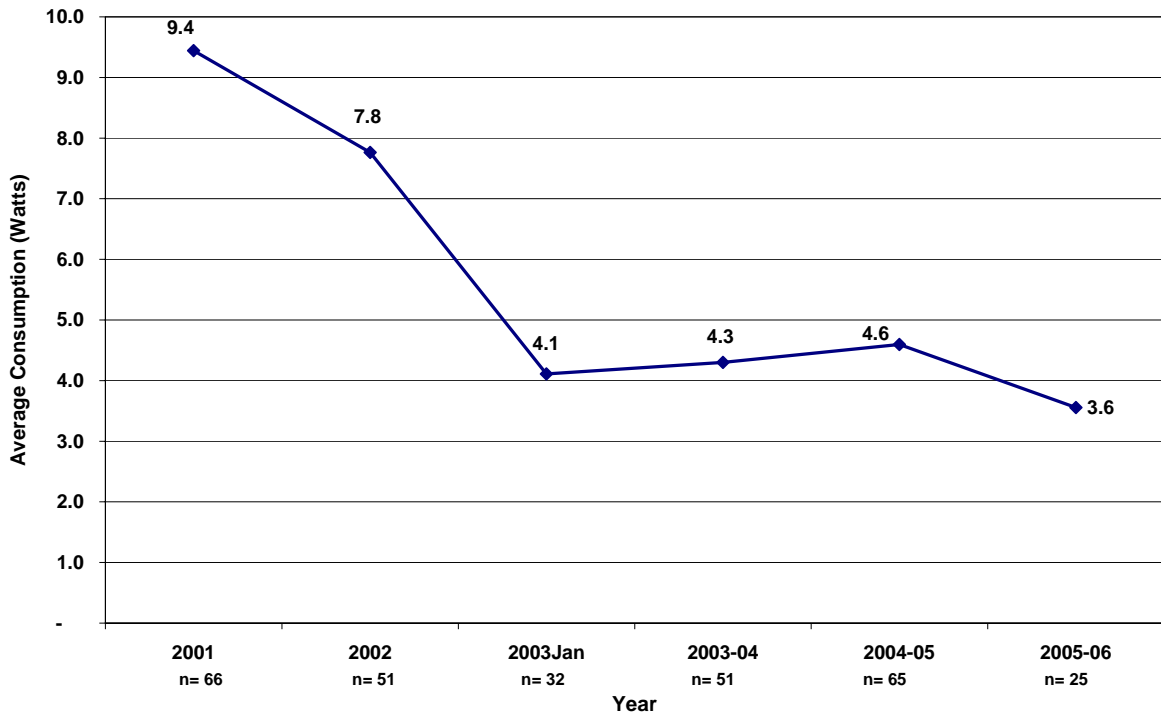


Figure 17: Power Consumption of Integrated Stereos in Passive Mode

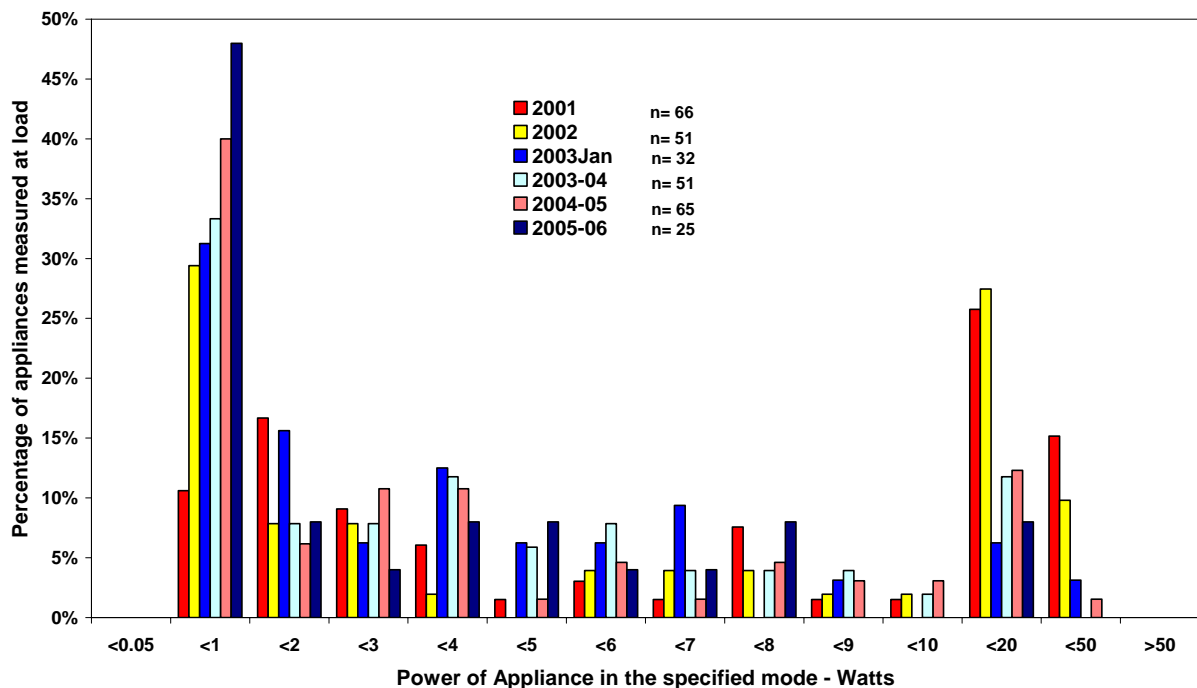


Figure 18 – Average Power Consumption of Integrated Stereos in Active Mode

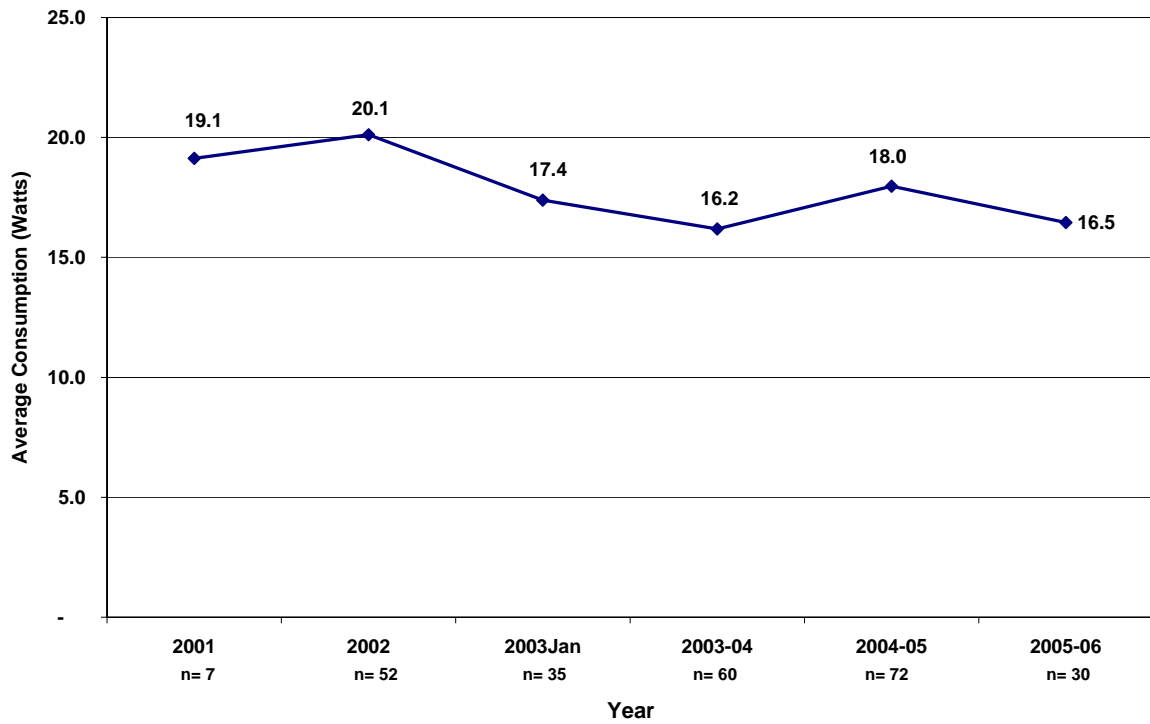
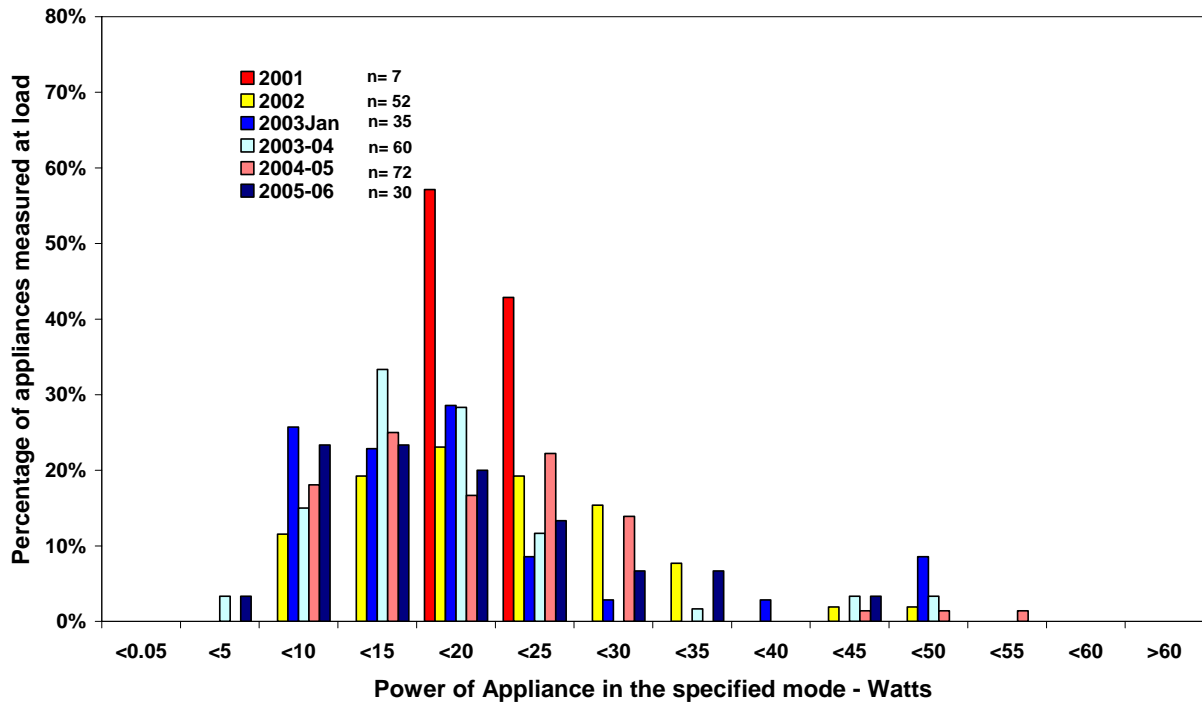


Figure 19 – Power Consumption of Integrated Stereos in Active Mode



**Stereos – Portable** Description: Portable stereo systems (usually CD/tape/tuner/amp, single case).  
 Number of products measured in November 2005: 22  
 Mode = Off: average power 1.6W (6), 2 less than 1W  
 Mode = passive standby: average power 2.6W (19), maximum 4.8 W, 1 less than 1W.  
 Mode = active standby: average power 7.2W (20) maximum 17.9W

Figure 20 – Average Power Consumption for Portable Stereos in Passive Mode

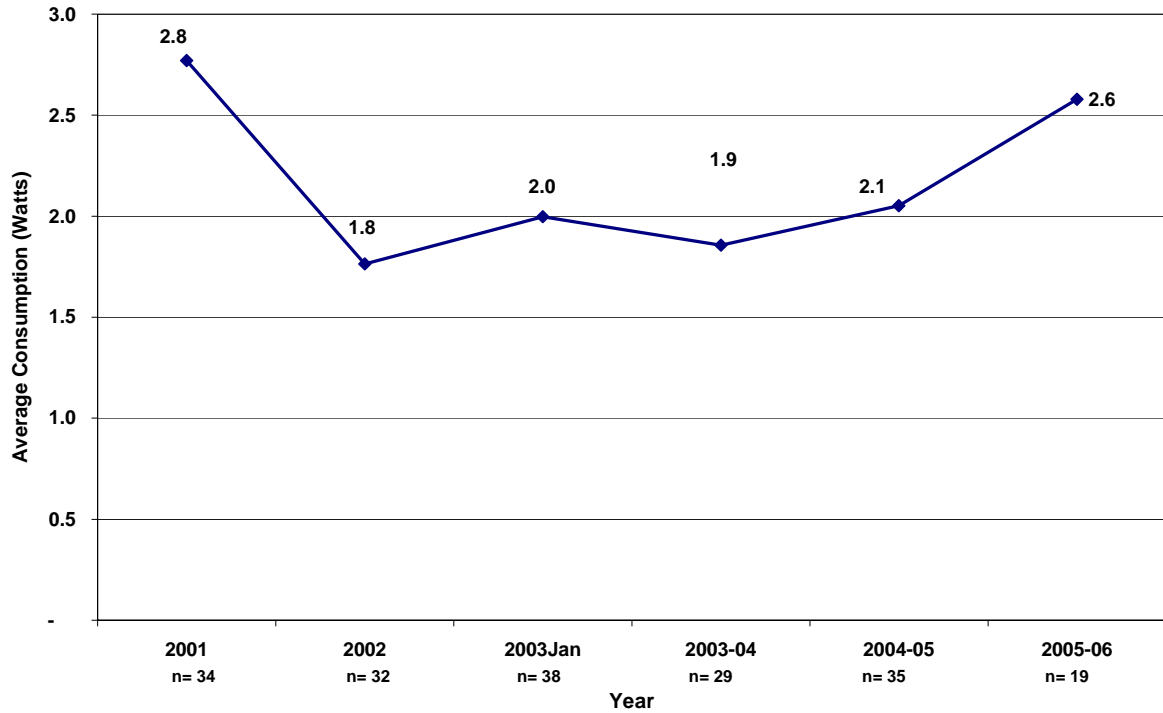


Figure 21 – Power Consumption for Portable Stereos in Passive Mode

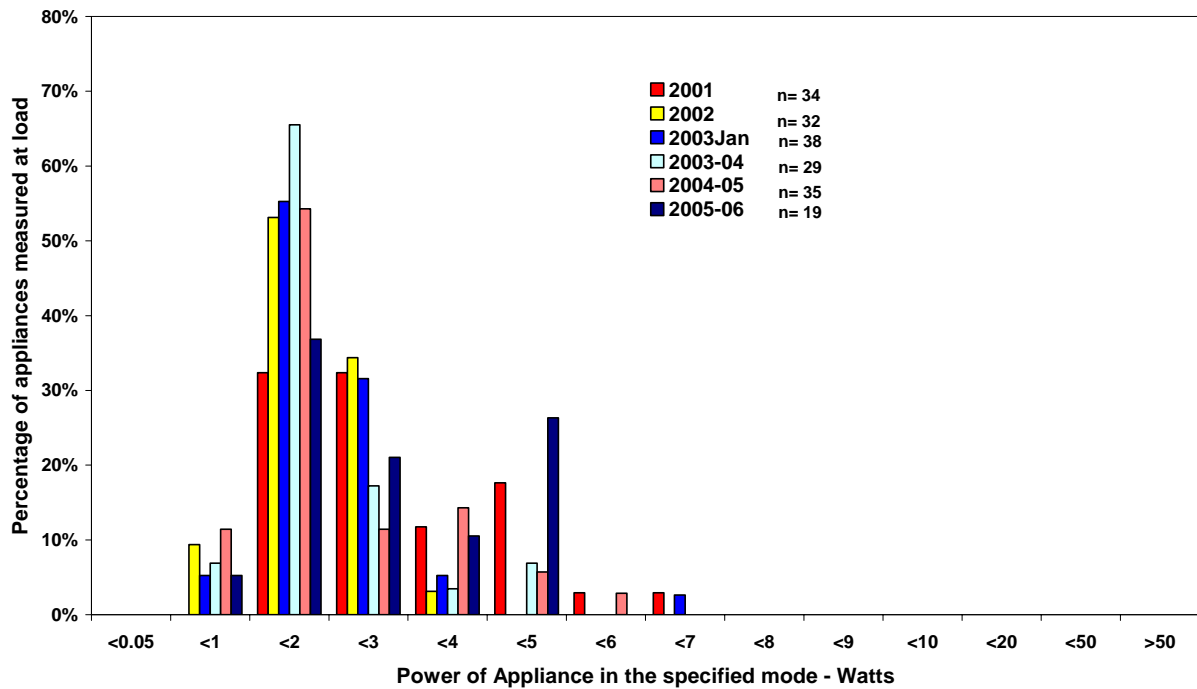


Figure 22 – Average Power Consumption for Portable Stereos in Active Mode

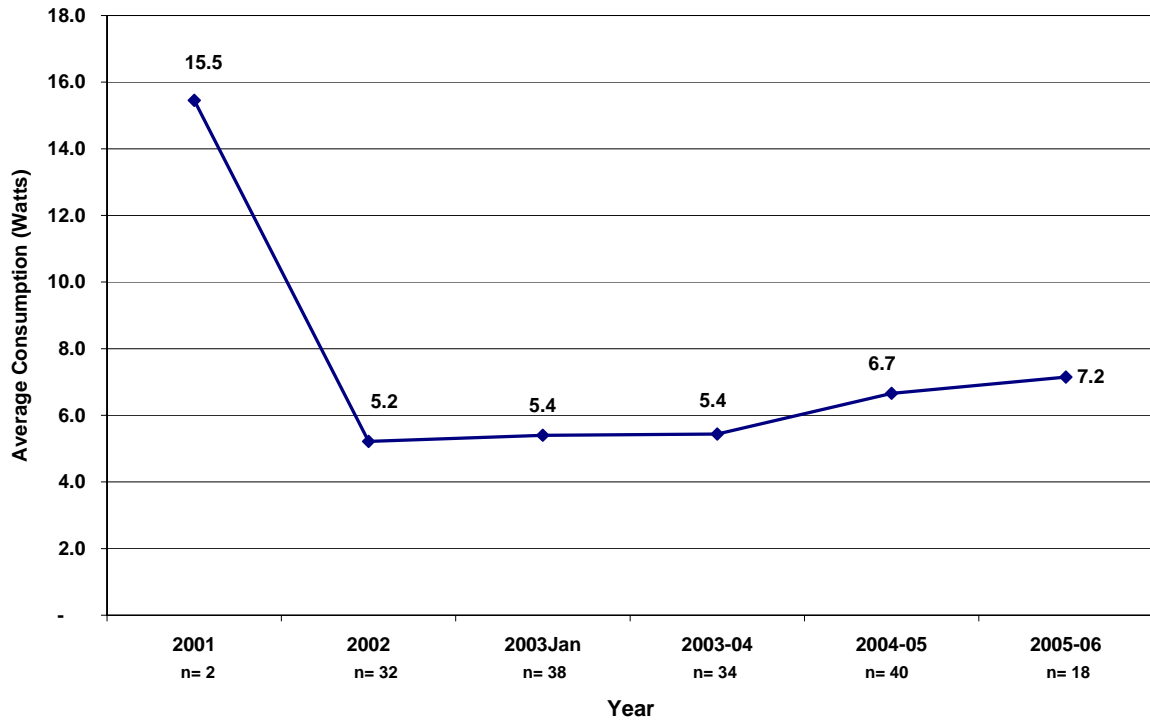
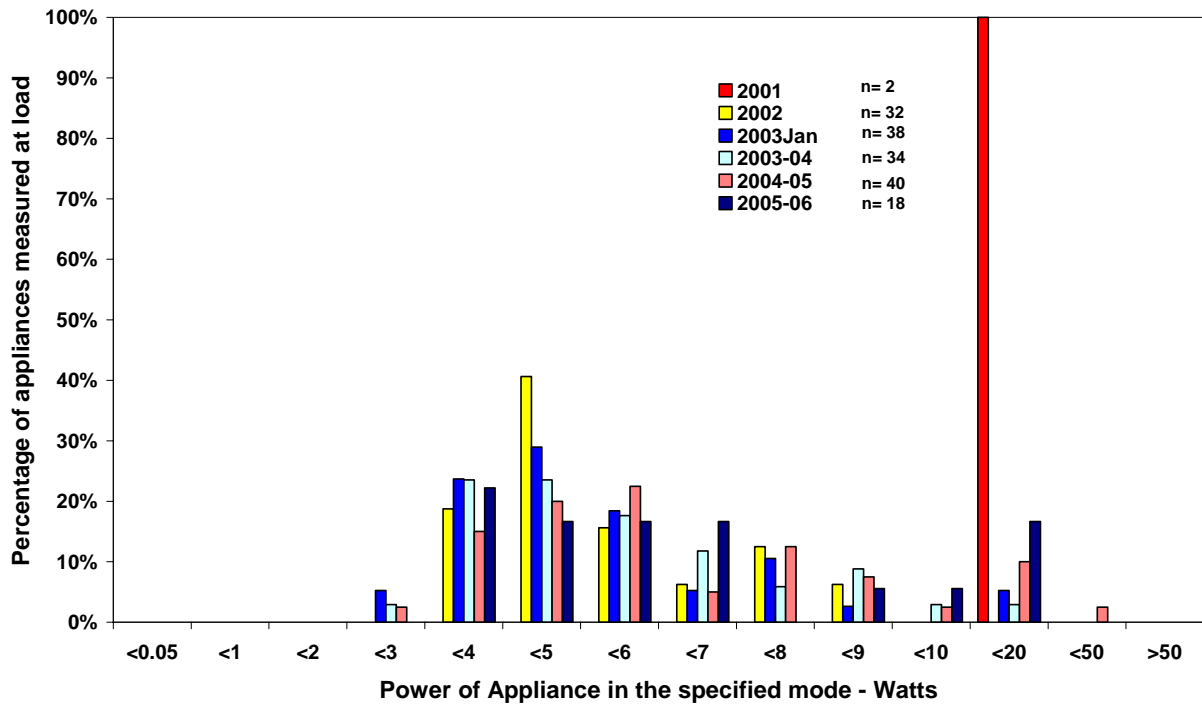


Figure 23 – Power Consumption for Portable Stereos in Active Mode



**AV Receiver** Description: Amplifiers for home theatre suitable for both audio and visual devices and usually 4+ speakers. Sometimes has built DVD player  
 Number of products measured in November 2005: 27  
 Mode = off: average power 0.4W (5). 4 were less than 1W  
 Mode = passive standby: average power 1.7W (26), maximum 11.7W.16 less than 1W  
 Mode = active: average power 47.2W (27).

Figure 24 – Average Power Consumption for AV Receiver in Passive Mode

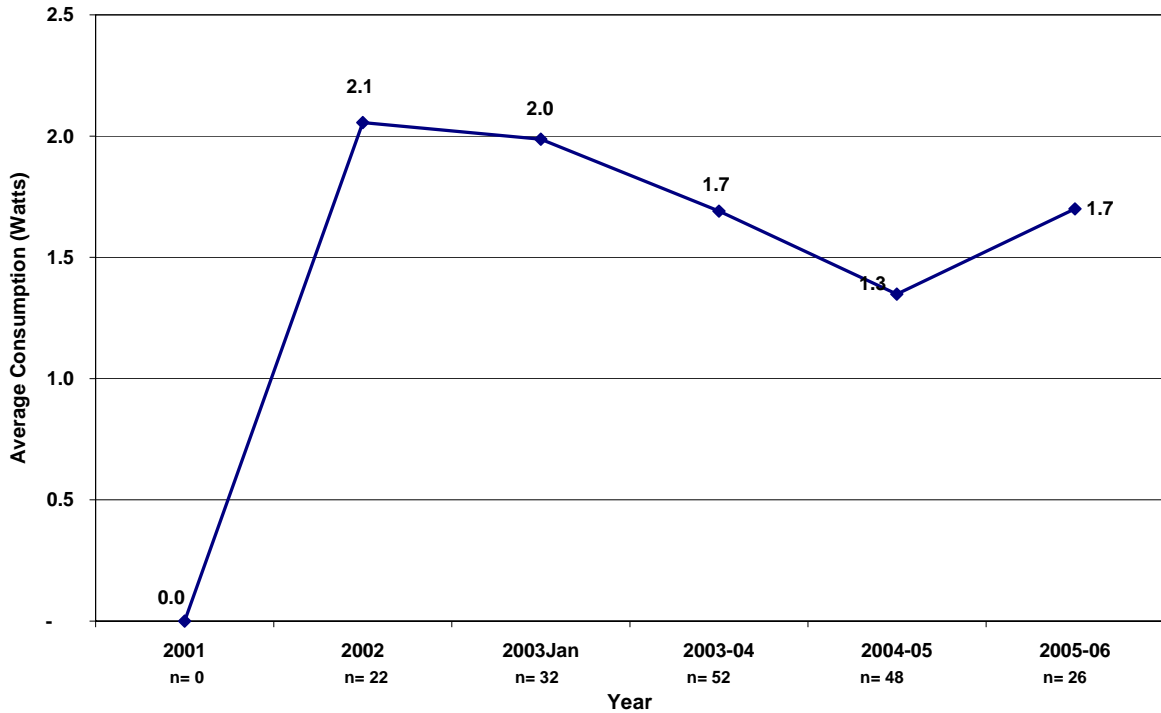


Figure 25 – Power Consumption for AV Receiver in Passive Mode

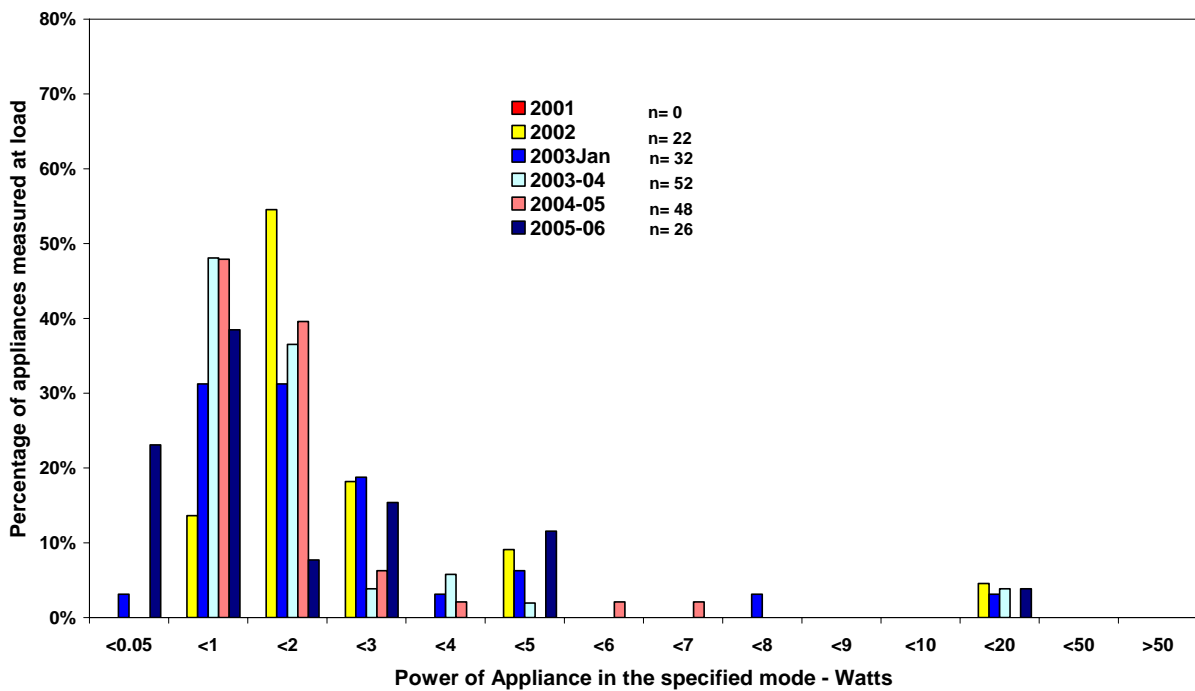


Figure 26 – Average Power Consumption for AV Receiver in Active Mode

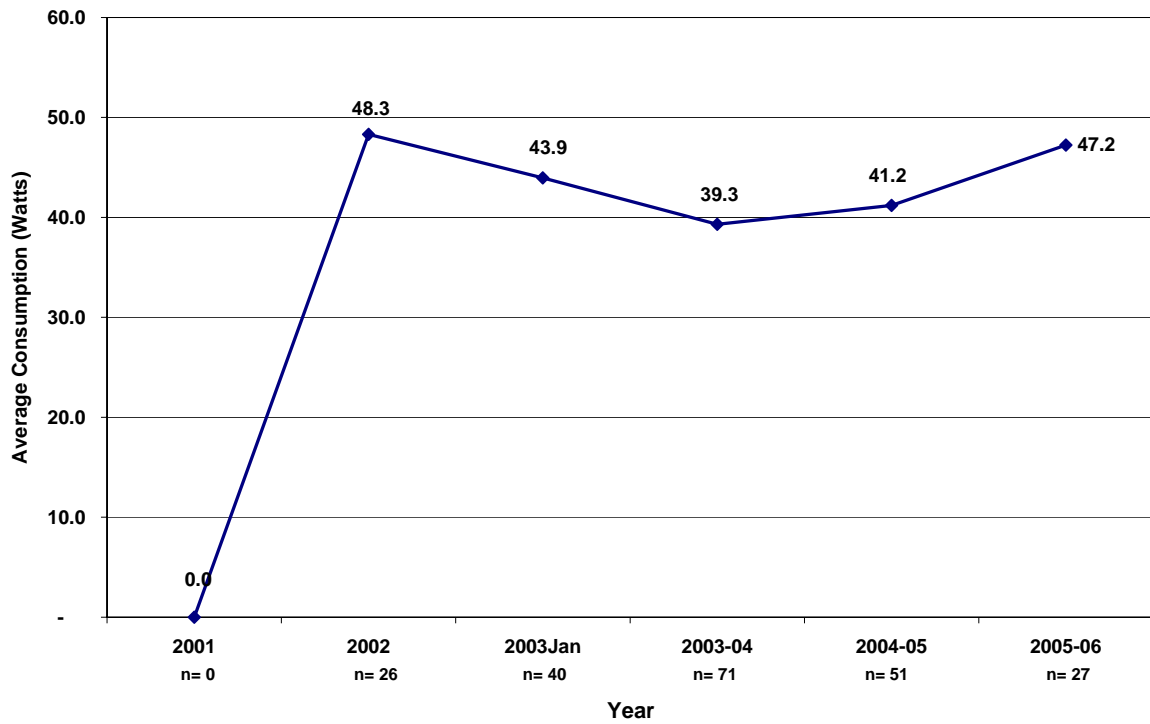
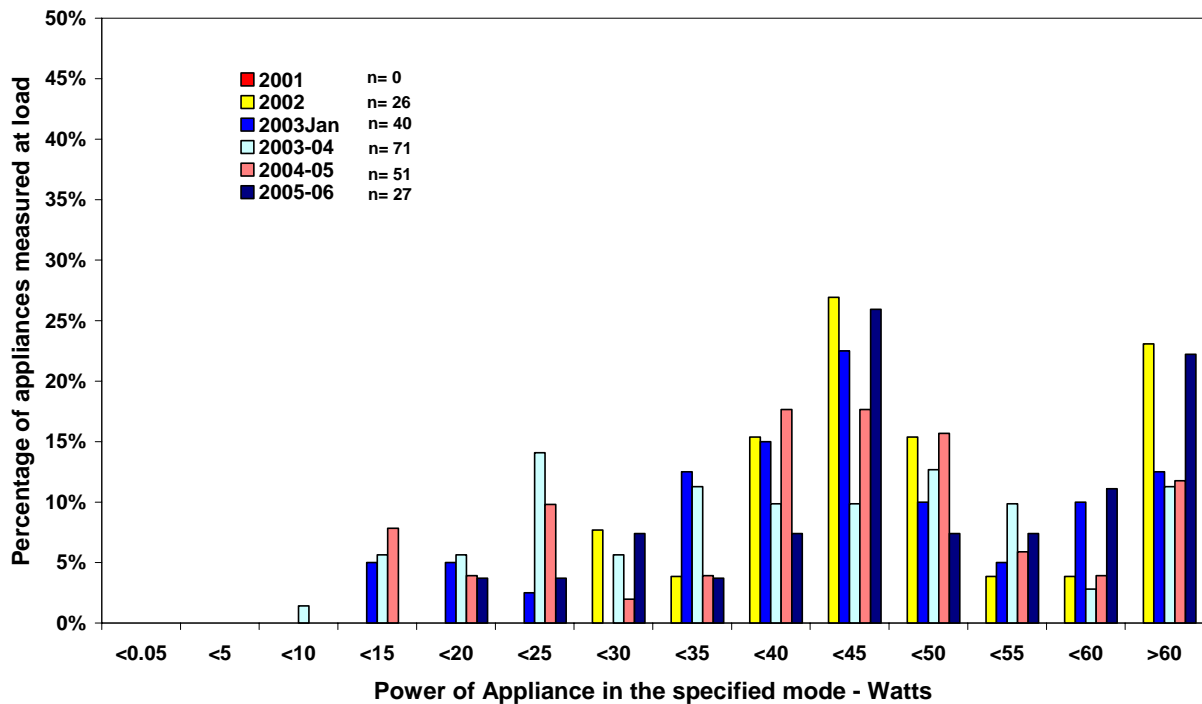


Figure 27 – Power Consumption for AV Receiver in Active Mode



**Home Theatre System Description:** Integrated system with receiver, DVD player and Speakers, including subwoofer all powered from one plug. May include a decoder  
**Number of products measured in November 2005:** 20  
**Mode = off:** average power 0.0W (4). All 0.0W  
**Mode = passive standby:** average power 3.0W (16), maximum 17.4W, 10 less than 1W  
**Mode = active:** average power 23.2W (20).

Figure 28 – Average Power Consumption for Home Theatre System in Passive Mode

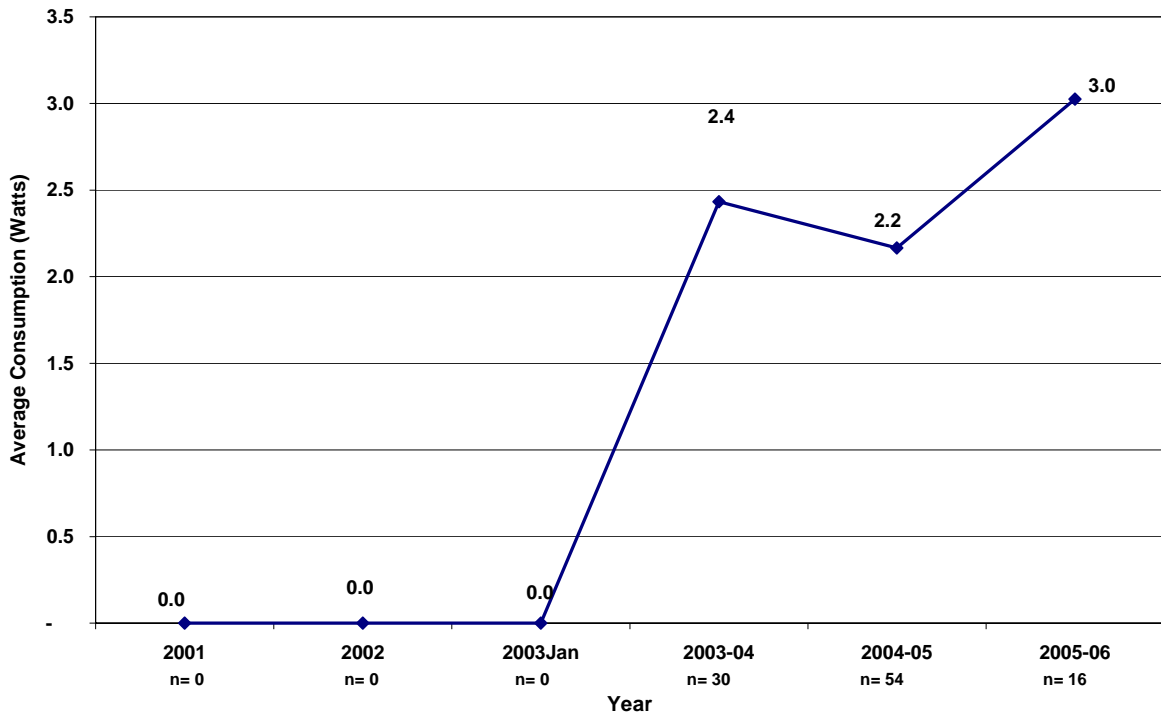


Figure 29 – Power Consumption for Home Theatre System in Passive Mode

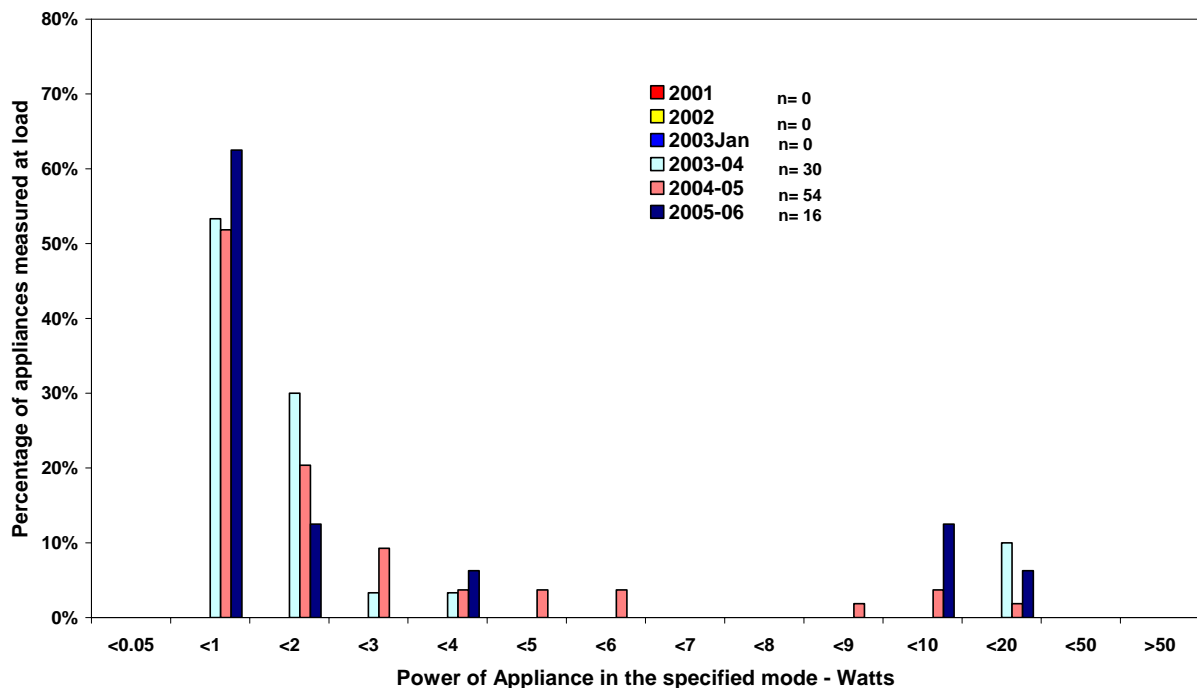


Figure 30 – Average Power Consumption for Home Theatre System in Active Mode

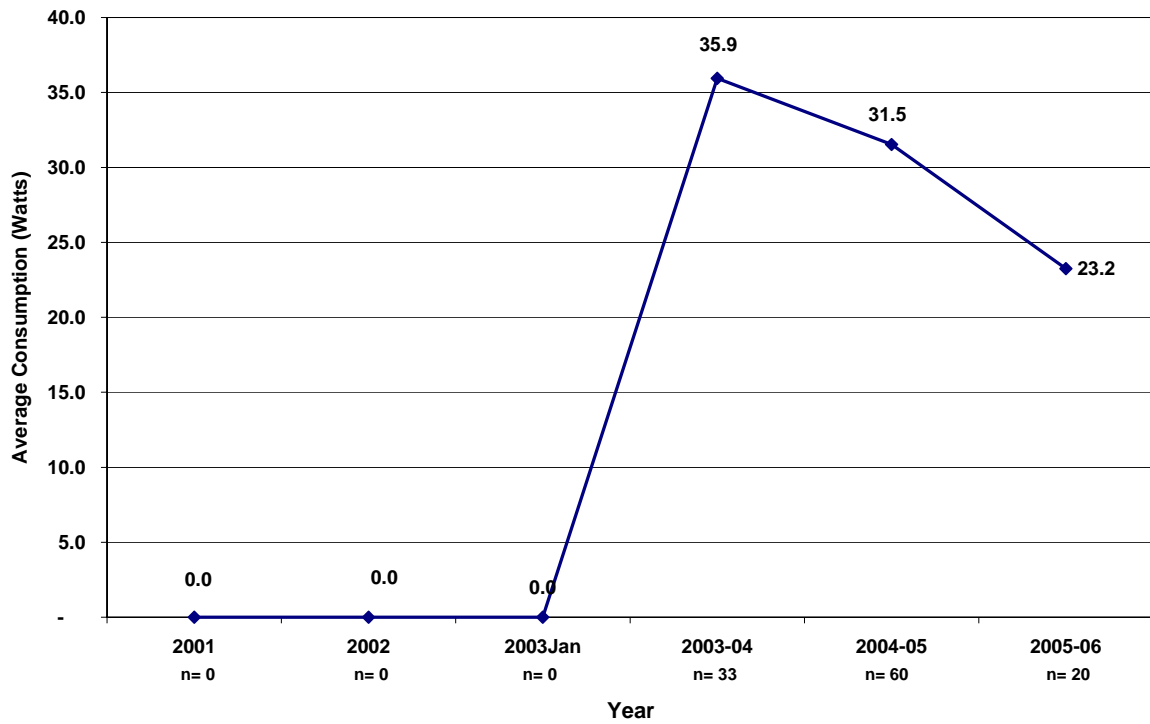
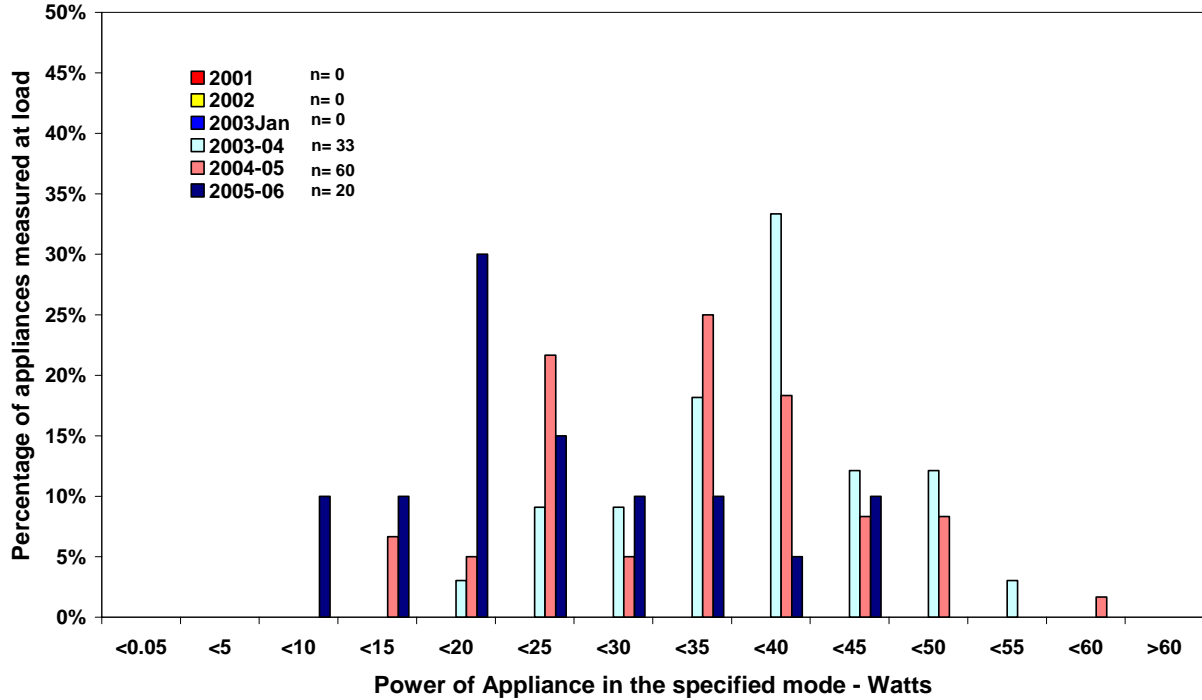


Figure 31 – Power Consumption for Home Theatre System in Active Mode



**Sub Woofer** *Description:* Large speaker with own power source and amplifier may also power additional speakers.  
*Number of products measured in November 2005: 22*  
*Mode = off:* average power 2.3W (20), maximum 17.4W, 16 less than 1W  
*Mode = passive standby:* average power 2.0W, 3.6W, & 0.0W (3),  
*Mode = active standby:* average power 10.1W (22). Maximum 18.2W  
*Notes:* Most off switches are difficult to reach at the rear and so are unlikely to be used.

Figure 32 – Average Power Consumption for Sub Woofer in Off Mode

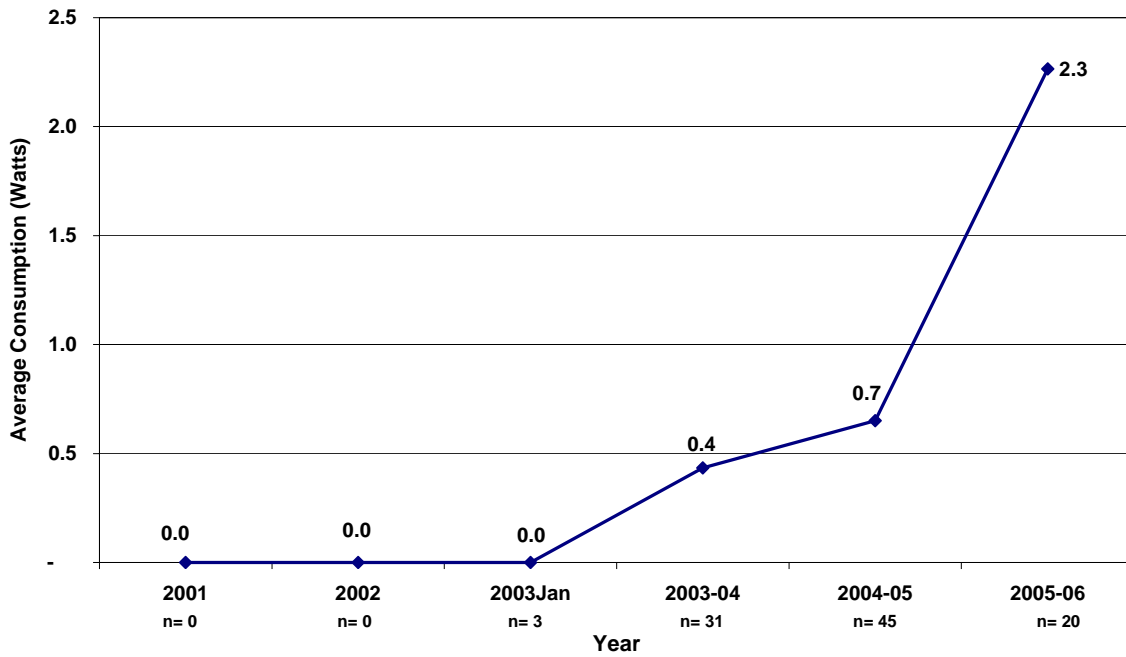


Figure 33 – Power Consumption for Sub Woofer in Off Mode

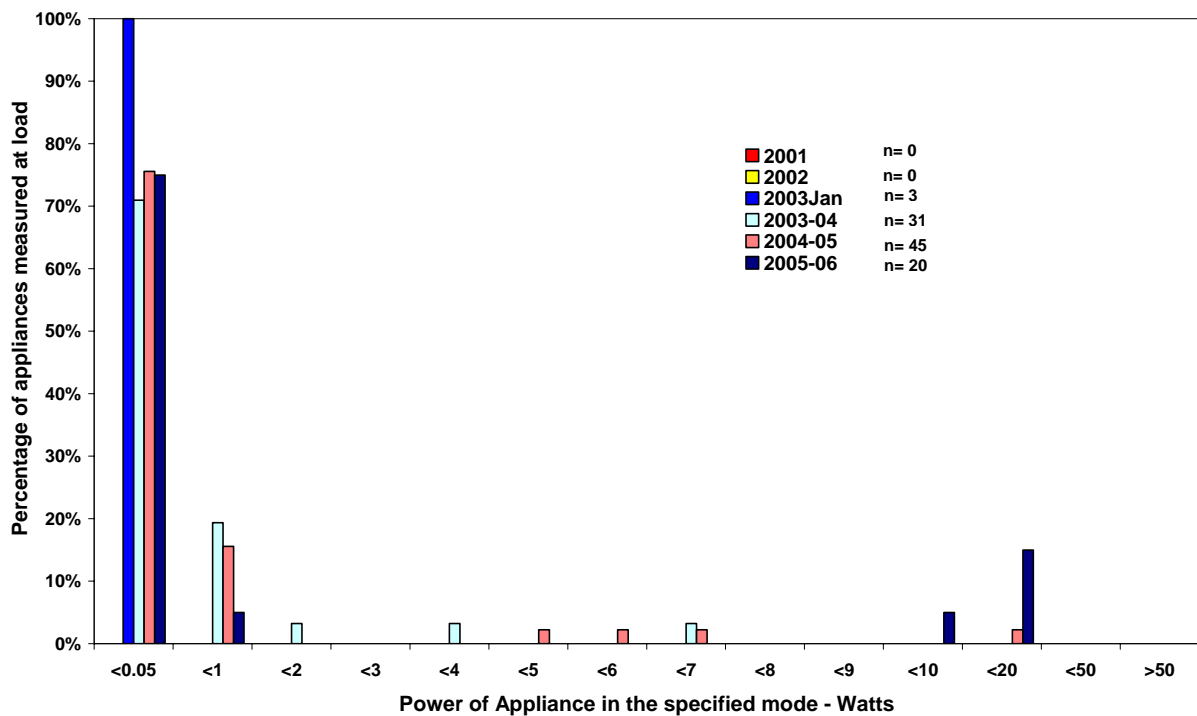


Figure 34 – Average Power Consumption for Sub Woofer in Active Mode

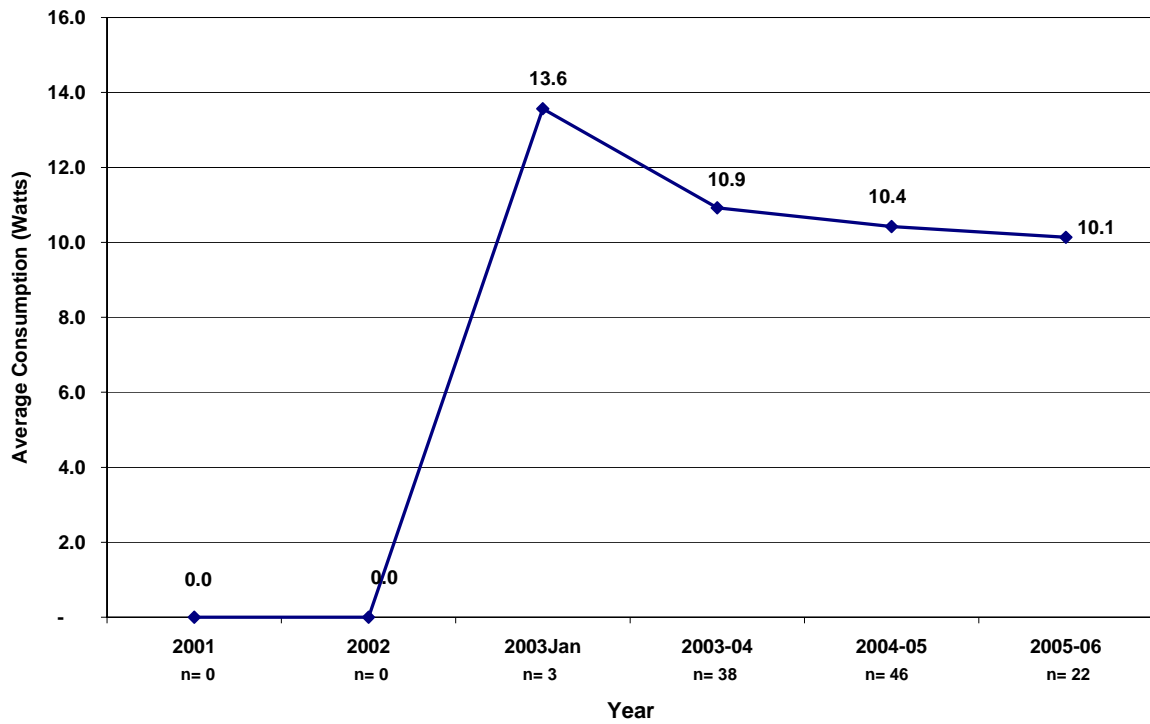
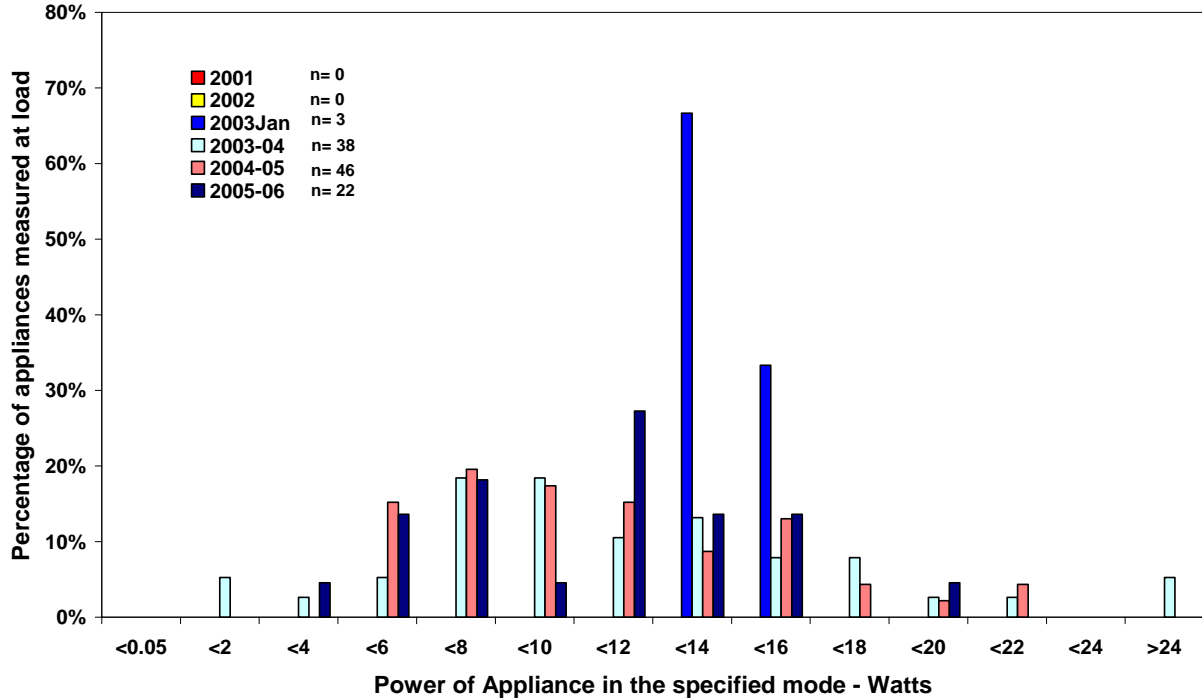


Figure 35 – Power Consumption for Sub Woofer in Active Mode



**Digital Set Top Box** Description: Digital Television Decoder  
 Number of products measured in November 2005: 24  
 Mode = off: average power 0W (6).  
 Mode = passive standby: average power 9.5W (23), max 19.4W, none less than 1W.  
 Mode = active: average power 13.2W (24).

Figure 36 – Average Power Consumption of Digital Set top Boxes in Passive Standby Mode

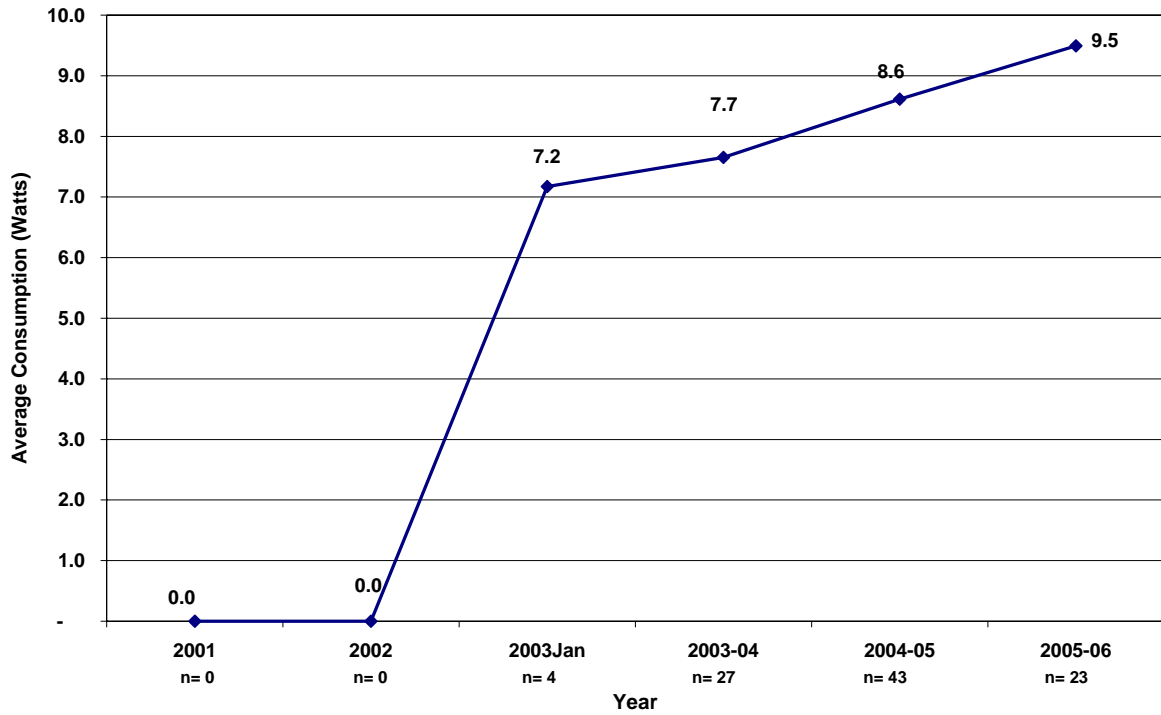


Figure 37 – Power Consumption of Digital Set top Boxes in Passive Standby Mode

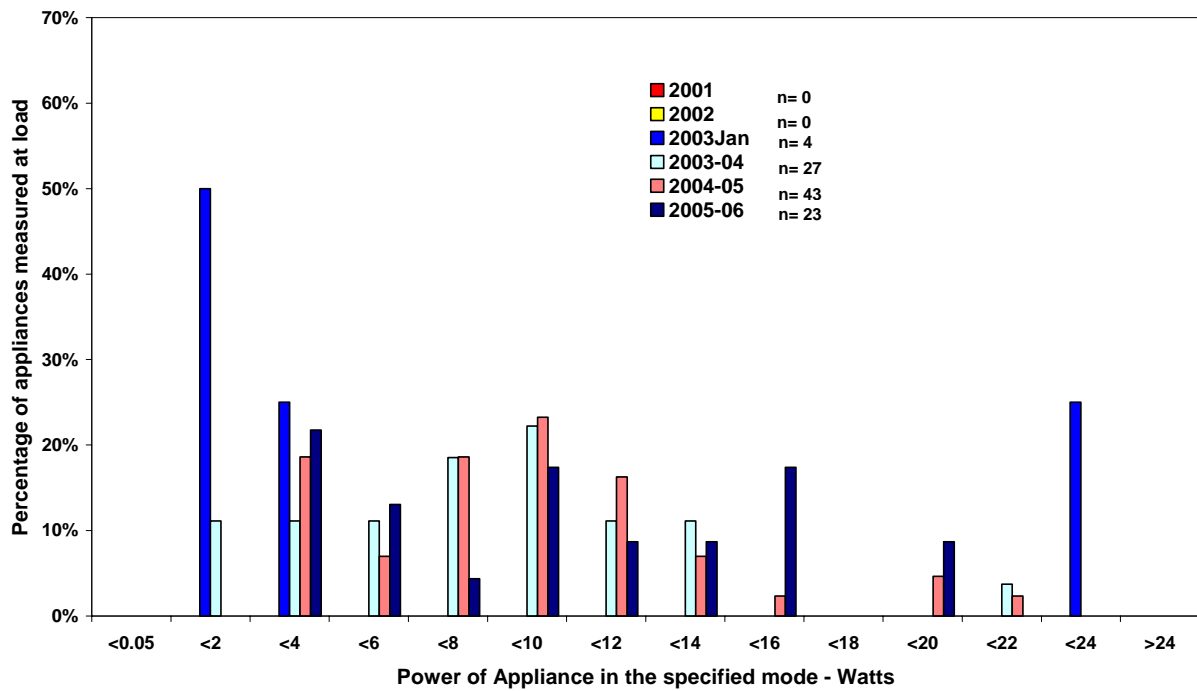


Figure 38 – Average Power Consumption of Digital Set Top Boxes Active standby Mode

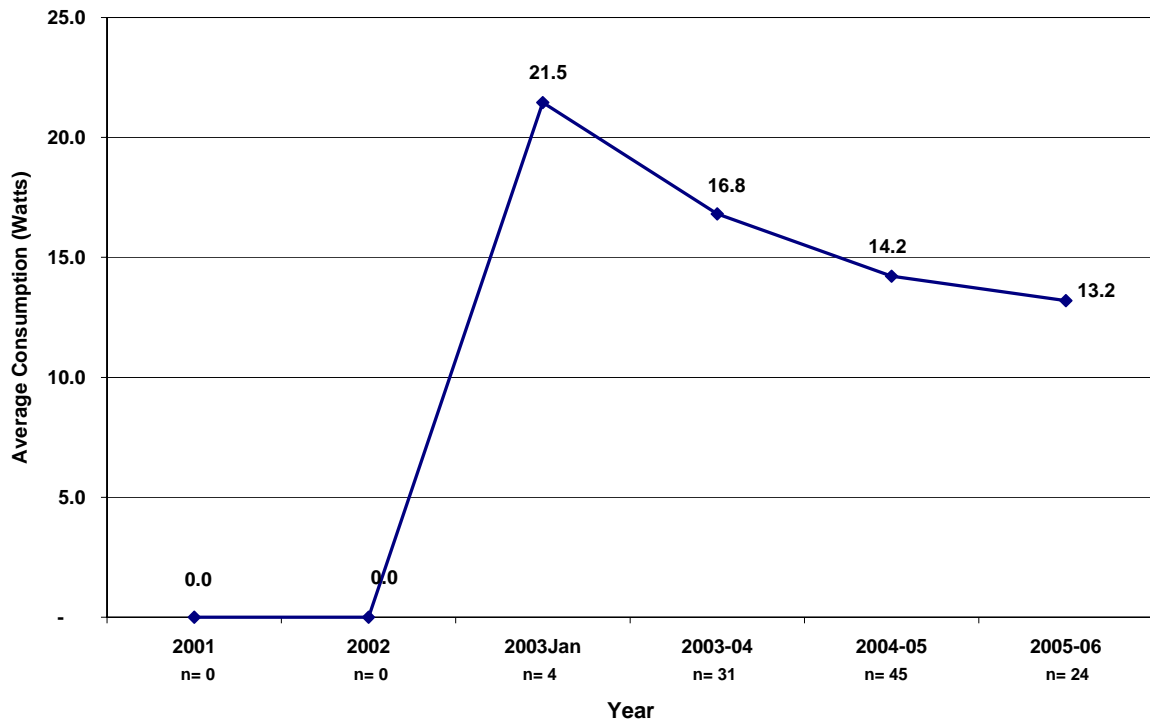
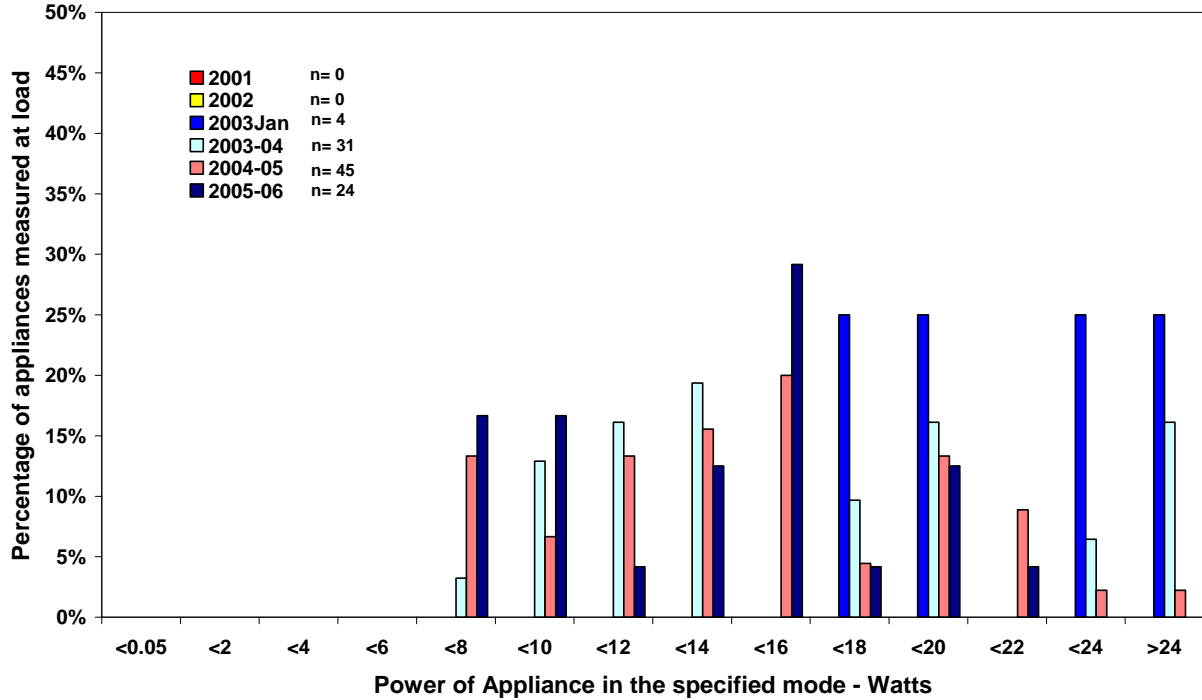


Figure 39 – Power Consumption of Digital Set Top Boxes Active standby Mode



### Product Summaries – major appliances

**Air Conditioners** Description: Fixed (window wall) and portable air conditioners.

Number of products measured in November 2005: 33

Mode = off: most 0.0W, average power 0.2W, maximum 3.0W (18)

Mode = passive: average 1.6W maximum 3.1W, 5 less than 1W (17)

Mode = delay start: 3.0W (1)

Notes: An increase in units with remote controls has seen a rapid rise in passive standby.

Figure 40 –Average Power Measurements for Air Conditioners in Off mode

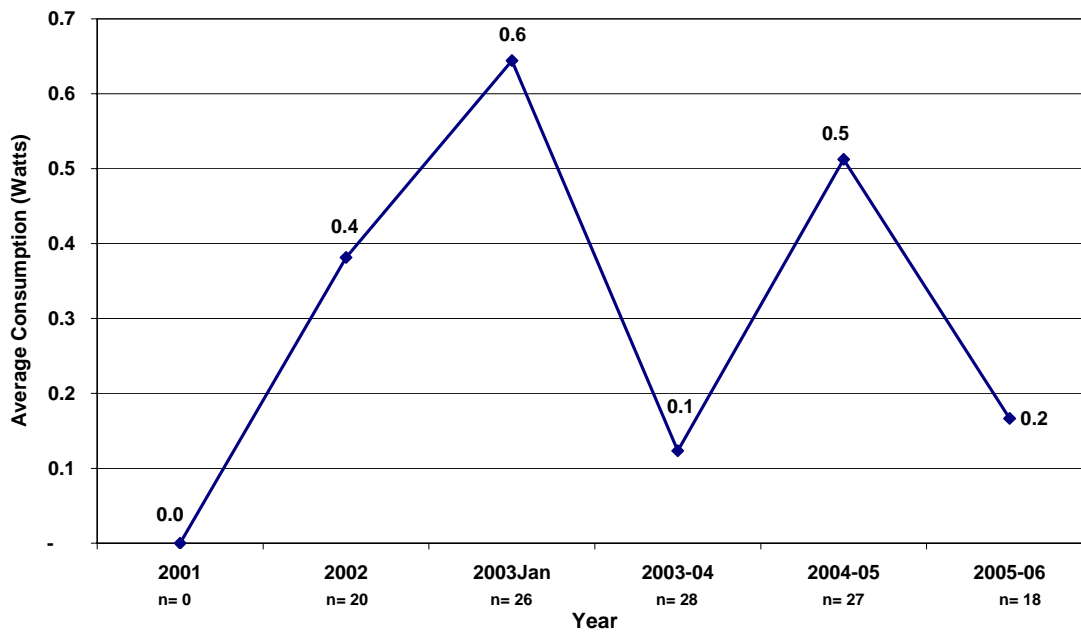


Figure 41 – Power Measurements for Air Conditioners in Off mode

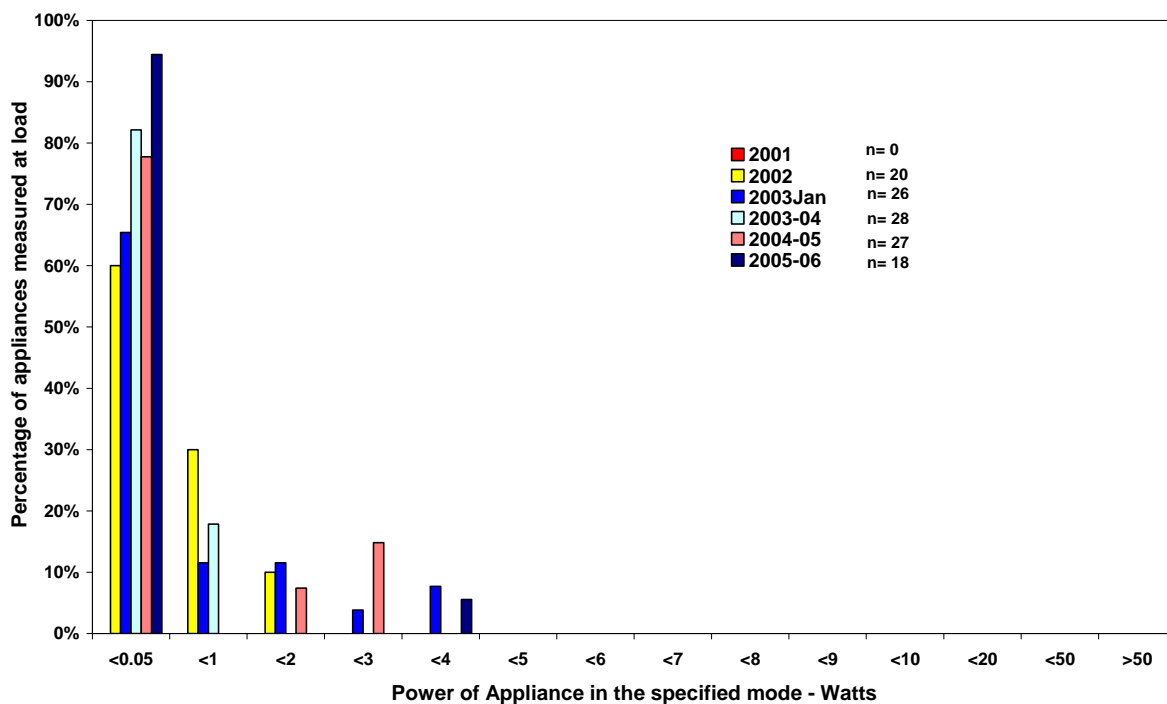


Figure 42 –Average Power Measurements for Air Conditioners in passive standby mode

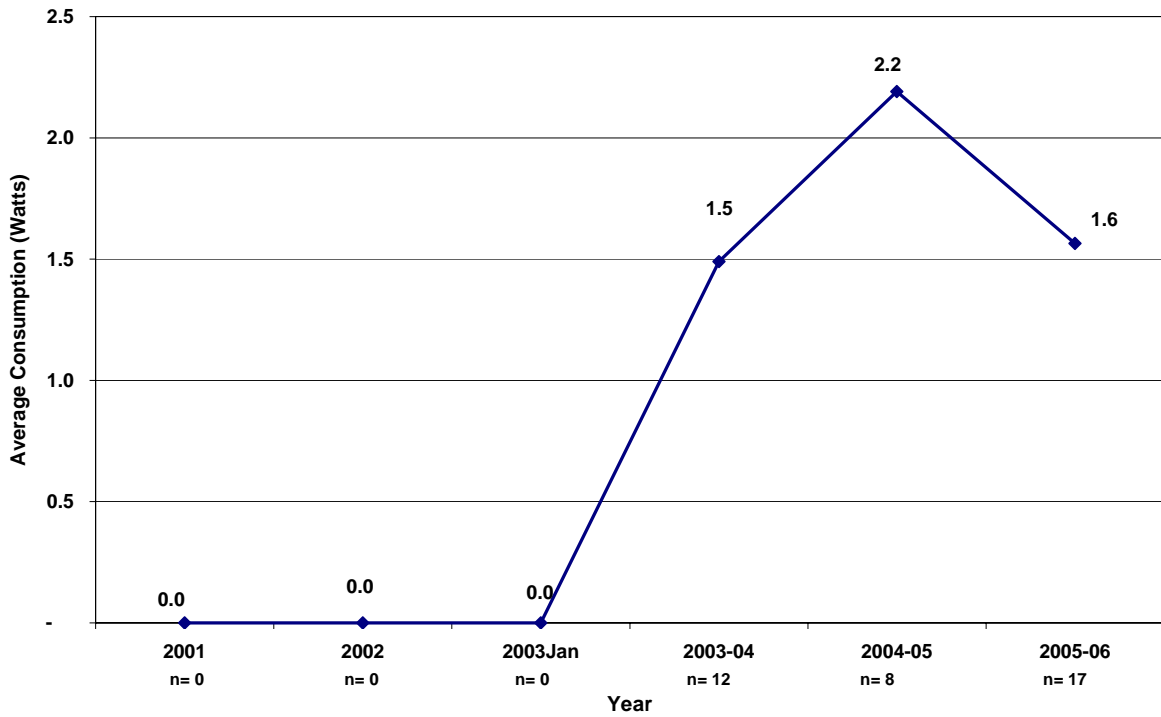
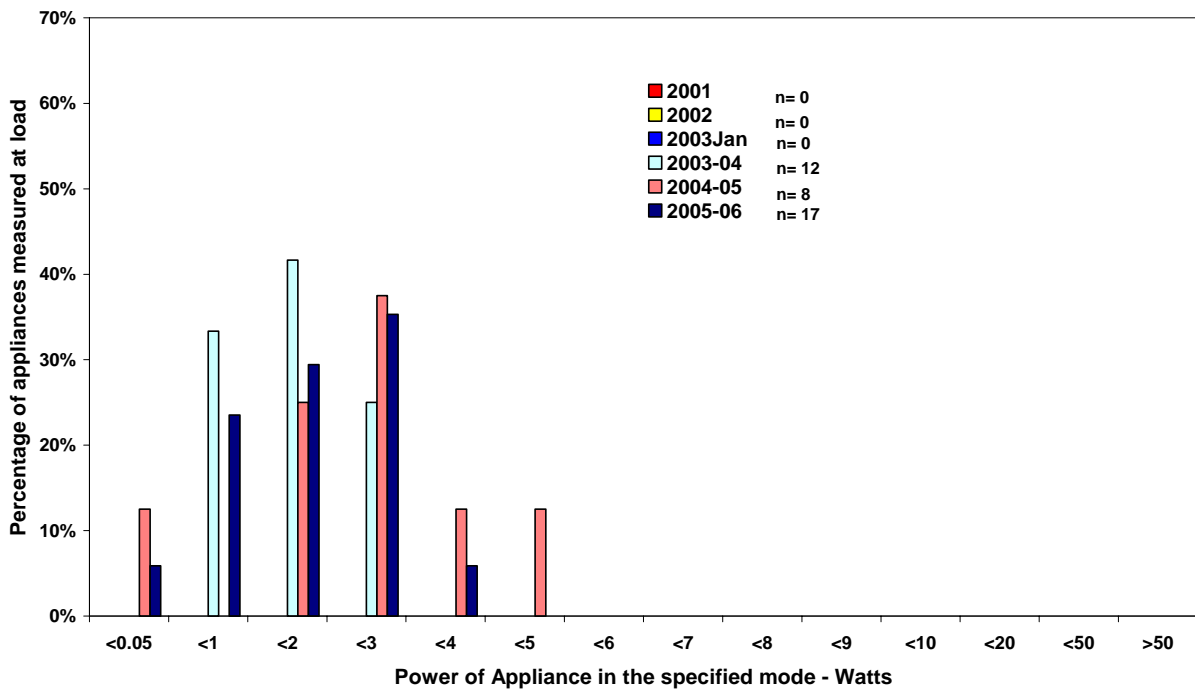


Figure 43 – Power Measurements for Air Conditioners in passive standby mode



**Dishwashers** Description: Domestic clothes dryers.  
 Number of products measured in 2005: 10  
 Mode = off: average power 0.0 W, maximum 0.2W (10)  
 Mode = active: average power 1.9 W maximum 2.9 W (9)  
 Mode = delay start: average power 2.3W, (5)

Figure 44 – Average Power Consumption of Clothes Dishwashers in Off Mode

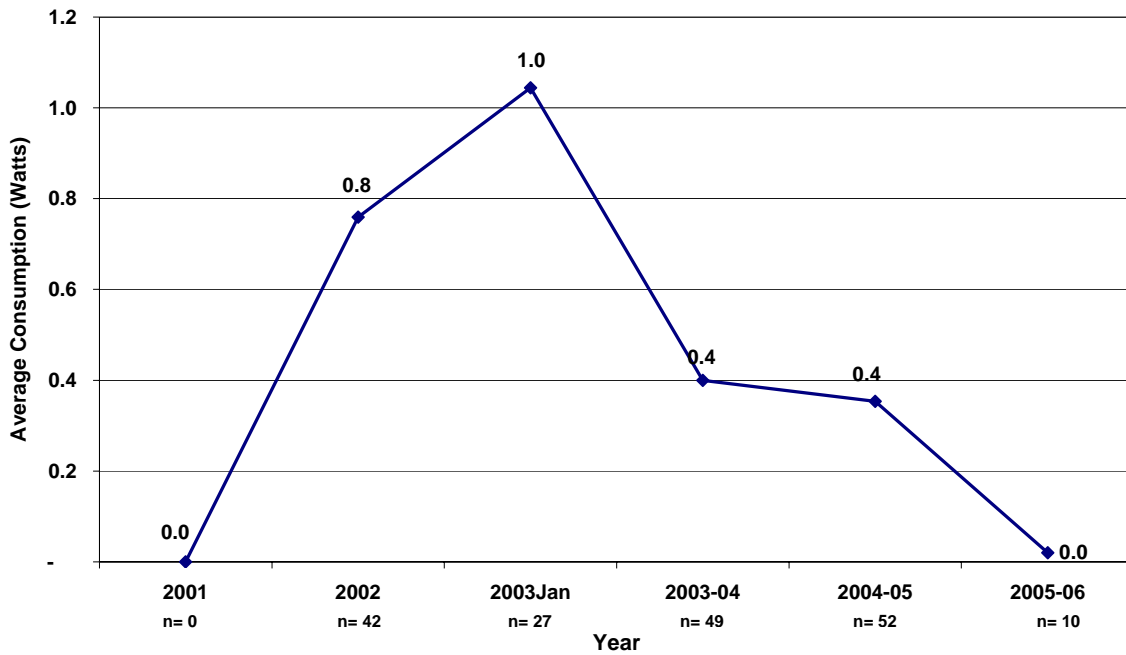


Figure 45 – Power Consumption of Clothes Dishwashers in Off Mode

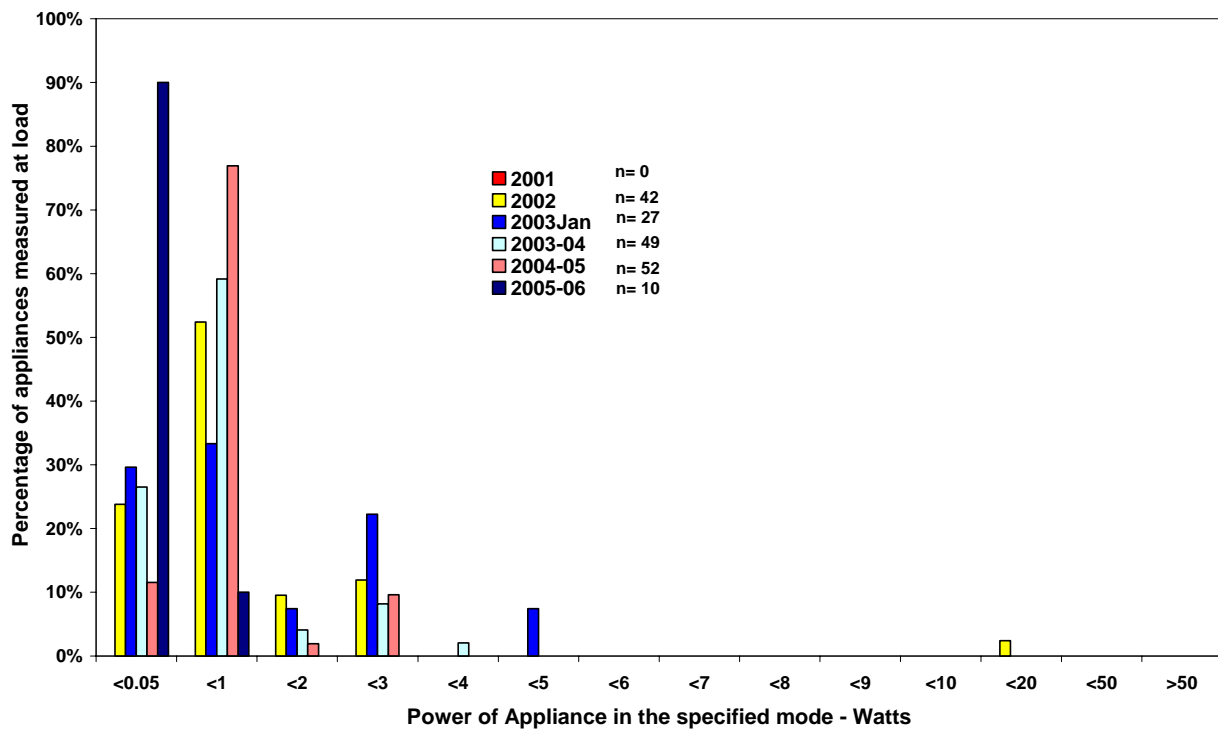


Figure 46 –Average Power Consumption of Clothes Dishwashers in Active Standby Mode

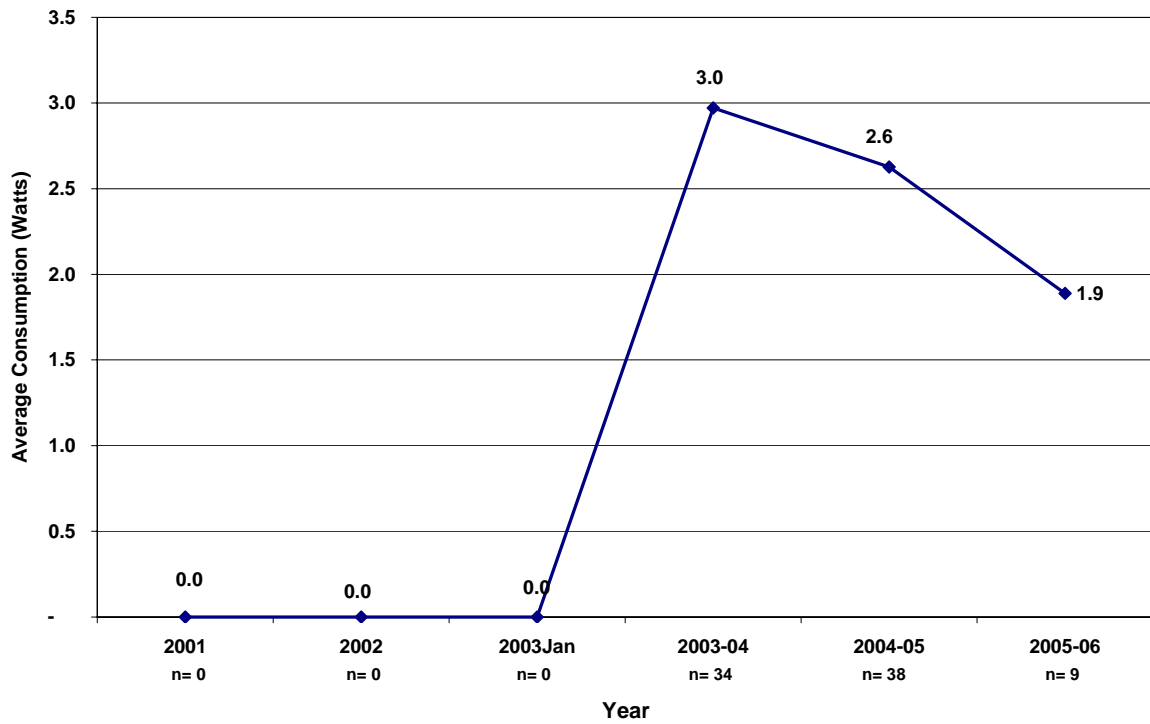
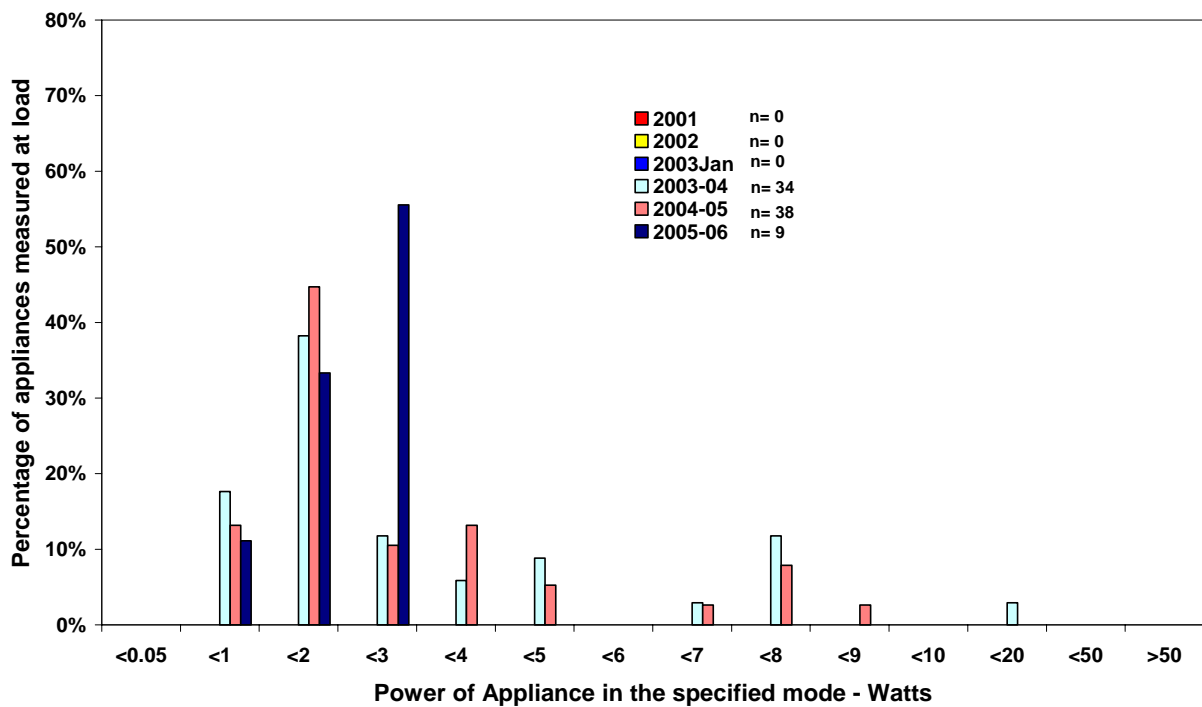


Figure 47 – Power Consumption of Clothes Dishwashers in Active Standby Mode



**Clothes Dryers** Description: Domestic clothes dryers.  
 Number of products measured in 2005: 8  
 Mode = off: average power 0.3W, maximum 2.0W (8)  
 Mode = active: power 3.6W &, 2.6 (2)  
 Mode = delay start: average power 3.8W, (1)

Figure 48 – Average Power Consumption of Clothes Dryers in Off Mode

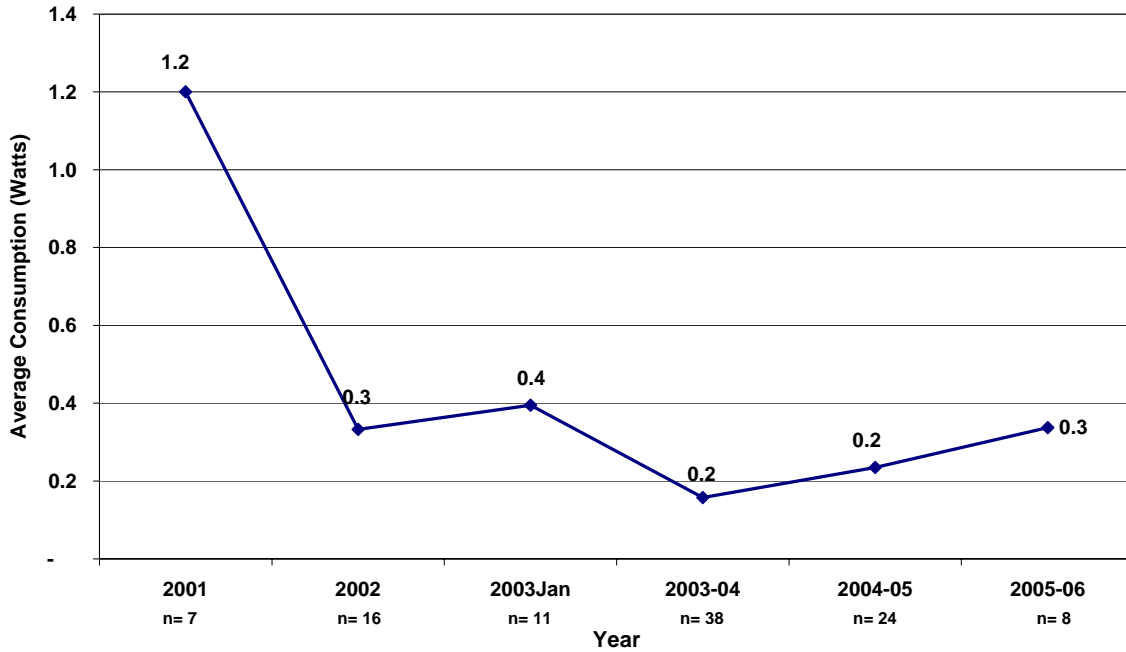
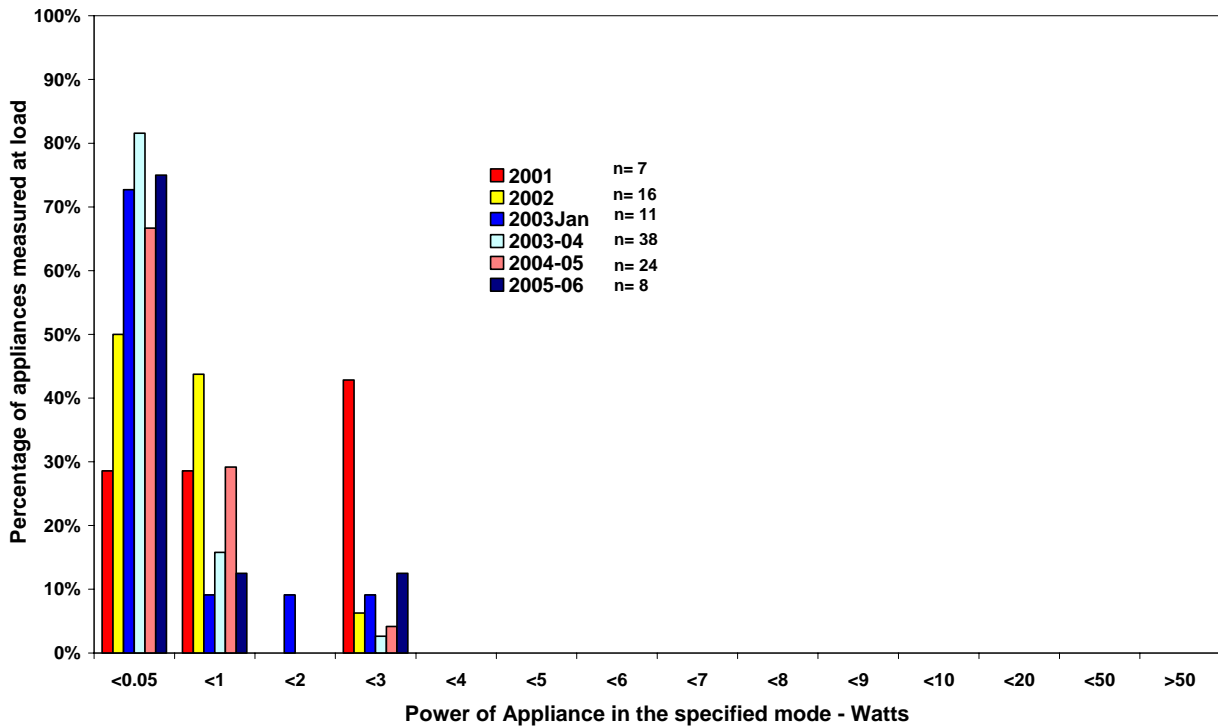


Figure 49 – Power Consumption of Clothes Dryers in Off Mode



**Washing Machines** Description: Domestic clothes washers (front and top loading).  
 Number of products measured in 2005: 40  
 Mode = off: average power 1.2W, maximum 4.2W, 39% were more than 1W (40)  
 Mode = active: average power 3.9 W, maximum 11.8W. No units less than 1W (34)  
 Mode = delay start: average power 4.2W, maximum 8.7W. No units less than 1W (18)

Figure 50 - Average Power Consumption for Washing Machines In Off mode

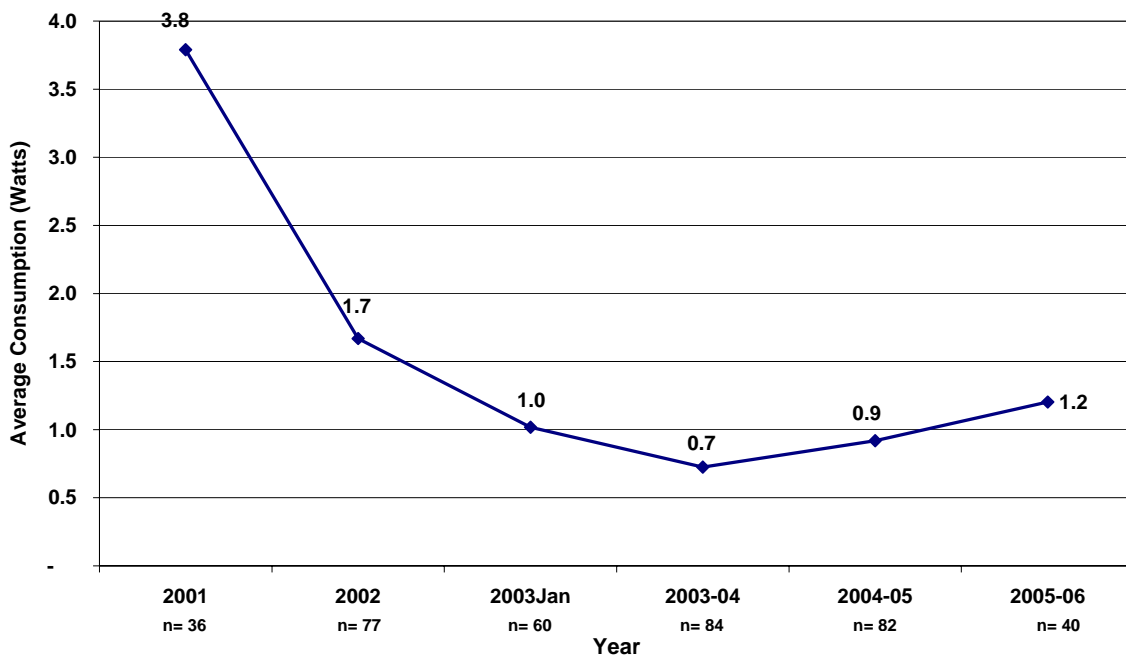


Figure 51 - Power Consumption for Washing Machines In Off mode

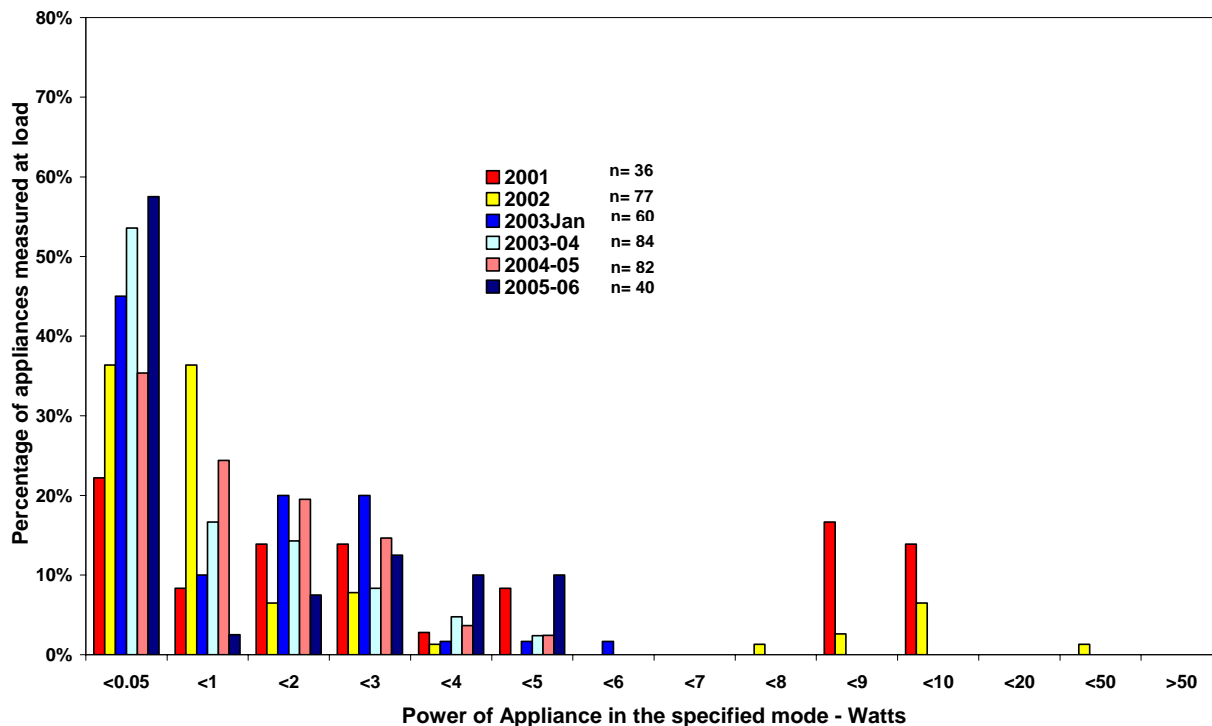


Figure 52 – Average Power Consumption for Washing Machines in Active Mode

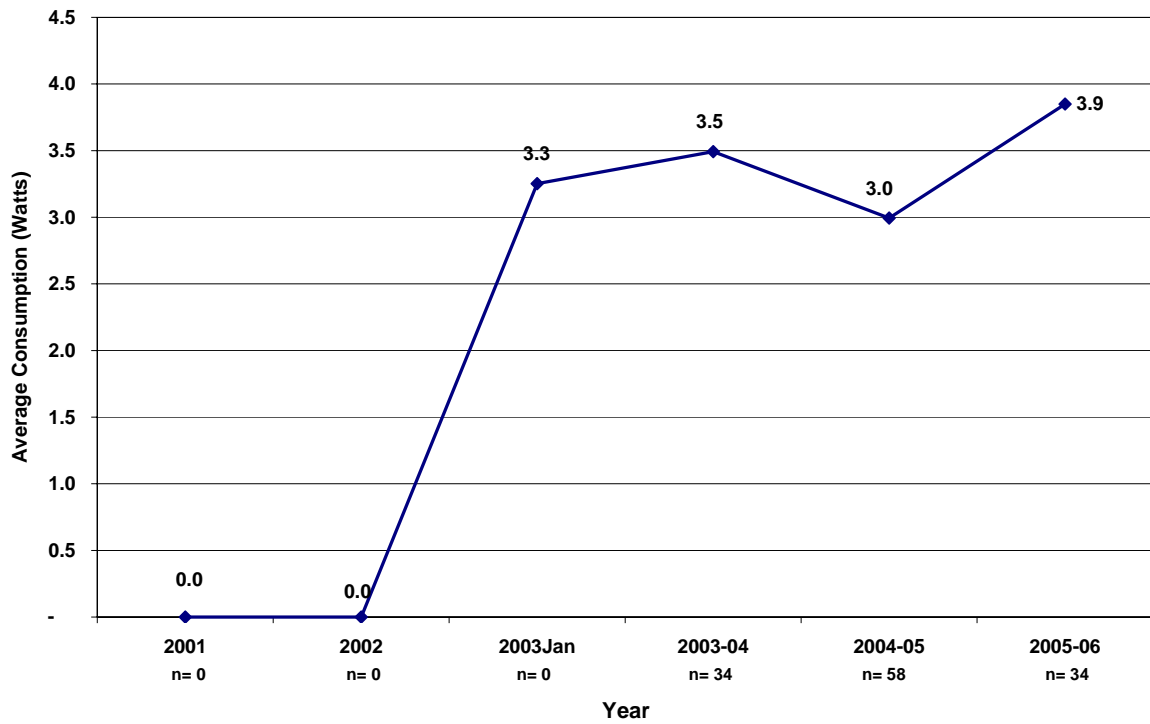


Figure 53 - Power Consumption for Washing Machines in Active Mode

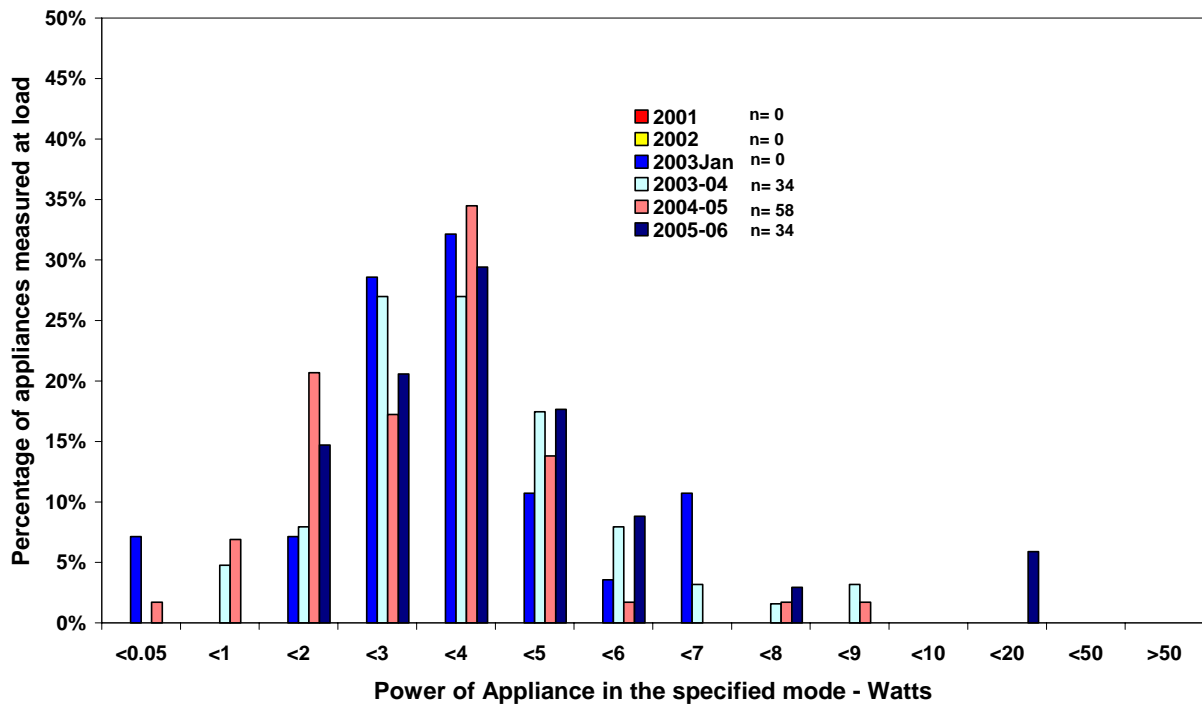


Figure 54 – Average Power Consumption for Washing Machines in Delay Start Mode

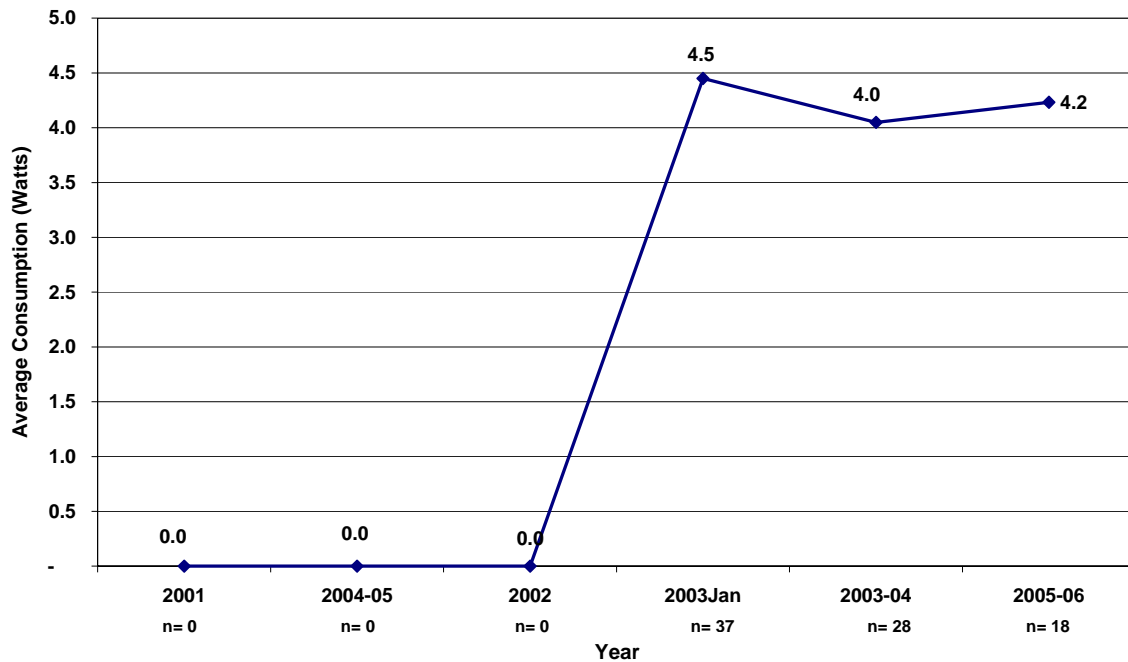
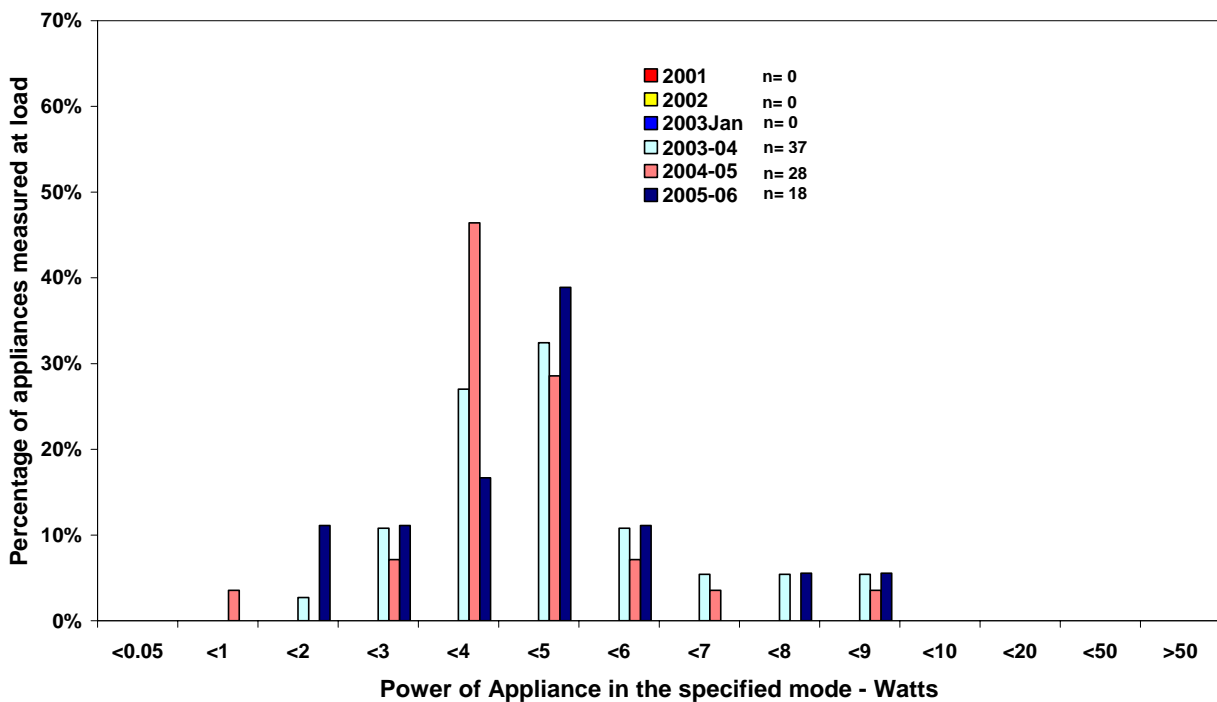


Figure 55 - Power Consumption for Washing Machines in Delay Start Mode



**Cook Tops, Ovens, Stoves & Rangehoods** these products were found to have low standby energy consumption in previous studies and therefore have minimal impact on overall energy consumption in the Residential sector; consequently it was decided not to measure these appliances in the 2005/06 survey.

### Product Summaries – computers and peripherals

**Computers - Box** Description: PC/hard drive box with desktop computers.

Number of products measured in November 2005: 8

Mode = off: average power 2.7W, maximum 4.3W (8). 2 units less than 1W

Notes: Two models had a hard off switch at the rear allowing a passive reading to be recorded (4.3W & 4.1W). Both recorded zero in off mode.

Figure 56 – Average Power Consumption For Computer Boxes in Off Mode

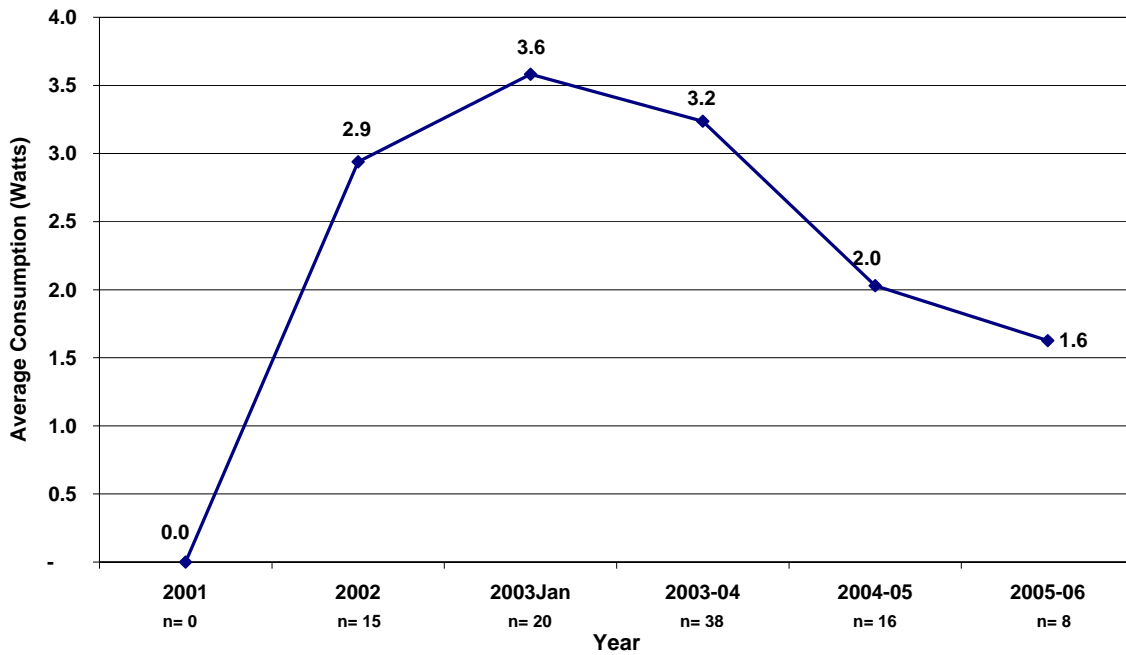
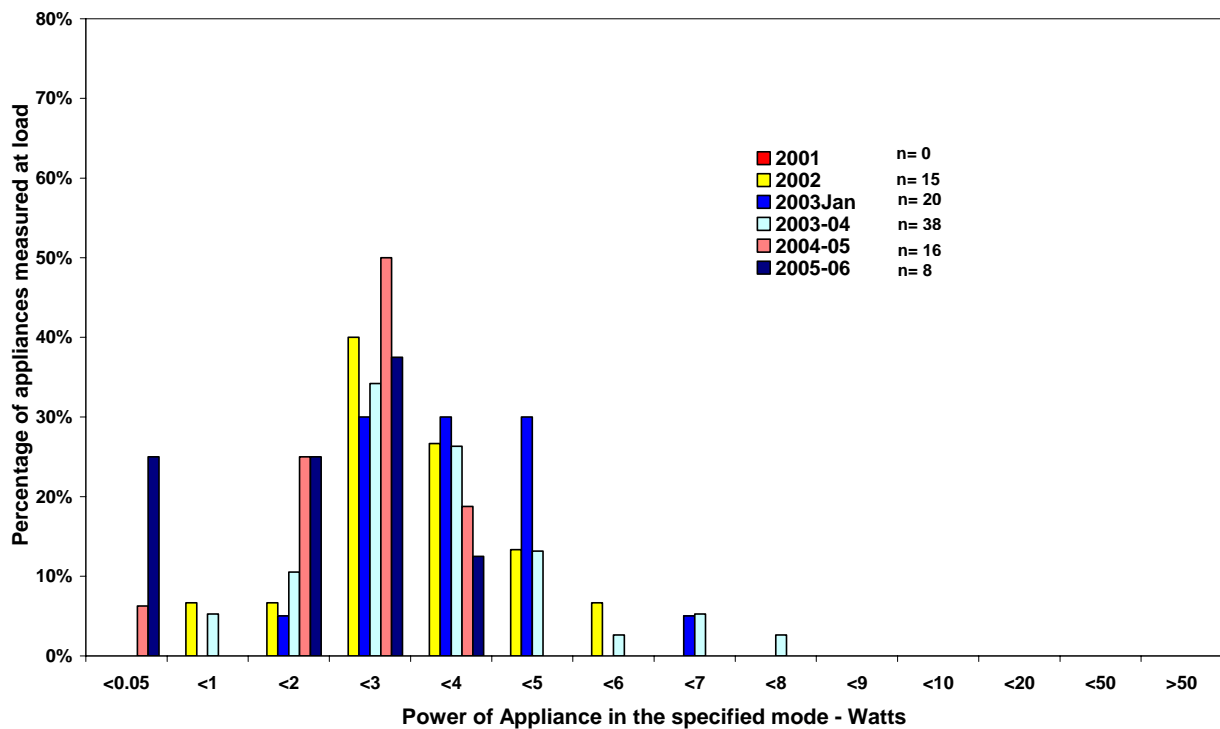


Figure 57 – Power Consumption For Computer Boxes in Off Mode



**Computer– Monitors** Description: Separate monitors for desktop computers.  
 Number of products measured in November 2005: 27  
 Mode = off: average power 0.9W, maximum 3.1W (27) 17 less than 1W.  
 Mode = In-use: average power 38.1W (25), maximum 60.9W  
 Notes: In use was measured for the first time in May 2005. Most models are LCD units

Figure 58 – Average Power Consumption for Monitors in Off Mode

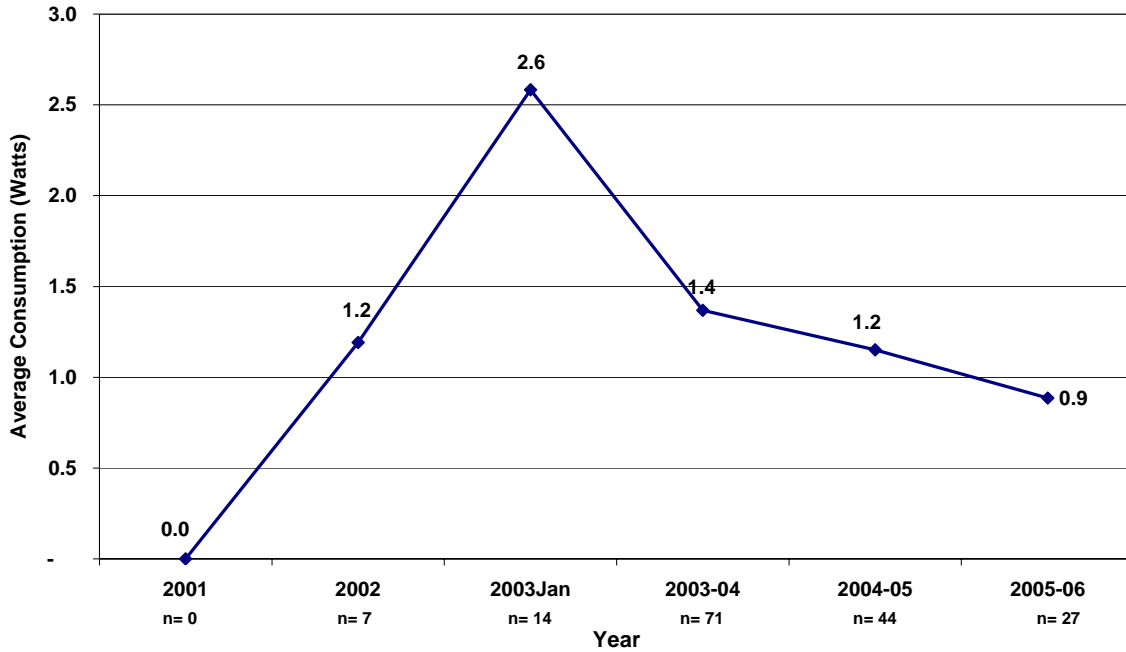
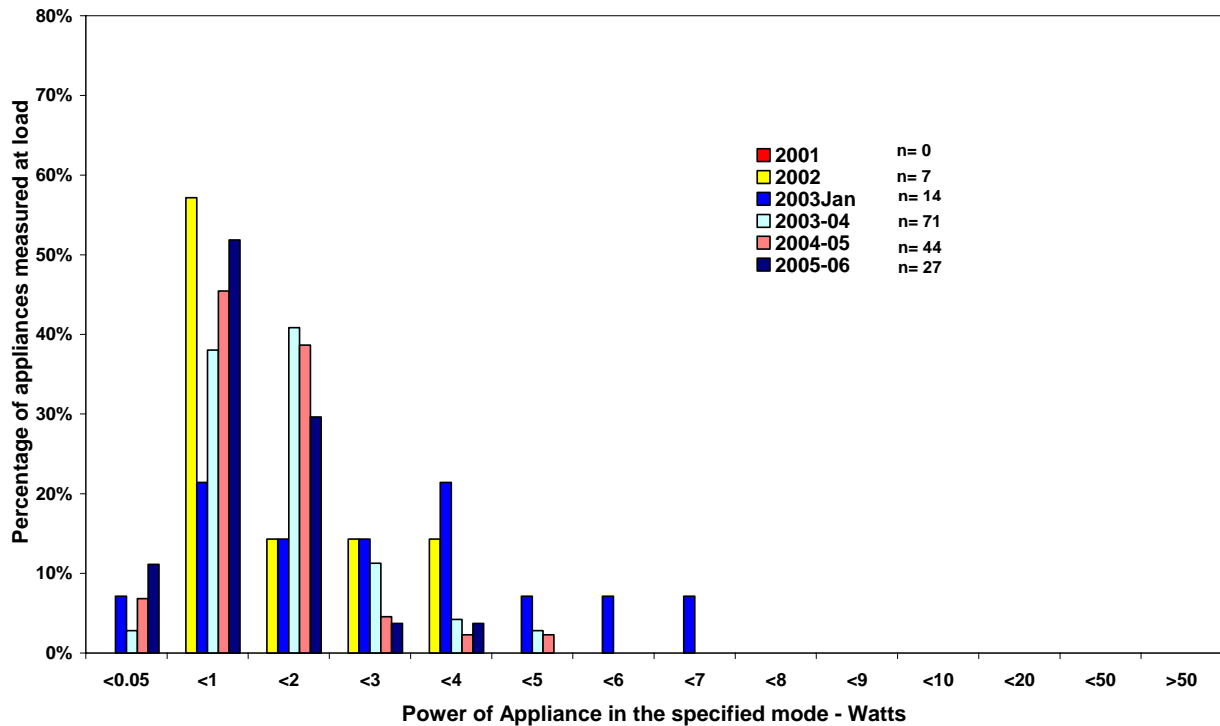


Figure 59 – Power Consumption for Monitors in Off Mode



**Computer – Speakers** Description: Separately powered speakers for desktop computers.  
 Number of products measured in November 2005: 6  
 Mode = off: average power 4.2W, (6) maximum 9.7W  
 Mode = Active: average power 7.5W (6), maximum 9.9W, minimum 2.2W.

Figure 60 –Power Consumption for Computer Speakers in Off Mode

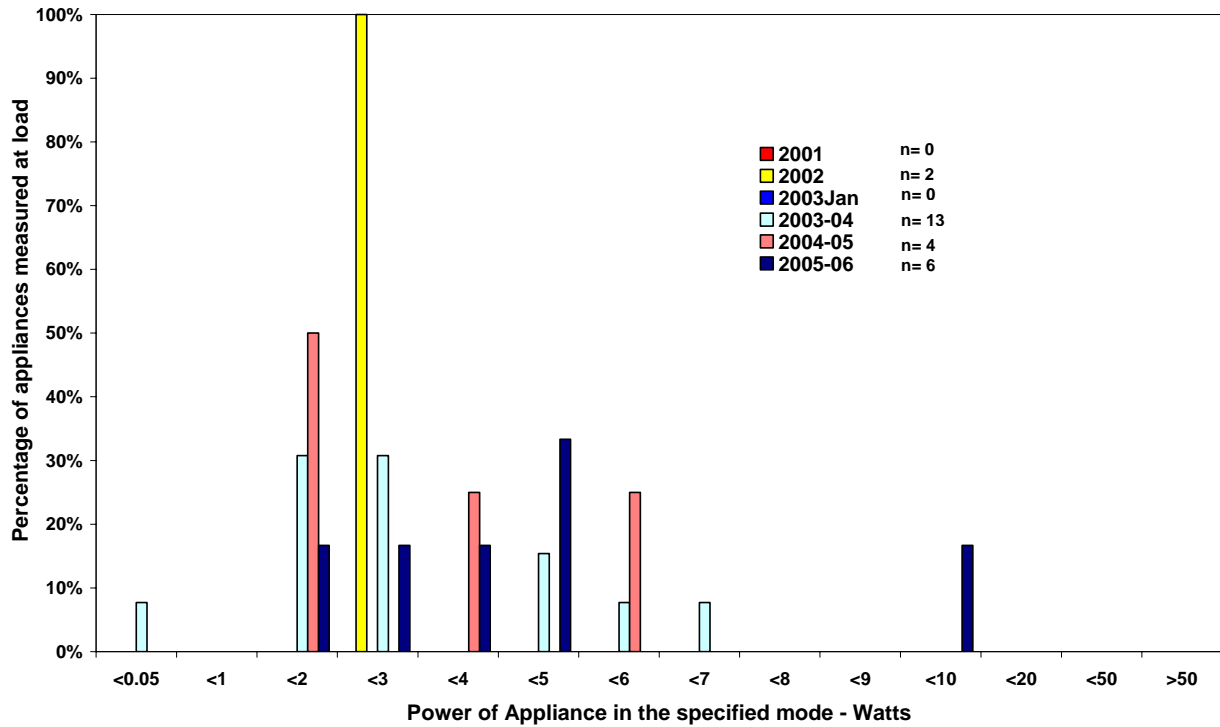
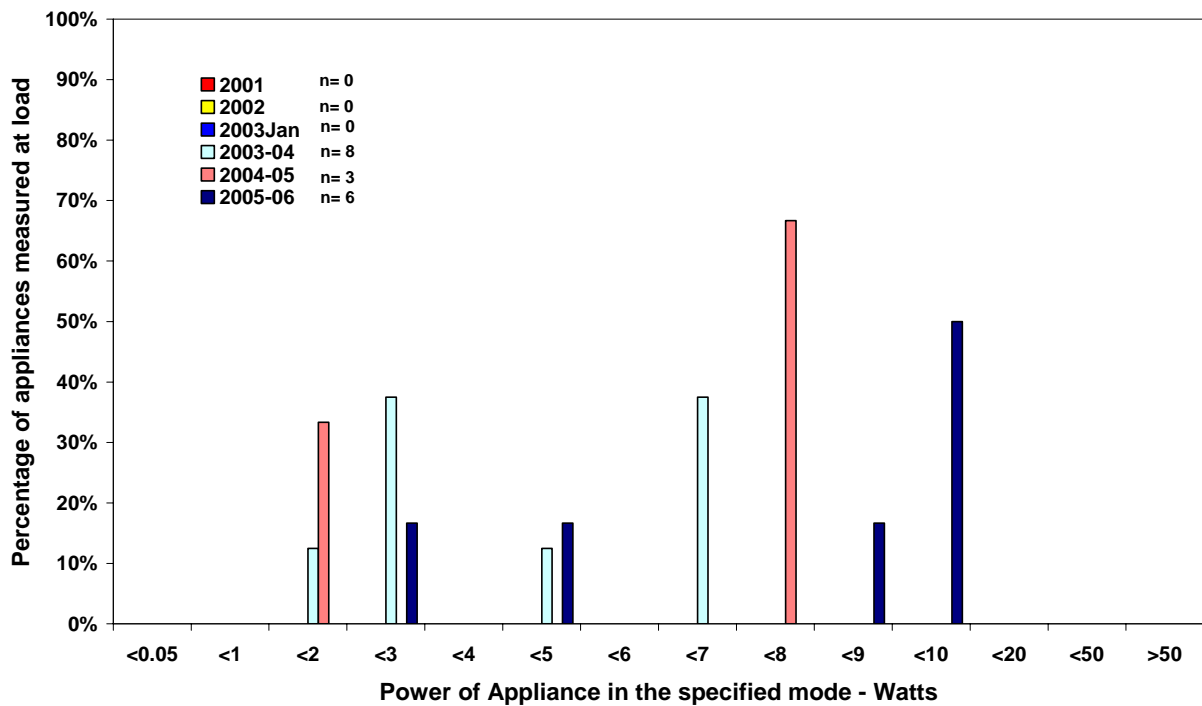


Figure 61 –Power Consumption for Computer Speakers in Active Standby Mode



**Printers - Inkjet** Description: Inkjet printers for personal computers.  
 Number of products measured in November 2005: 16  
 Mode = off: average power 0.9W, maximum 3.4W, 3 greater than 1.0W (16)  
 Mode = passive: average power 3.4W, maximum 5.4W, none less than 1.0W (14)

Figure 62 – Average Power Consumption of Printers – Inkjet in Off Mode

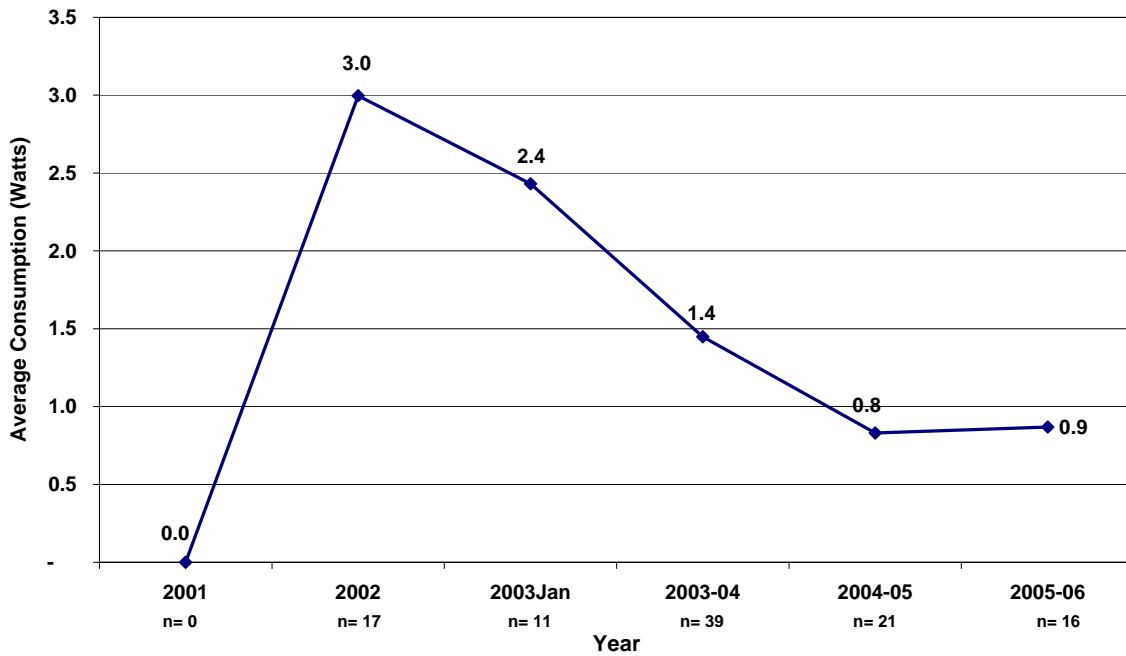


Figure 63 – Power Consumption of Printers – Inkjet in Off Mode

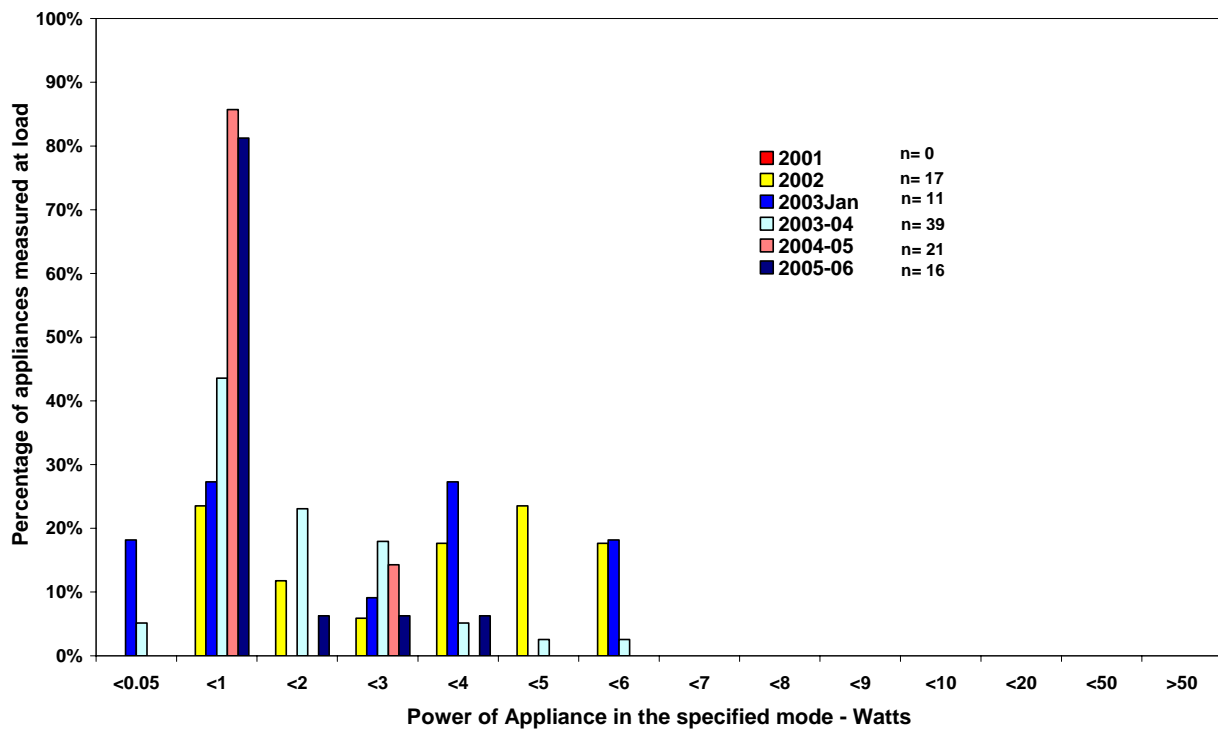


Figure 64 – Average Power Consumption of Ink Jet Printers in Passive Mode

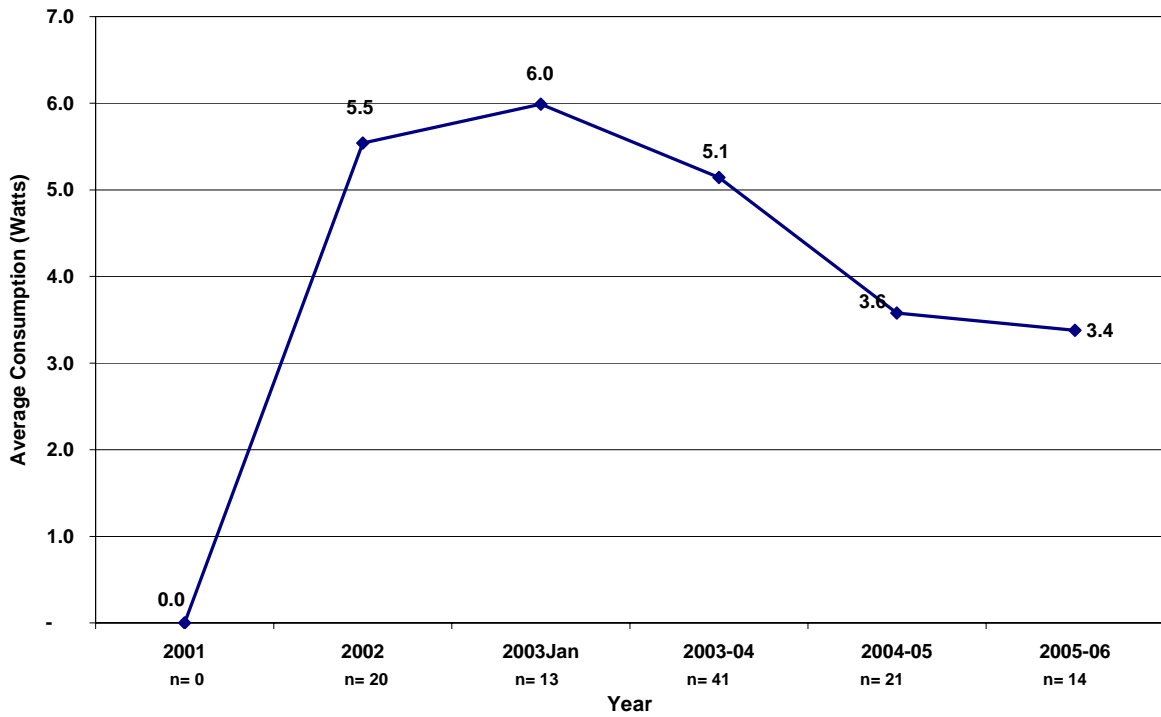
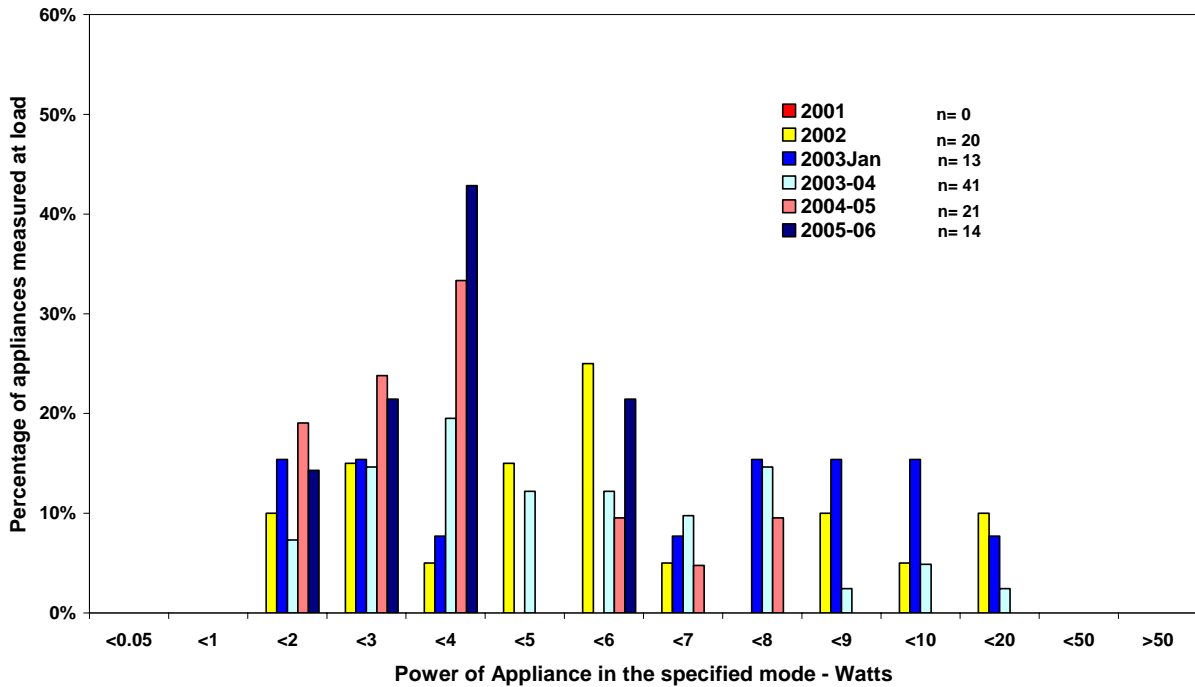


Figure 65 – Power Consumption of Ink Jet Printers in Passive Mode



**Printers - Laser** Description: Laser printers for personal computers.  
 Number of products measured in November 2005: 5  
 Mode = off: average power 0.0W, all were 0.0W (5)  
 Mode = passive: average power 7.7W, maximum 22.7W, none less than 1.0W (5)

Figure 66 – Power Consumption of Printers – laser in Off Mode

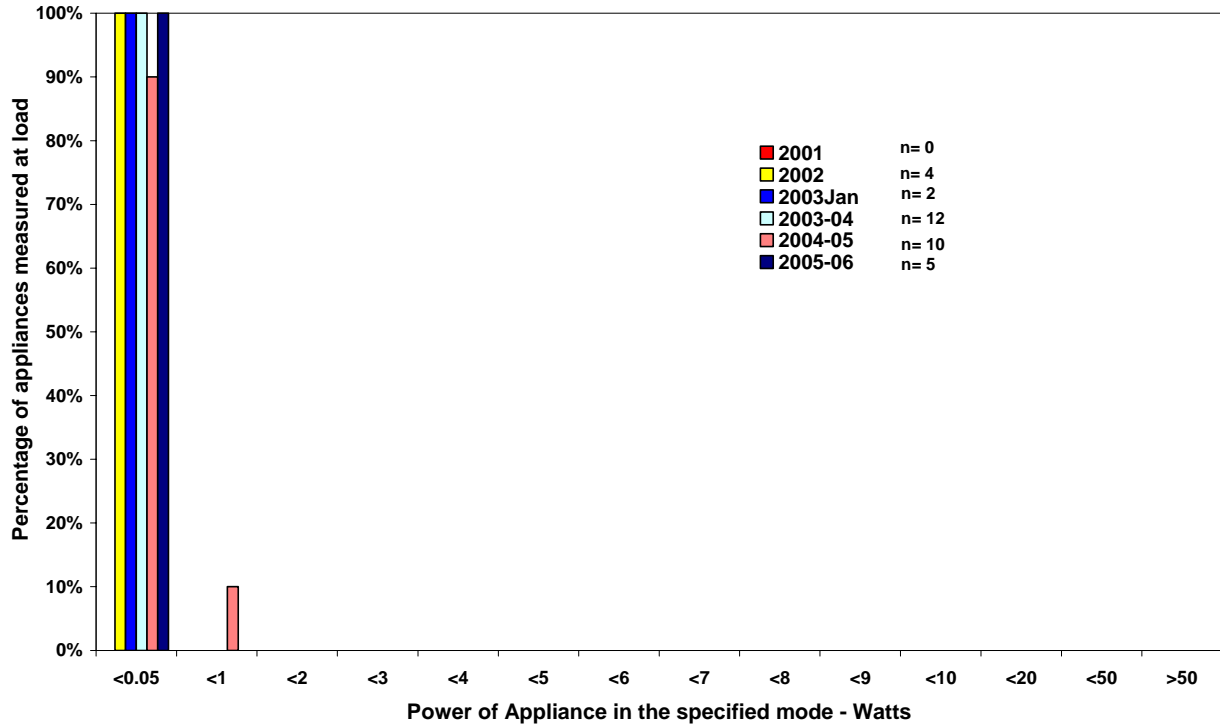
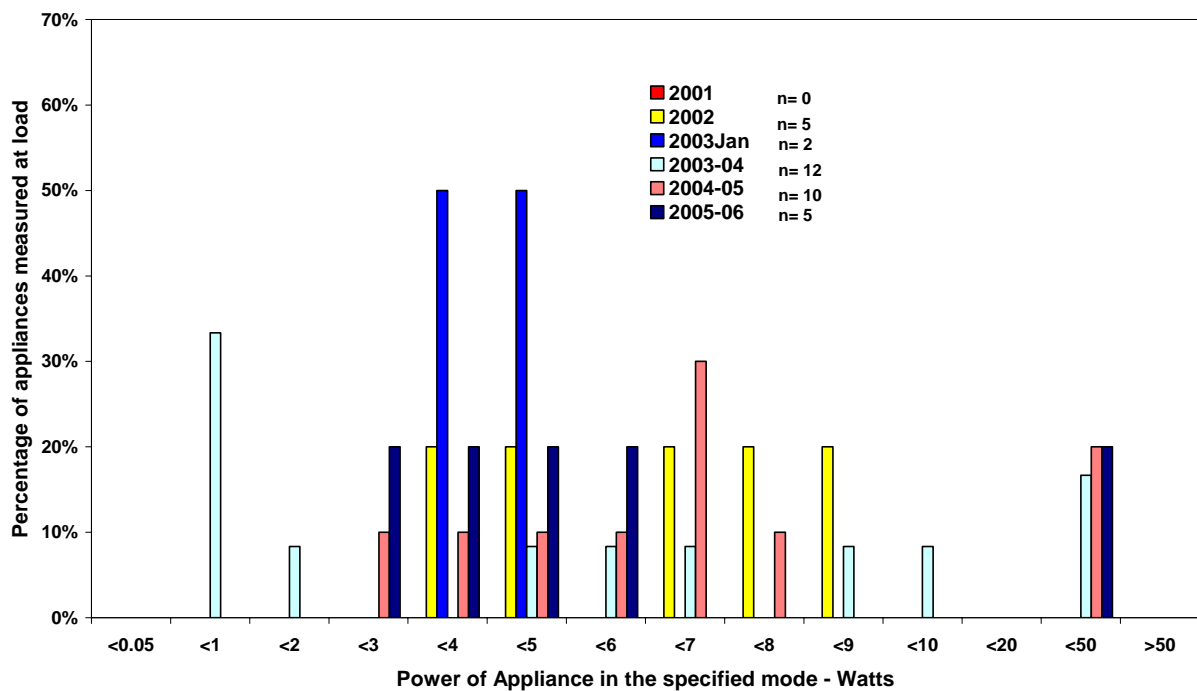


Figure 67 – Power Consumption of laser Printers in Passive Mode



**Multi function Devices** Description: Machines that incorporated various combinations of Phone/Fax/Copier/Scanner/Printer.

Number of products measured in November 2005: 20

Mode = off: average power 4.1W, maximum 9.2W, 4 less than 1W. (10)

Mode = active: average power 8.2W, (20) maximum 18.2W

Figure 68 – Average Power Consumption of Multifunction Devices in Off Mode

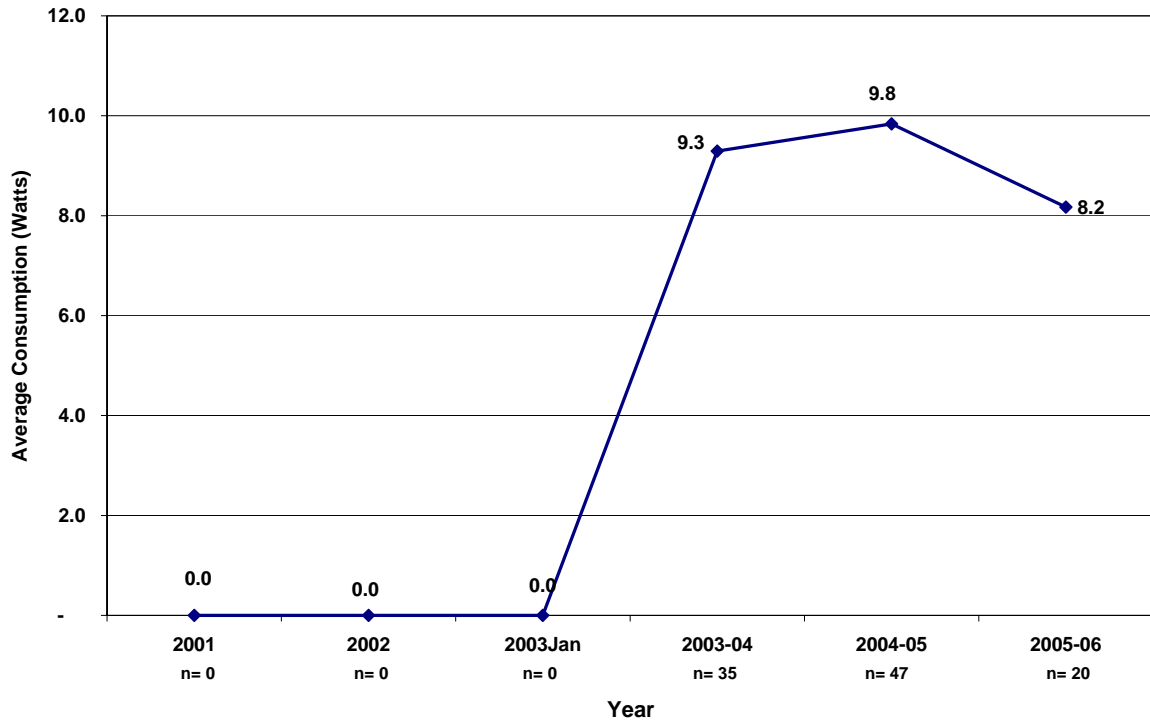


Figure 69 – Power Consumption of Multifunction Devices in Off Mode

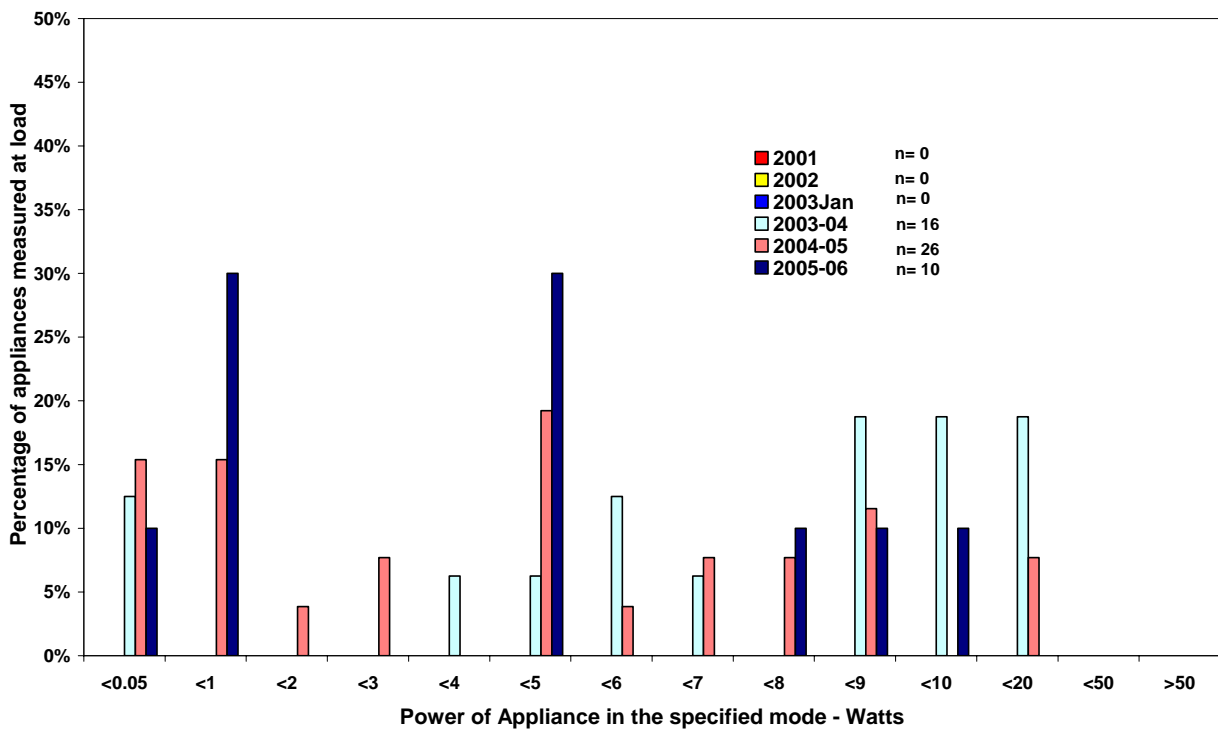


Figure 70 – Average Power Consumption of Multifunction Devices in Active Standby Mode

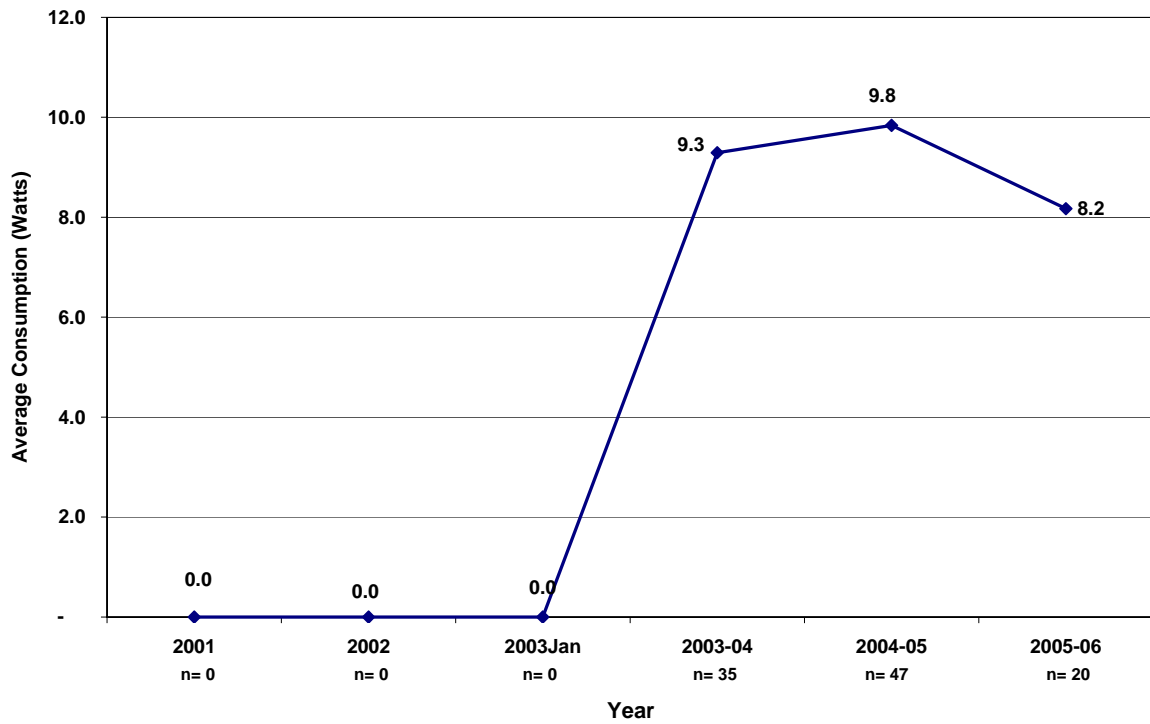
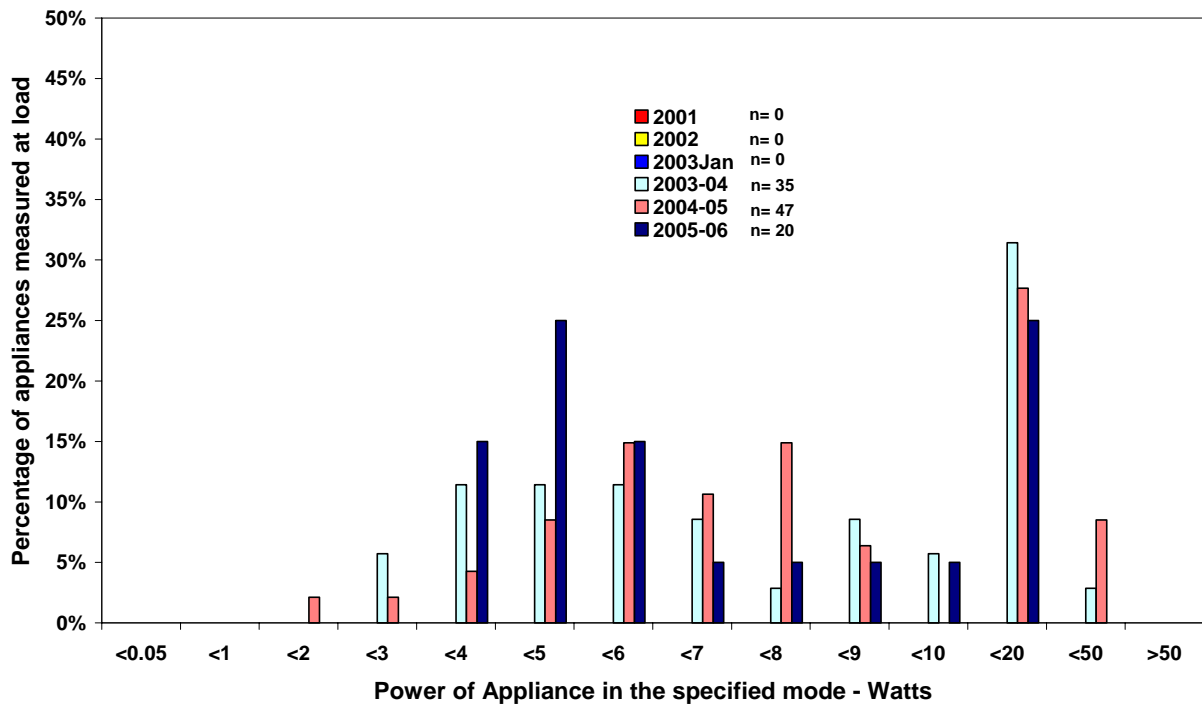


Figure 71 – Power Consumption of Multifunction Devices in Active Standby Mode



### Product Summaries – small appliances

**Breadmakers** *Description:* Domestic electric breadmakers.  
*Number of products measured in November 2005:* 12  
*Mode = active:* average power 1.8W, all in the range 1W to 2.5W  
*Notes:* No models had an off button

Figure 72 – Average Power Consumption for Breadmakers in Active Mode

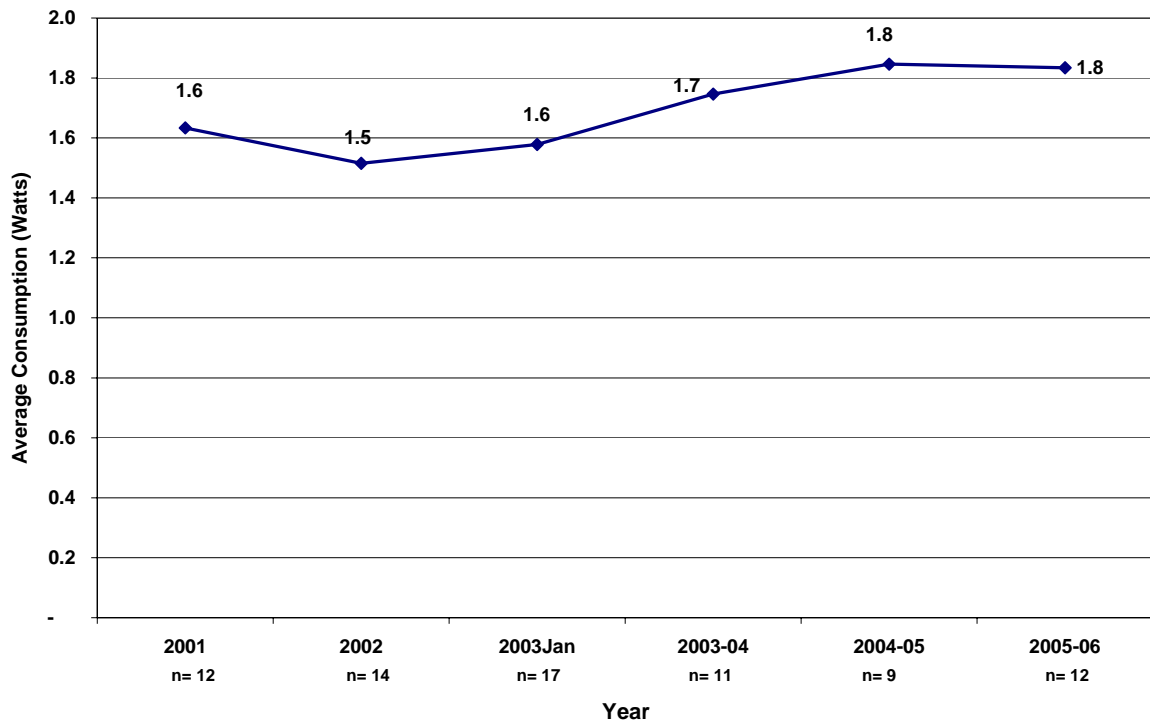
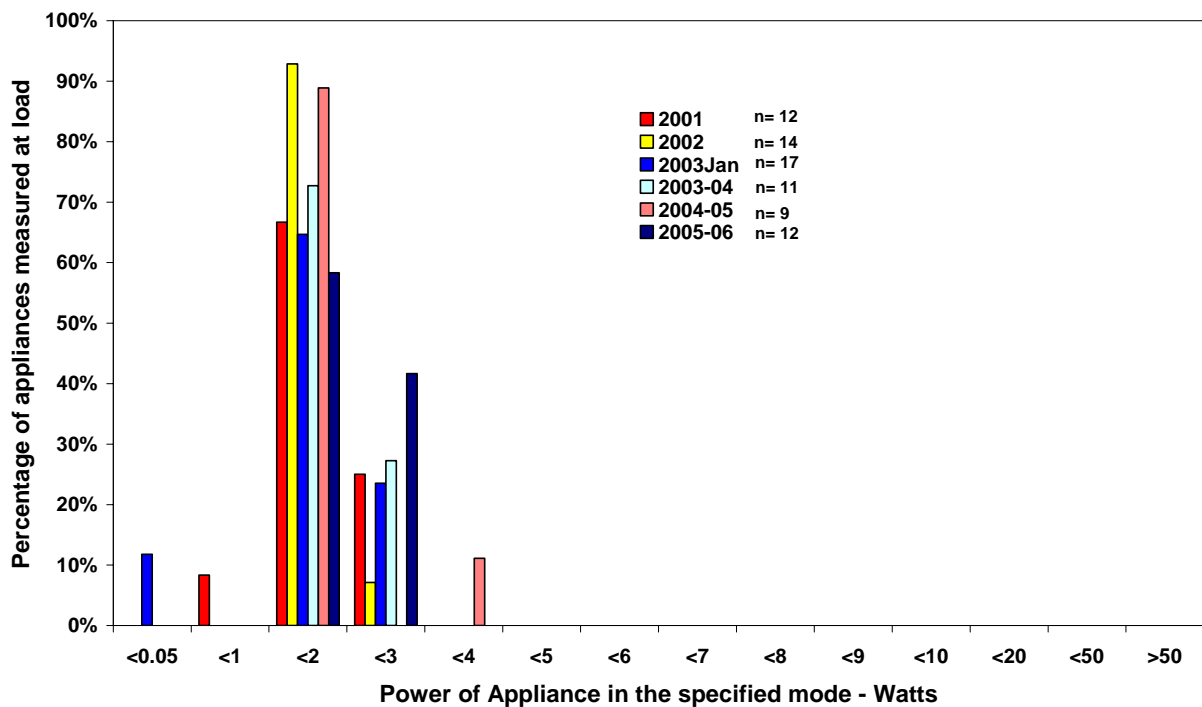


Figure 73 – Power Consumption for Breadmakers in Active Mode



**Hand Held Vacuum** Description: Portable battery operated vacuum cleaners (dust busters).  
 Number of products measured in November 2005: 7  
 Mode = passive standby: average power 1.2W, maximum 2.0W (7) 1 less than 1W.  
 Mode = active standby: average power 4.8W Max 9W (7)

Figure 74 – Average Power consumption for Hand Held Vacuums in passive standby mode

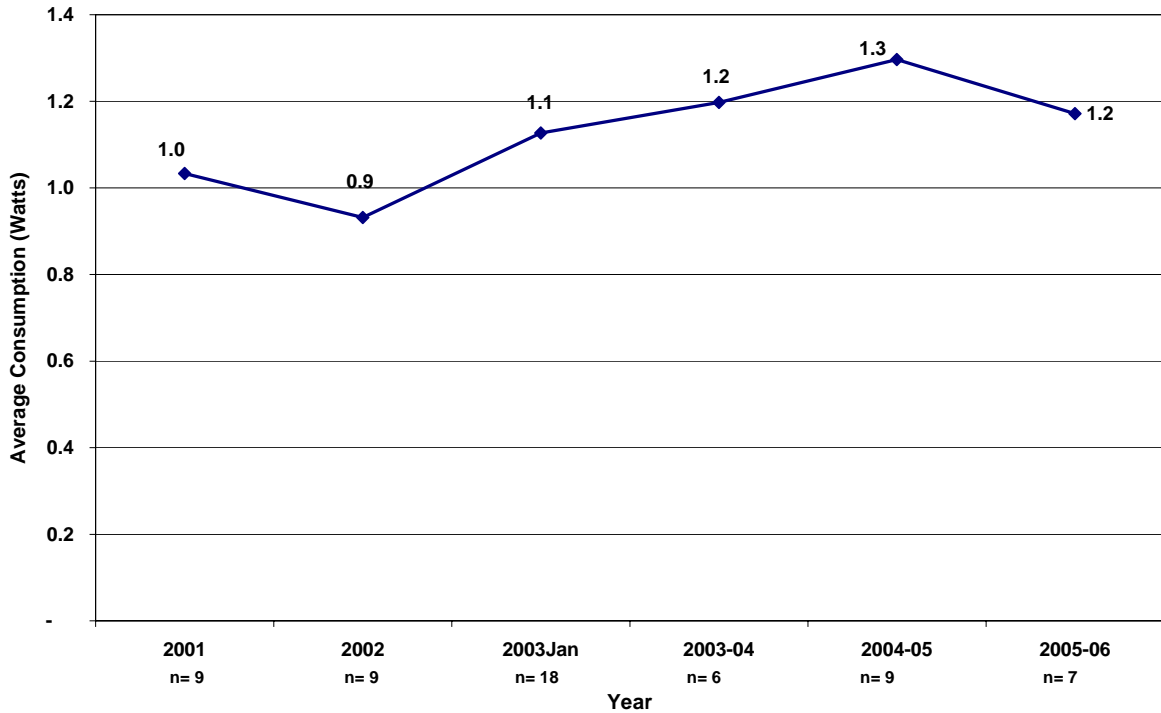


Figure 75 – Power consumption for Hand Held Vacuums in passive standby mode

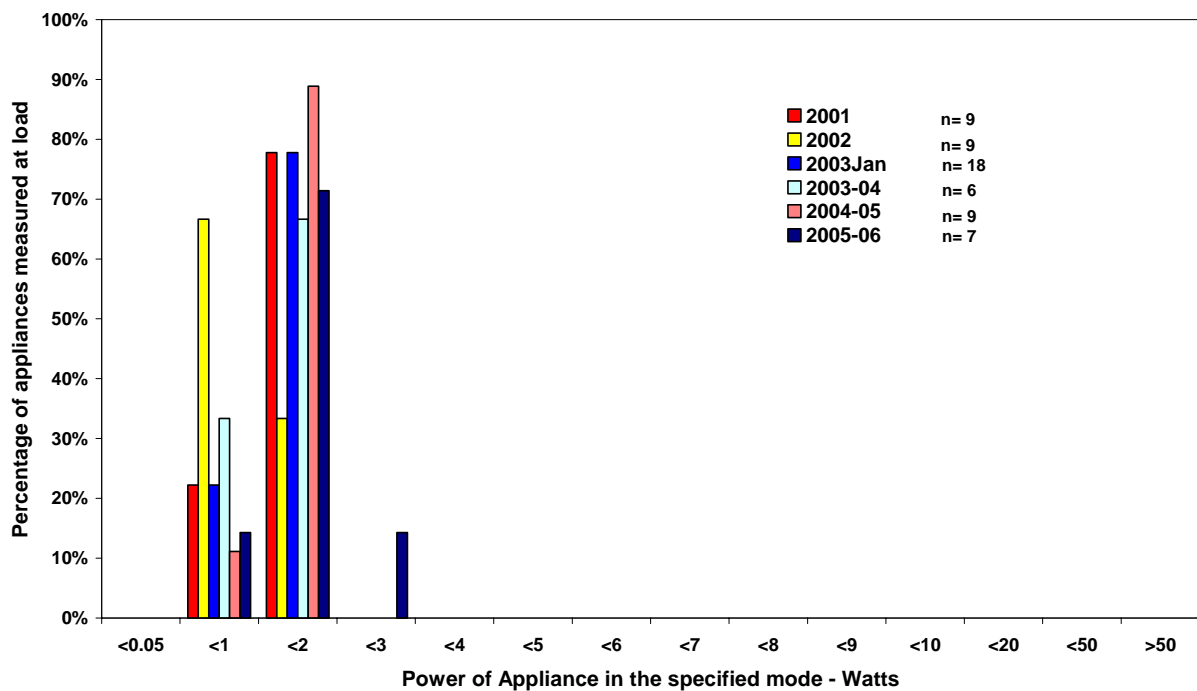
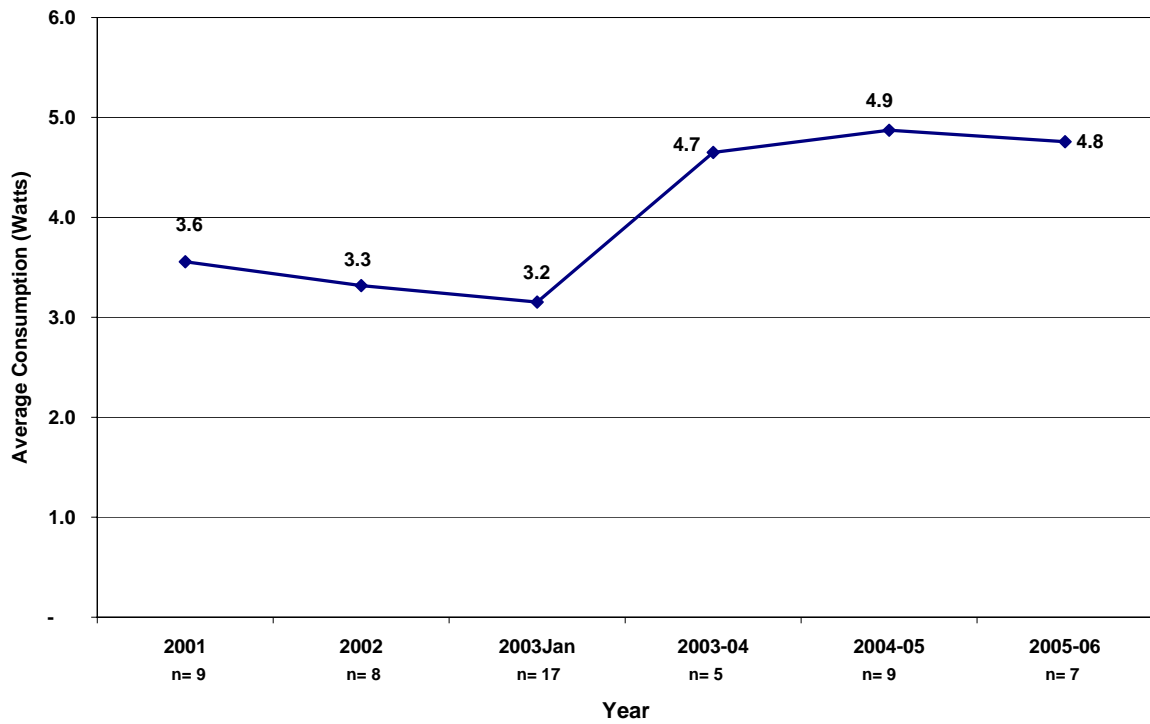
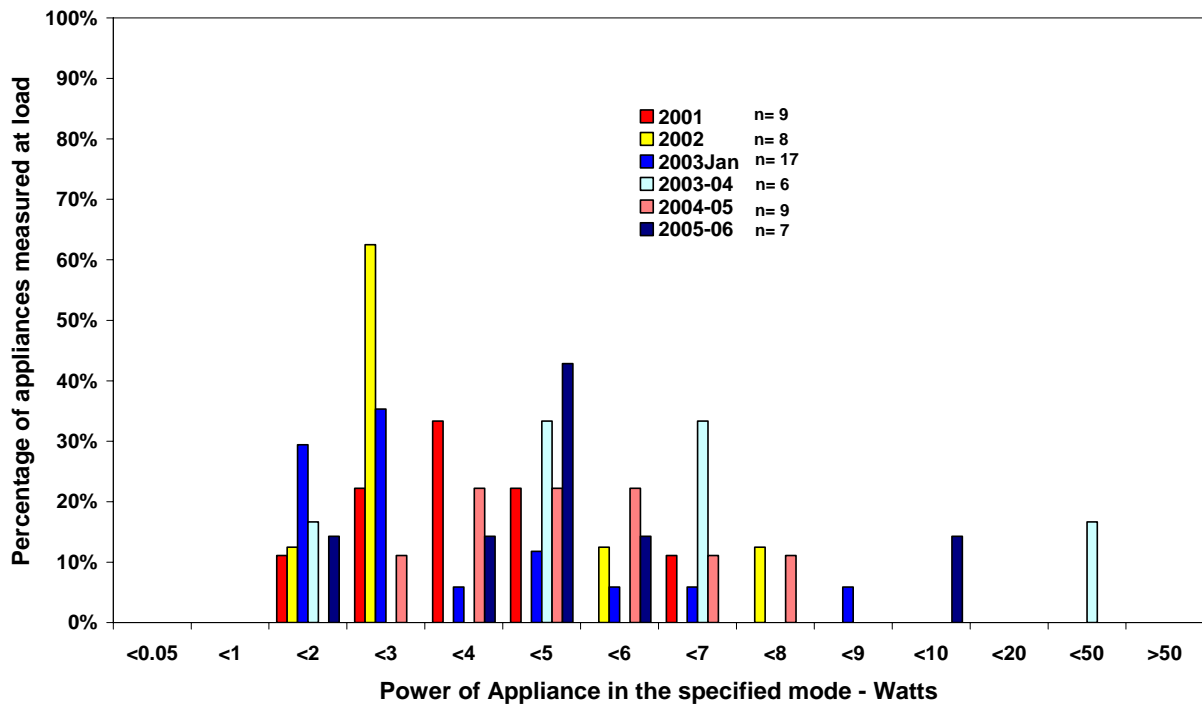


Figure 76 – Average Power consumption for Hand Held Vacuums in active standby mode



Note: This average chart has had one unit removed from the 2003-04 data as it recorded an extraordinarily high 39.55W skewing the average results.

Figure 77 – Power consumption for Hand Held Vacuums in active standby mode



**Microwaves** Description: Domestic microwave ovens.  
 Number of products measured in November 2005: 43  
 Mode = passive standby: average power 3.2W, maximum 5.5W. 2 models less than 1W

Figure 78 –Average Power Consumption of Microwave Ovens in passive Standby

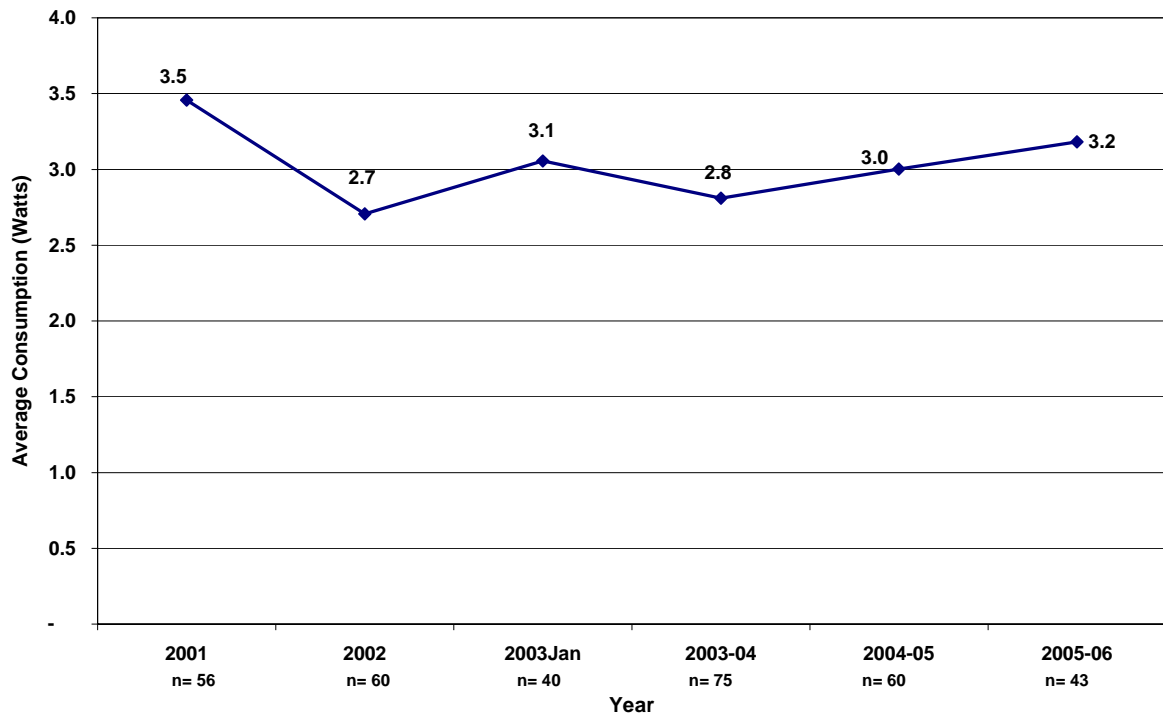
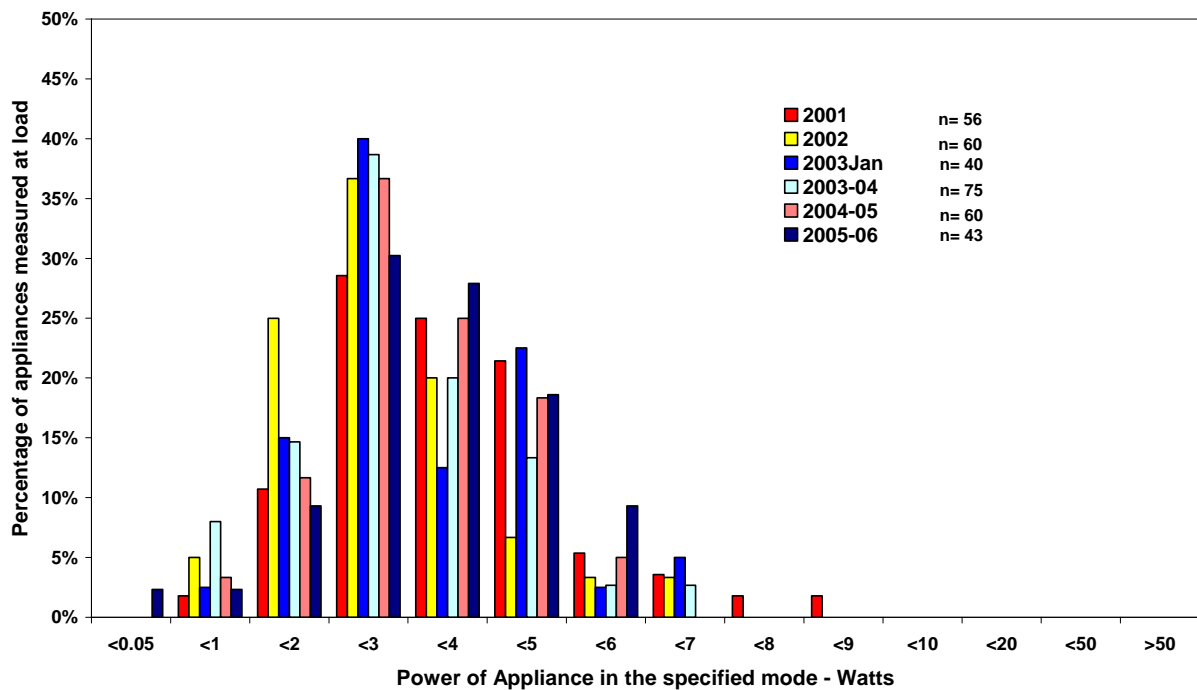


Figure 79 – Power Consumption of Microwave Ovens in passive Standby



**Espresso Machine** Description: Steam or pump operated coffee making.  
 Number of products measured in November 2005: 20  
 Mode = Off: average power 1.5W, maximum 6.1W (12 no consumption) (20)  
 Mode = Passive Standby: power 4.1W & 3.7W, (2) (these models had both standby and hard off switches).

Figure 80 – Average Power Consumption of Espresso Machines in Off Mode

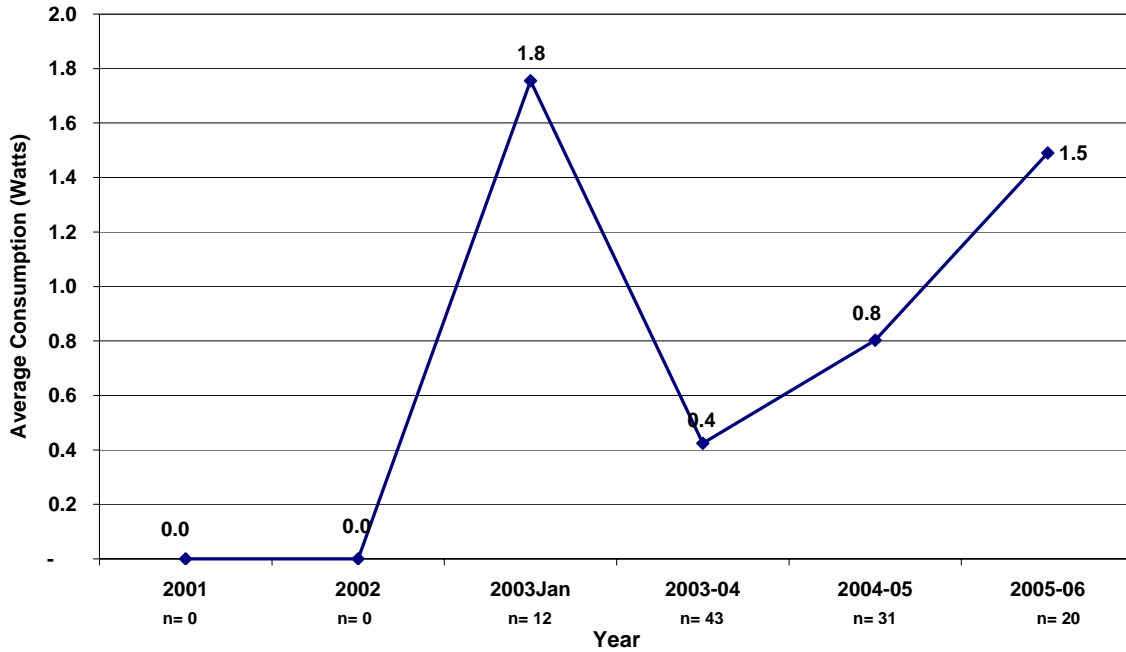
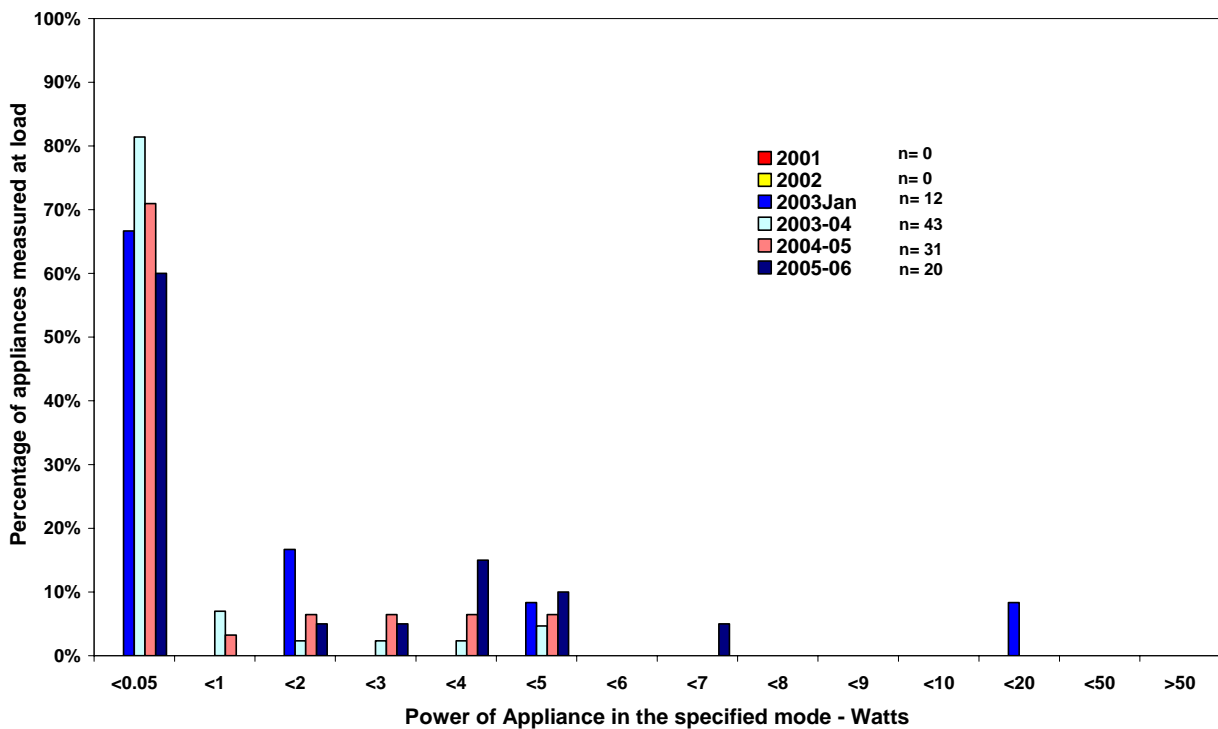
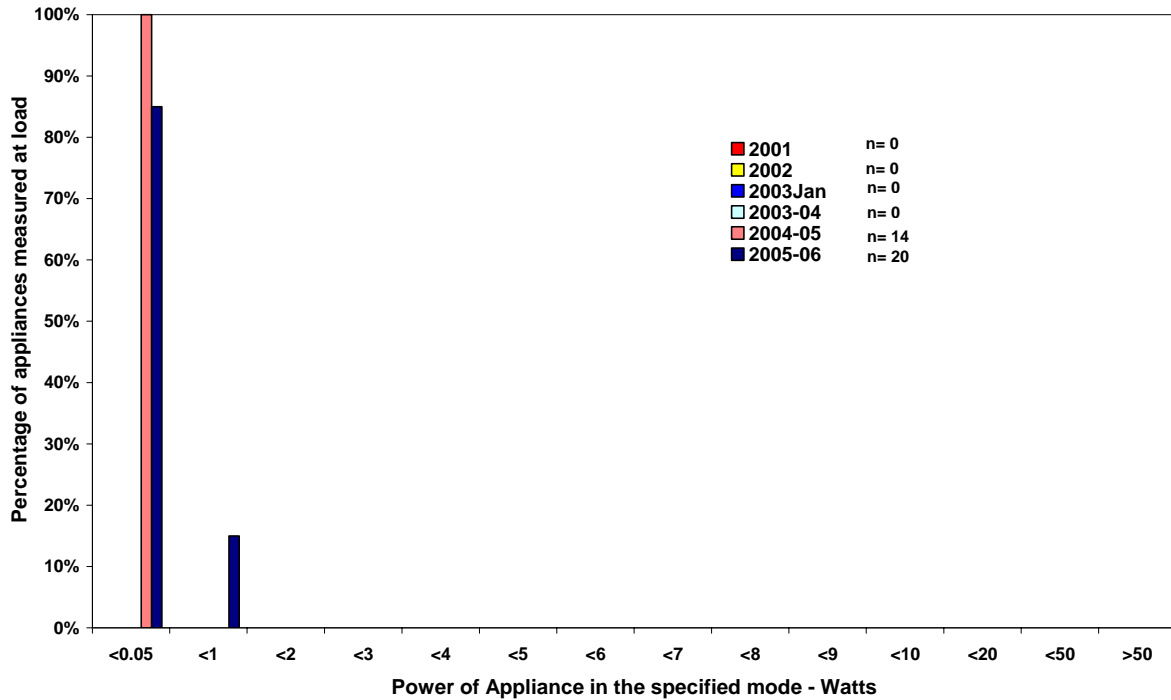


Figure 81 – Power Consumption of Espresso Machines in Off Mode



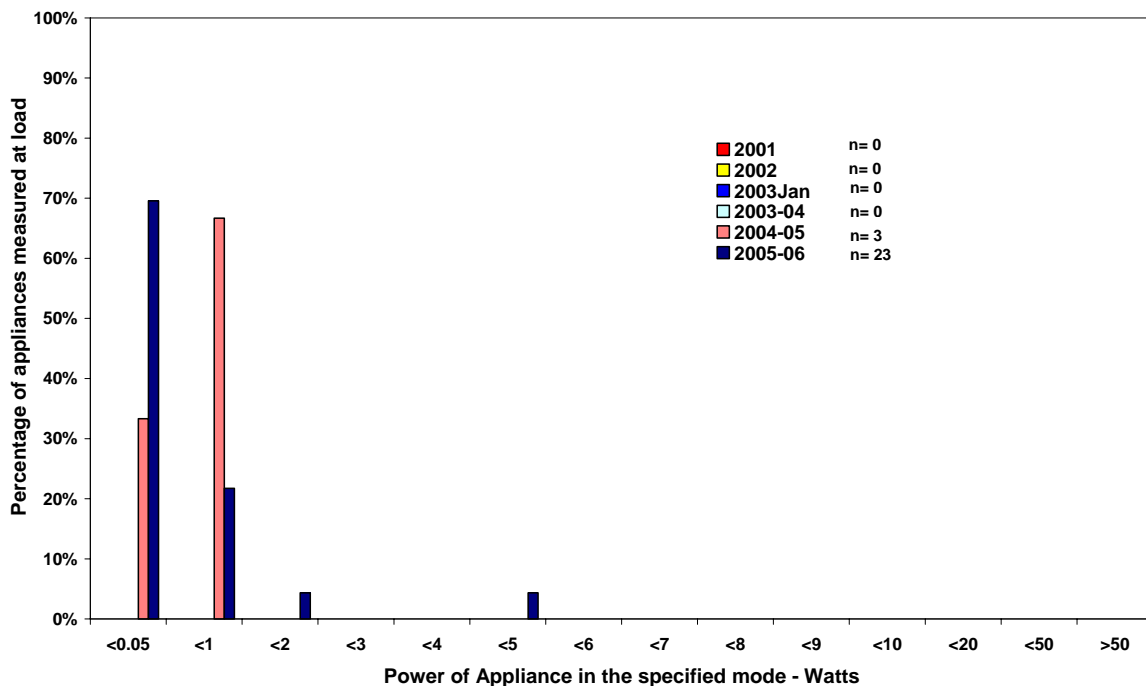
**Cooling Fans** *Description:* Portable Fan  
*Number of products measured in November 2005:* 23  
*Mode = Off:* average power 0.1W max 0.9 (20)  
*Mode = passive standby:* 0.4W for both (2)  
*Notes:* 2 models had remote controls and no off mode. Another model had a remote control but was unavailable to test in passive standby.

Figure 82 – Power Consumption of Fans in Off Mode



**Juicers** *Description:* Blender designed for creating Juice  
*Number of products measured in November 2005:* 23  
*Mode = Off:* average power 0.4W max 4.8 (23)  
*Notes:* 16 models recorded zero consumption in off and another 5 used less than 1W.

Figure 83 – Power Consumption of Juicers in Off Mode



**Heaters – Portable Electric** Description: Portable electric Heater  
 Number of products measured in November 2005: 18  
 Mode = Off: average power 0.4W max 2.1W (18), 15 less than 1W.

Figure 84 – Average Power Consumption of Electric Portable Heaters in Off Mode

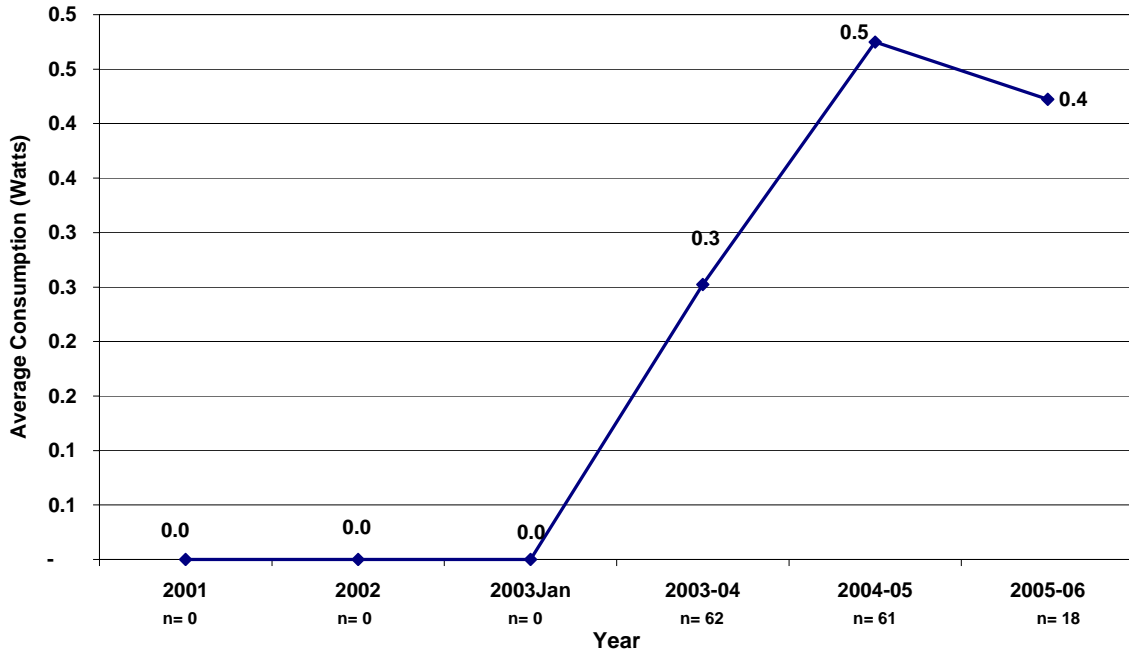
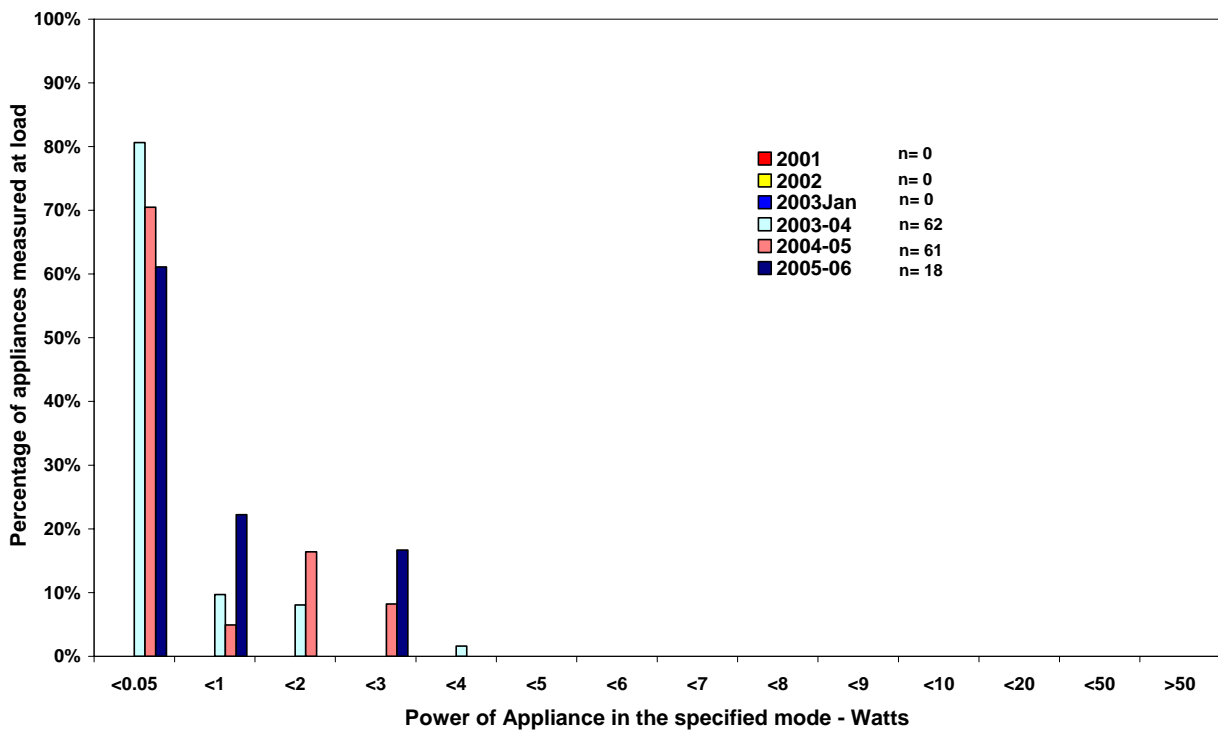


Figure 85 – Average Power Consumption of Electric Portable Heaters in Off Mode



**External Power Supply (EPS)** Description: Power supply provided by manufacturer to connect appliance to mains power.

Number of products measured in November 2005: 14

Mode = passive standby: average power 1.1W max 2.8W (14), 8 less than 1W.

Products: 6 PC monitors, 3 PC speakers, 1 portable stereo, 1 inkjet printer, 3 set top boxes.

Product type appears to have no impact on EPS consumption

**Note:** Power supplies have always been included in the standby of the appliance they have powered; however this survey recorded details of the individual EPS units as well. These results are not included in the average standby calculation, avoiding double counting the effect of EPS

### **Further Information:**

All reports on standby, including product profiles released for public comment, can be found on [www.energyrating.gov.au](http://www.energyrating.gov.au) in the electronic library.

Energy Efficient Strategies and EnergyConsult, 2005, *Appliance Standby Power Consumption: Store Survey 2004/05*. This report contains the detailed results of the Australian retail store standby surveys undertaken during the 2004/05 financial year outlined in this executive summary.

Energy Efficient Strategies and EnergyConsult, 2004, *Appliance Standby Power Consumption: Store Survey 2003/04*. This report contains the detailed results of the Australian retail store standby surveys undertaken during the 2003/04 financial year outlined in this executive summary.

Energy Efficient Strategies and EnergyConsult, 2003, *Appliance Standby Power Consumption: Store Survey 2003*, NAEEEEC Report 2003/04. This report contains the detailed results of the Australian retail store standby survey undertaken in early 2003 outlined in this executive summary. Available from <http://www.energyrating.gov.au/library/details200304-storesurvey.html>.

Energy Efficient Strategies and EnergyConsult, 2002, *Appliance Standby Power Consumption: Store Survey 2002*, NAEEEEC Report 2002/08. This report contains detailed results of the Australian retail store standby survey undertaken in early 2002. Available from <http://www.energyrating.gov.au/library/details200208-storesurvey.html>.

Energy Efficient Strategies and EnergyConsult 2001, *Quantification of Residential Standby Power Consumption in Australia: Results of Recent Survey Work*. Prepared for NAEEEEC, this report provides results of an intrusive survey where measurements on 2,500 appliances were undertaken in 64 houses in Melbourne, Sydney and Brisbane. The report also includes results of measurements on 531 new appliances in retail outlets and results of a telephone survey of 801 households in Australia, which documents information on appliance ownership, age and usage patterns. Available from <http://www.energyrating.gov.au/library/detailsstandby-2001.html>.