

Energy saving potential by implementing the Energy Star Imaging Equipment specification version 1.0 in the European Union

Estimated energy savings

The total energy saving potential in the office and residential sectors due to the effect of the Imaging Equipment specification (version 1.0) Tier I (from 2007) on purchasing throughout the European Union (EU-25) during three years (2007-2009) has been estimated at about 17 TWh.

Part of the saving potential will be achieved after 2009 because the lifetime of the purchased products during 2007-2009 will extend beyond 2009.

The energy savings may not be achieved by the specifications alone, but may need additional measures and initiatives based on the labelling programme such as public procurement and campaigns towards consumers in the offices and households.

A breakdown of the saving potential on product categories is provided below.

Savings - Million kWh	Tier I
<u>Office</u>	
Fax machine	68
Fax machine (inkjet)	5
Scanner	451
Printer	5804
Copier	797
Multifunction device	6585
Total office	13711
<u>Residential</u>	
Fax machine	220
Fax machine (inkjet)	3
Scanner	2254
Printer	507
Multifunction device	20
Total residential	3004
Total office and residential	16715

Methodology and assumptions

Very few data on the conditions in the European Union were available for this assessment. The saving potential was therefore calculated mainly on basis of data in the CCAP model (CCAP: Climate Change Action Plan) on the impact of the Energy Star programme in the USA. The model is developed and managed by LBNL (Lawrence Berkeley National Laboratory) for the US EPA responsible for the Energy Star programme in USA. The US EPA is using results from the model to estimate realised and future energy saving potential due to Energy Star programme. Model data is based on various market research reports and on calculations made by LBNL.

The following methodology was applied:

- For each product type, the potential energy savings for each year in the period were calculated by multiplying the difference in average energy consumption between an Energy Star compliant product and a non Energy Star compliant product (unit base consumption) with the sales number of Energy Star compliant products (excluding free riders) during the particular year and multiplying with the product lifetime.
- The potential energy savings for each year during the period were added resulting in total savings for the product type.
- The savings for each product type were added resulting in total savings for all products.

The following data were basis for the calculations:

- Total sales: Product sales for USA from the LBNL model have been used as sales data for EU-25 as a rough estimate based on the fact that GDP for USA and EU-25 is approximately the same.
- Sales of compliant products: Data is from the LNBL model and it is corrected for free riders i.e. products having energy consumption below the Energy Star specifications but not as a result of the Energy Star programme impact. The LNBL model data is based on various market research reports and analyses.
- Product lifetime: Data from the LNBL model.
- Unit energy consumption for non Energy Star compliant products (unit base consumption): Unit consumption of an Energy Star compliant product in 2006 (i.e. last year of the old specification) from the LNBL model. However, if the model consumption of a non Energy Star compliant product was lower than of an Energy Star compliant product, this figure was used.
- Unit energy consumption for Energy Star Tier I compliant products: Data from the LNBL model based on the specifications and an estimated usage pattern.

Main data uncertainties include:

- Sales of compliant products: Currently, there is less focus on the Energy Star programme in EU than in USA, which may hinder the realisation of the saving potential. However, due to the Energy Star specifications becoming more stringent Member States may be more willing to use the Energy Star programme.
- Unit energy consumption: The energy consumption of the products is quite uncertain because it is based on assumed power levels in the various modes and on usage patterns.

The quality of the data in the LBNL model has been verified in a simplified way by the following data tests:

- Product sales data: The data have been checked indirectly by comparing the stock data in the LBNL model with the similar data in a Fraunhofer report¹ (extrapolated to EU-25 based on GDP). The difference between the total figures is about 20 per cent giving a good indication that the thesis about sales data being roughly of the same order of magnitude is correct.
- Energy consumption of imaging equipment: Total 2006 energy consumption of imaging equipment products in the office and residential is about 48 TWh in the LBNL model. Extrapolating consumption data from the Fraunhofer report¹ to all of EU-25 (based on GDP) gives about 21 TWh and the LBNL model consumption is thus two times higher. The ECCP report² states a total consumption of office equipment in the residential and commercial sectors of 117 TWh. This is an indication that the energy consumption figures and thereby the saving potential might be slightly too high.

There is however no doubt that the saving potential is important. Furthermore, there will be additional energy savings beyond the assessed period and it is also assumed that a more stringent Tier II will be introduced.

Data used for estimating the saving potential are shown in Annex 1.

¹ “Technical and legal application possibilities of the compulsory labelling of the standby consumption of electrical household and office appliances. Summary of the final report to the Federal Ministry of Economics and Labour”. Fraunhofer Institut Systemtechnik und Innovationsforschung. 2005.

² ”European Climate Change Programme. Long Report.” June 2001.

Annex 1: Data used for estimating the saving potential

Product type	Energy consumption 2006 GWh	Unit consump.		Product lifetime Years	Sales					
		Non E*	Tier I E*		2007		2008		2009	
					Total unit sales 1000	Tier I E* %	Total unit sales 1000	Tier I E* %	Total unit sales 1000	Tier I E* %
<u>Office</u>										
Fax machine	259	205	156	4	220	50	204	70	192	49
Fax machine (inkjet)	14	44	30	4	62	49	59	49	57	51
Scanner	1228	109	84	4	2651	50	2686	70	2721	44
Printer	17879	196	112	5	18587	23	19539	32	20527	16
Copier	1214	1408	558	6	94	50	95	70	96	44
Multifunction device	12130	749	310	6	3325	20	3402	39	3467	15
Total office	32724									
<u>Residential</u>										
Fax machine	811	205	156	4	708	50	662	70	628	49
Fax machine (inkjet)	27	44	30	4	122	0	117	20	113	21
Scanner	5367	109	84	4	13048	50	13561	70	13988	43
Printer	8561	78	49	5	24244	6	25901	8	27669	1
Multifunction device	106	96	30	6	246	1	258	21	268	0
Total residential	14872									
Total office + residential	47597									