Office IT equipment

Green Public procurement (GPP) Product Sheet

This Product Sheet forms part of the European Commission's GPP Training Toolkit, which can be downloaded from the GPP website http://ec.europa.eu/environment/gpp/toolkit_en.htm. Similar product sheets have been established for 10 other product and service groups. More information on the reasons for selecting these criteria can be found in the detailed background report on the website.

For each product/service group two sets of criteria are presented:

- **Core GPP criteria** address the most significant environmental impacts, and are designed to be used with minimum additional verification effort or cost increases.
- **Comprehensive GPP criteria** are intended for use by authorities who seek to purchase the best environmental products available on the market, and may require additional administrative effort or imply a certain cost increase as

1 Scope

Office IT equipment as dealt with in this document covers three sets of products:

- Computers - covering both PCs and notebooks
- Monitors
- Imaging equipment - covering copiers, printers, scanners, faxes, and MFDs

The scope of products covered is taken from the Energy Star **Agreement between the Government of the United States of America and the European Community on the coordination of energy-efficiency labelling programs for office equipment**[1] and from the EuP Preparatory Studies for Imaging Equipment[2].

[1] *http://eur-lex.europa.eu/LexUriServ/site/en/oj/2006/l_381/l_38120061228en00260104.pdf*
[2] *EcoDesign of EuP Products: Preparatory Studies LOT 4: Imaging Equipment: Copiers, Faxes, Printers, Scanners, MFD: http://www.ecoimaging.org*

1.1 PCs, notebooks and monitors

Criteria for PCs, notebooks and monitors are grouped together.

The **Core** criteria for PCs, notebooks and monitors focus on the inclusion of technical specifications regarding energy consumption, as this has been identified as the aspect having the most significant environmental impact. The requirements are based on ENERGY STAR requirements. In addition, the **Core** criteria include some simple, easy to understand (and verify) criteria addressing the lifetime of products. These lifetime criteria have been selected on the basis of the European Ecolabel, Blue Angel and Nordic Swan.

In the **Comprehensive** criteria, a number of further aspects are included in the specifications and award stage:

- Noise emissions
- The use of mercury in LCD monitor backlighting
- The disassembly of equipment
- The use of flame retardants with certain risk-phrases (carcinogenic, mutagenic or harmful to reproduction) in plastic parts

1.2 Imaging equipment

The **Core** criteria for imaging equipment focus on the inclusion of technical specifications covering the requirement for a duplexing function (where the device has a printing function), energy consumption, and the availability of spare parts, as these cover the most significant environmental impacts. The duplexing criteria are taken from the Nordic Swan and Blue Angel ecolabels. Energy consumption is based on either the ENERGY STAR or the Blue Angel requirements.

In the **Comprehensive** criteria, a number of further aspects are included in the specifications and award stage:

- Noise emissions
- The disassembly of equipment
- The use of flame retardants with certain risk-phrases (carcinogenic, mutagenic or harmful to reproduction) in plastic parts

2 Key environmental im-

Impact	GPP Approach
Energy consumption and resulting Carbon Dioxide (CO_2) emissions	• Purchase energy efficient models • Purchase products with a restricted amount of hazardous constituents and promote take back options • Purchase products with a restricted noise level • Design for recycling, longer life and promote take back options • Decrease the quantity of packaging used • Ensure the recyclability of the packaging used • Increase the use of recycled packaging
Air, soil and water pollution, ozone formation (smog), bioaccumulation or food chain exposure and effects on aquatic organisms due to hazardous constituents e.g. mercury content of LCD displays and some flame retardants	
Negative impact on the health of employees due to noise, causing stress for those sensitive to such sounds	
Use of energy, finite resources and harmful emissions related to the production of IT products	
Generation of waste material including packaging and final disposal	

3 PCs, notebooks and monitors - GPP criteria

3.1 PCs, notebooks and monitors - Core GPP criteria

Subject matter

Purchase of energy efficient [PCs/notebooks/monitors].

Specifications

1. All products must meet the latest ENERGY STAR standards for energy performance, available at www.eu-energystar.org.
   Verification:
   All products carrying the ENERGY STAR label will be deemed to comply. Any other appropriate means of proof, such as a technical dossier of the manufacturer or a test report from a recognised body demonstrating that the criteria are met will also be accepted.

2. PCs must be designed so that:
   - The memory is readily accessible and can be changed.
   - The hard disk and, if available, the CD drive and/or DVD drive, can be changed.

   Verification:
   All products carrying the EU Ecolabel will be deemed to comply. Other appropriate means of proof will also be accepted.

3. Notebooks must be designed so that the memory is easily accessible and can be changed.
   Verification:
   All products carrying the EU Ecolabel will be deemed to comply. Other appropriate means of proof will also be accepted.

Contract performance clauses

For notebooks the availability of compatible batteries and power supplies and of the keyboard and its parts shall be guaranteed for at least 3 years from the time that production ceases.

Verification:
All products carrying the EU Ecolabel, will be deemed to comply. Alternatively the bidder must provide a written guarantee that this criterion will be met.

3.2 PCs, notebooks and monitors - Comprehensive GPP criteria

Subject matter

Purchase of [PCs/notebooks/monitors] with low environmental impacts throughout the lifecycle.

Specifications

1. All products must meet the latest ENERGY STAR standards for energy performance, available at www.eu-energystar.org.

   Verification:
   All products carrying the ENERGY STAR label will be deemed to comply. Any other appropriate means of proof, such as a technical dossier of the manufacturer or a test report from a recognised body demonstrating that the criteria are met will also be accepted.

2. PCs must be designed so that:
   - The memory is readily accessible and can be changed.
   - The hard disk, and if available the CD drive and/or DVD drive, can be changed.

   Verification:
   All products carrying the EU Ecolabel will be deemed to comply. Other type I ecolabels fulfilling the above criteria can also be accepted. Other appropriate means of proof will also be accepted.

3. Notebooks must be designed so that the memory is easily accessible and can be changed.

   Verification:
   All products carrying the EU Ecolabel will be deemed to comply. Other type I ecolabels fulfilling the above criteria can also be accepted. Other appropriate means of proof will also be accepted.

4. The background lighting of LCD monitors shall not contain more than 3.5 mg of mercury on average per lamp.

   Verification:
   All products carrying the EU Ecolabel will be deemed to comply. Other type I ecolabels fulfilling the above criteria can also be accepted. Other appropriate means of proof will also be accepted.

5. The 'Declared A-weighted Sound Power Level' (re 1 pW) of PCs or notebooks, according to paragraph 3.2.5 of ISO 9296, measured in accordance with ISO 7779, shall not exceed:

   For PCs:
   - 4.0 B(A) in the idle operating mode (equivalent to 40 dB(A)).
   - 4.5 B(A) when accessing a hard-disk drive (equivalent to 45 dB(A)).

   Verification: All products carrying the EU Ecolabel will be deemed to comply. Other type I ecolabels fulfilling the above criteria can also be accepted. Other appropriate means of proof will also be accepted.

   For notebooks:
   - 3.5 B(A) in the idle operating mode (equivalent to 35 dB(A)).
   - 4.0 B(A) when accessing a hard-disk drive (equivalent to 40 dB(A)).

   Verification: All products carrying the EU Ecolabel will be deemed to comply. Other type I ecolabels fulfilling the above criteria can also be accepted Other appropriate means of proof will also be accepted.

Award criteria

Additional points will be awarded for:

1. ***Ease of disassembly***
   - Connections are easy to find, accessible with commonly available tools, and as standardised as possible.
   - Plastic parts heavier than 25g shall have a permanent marking identifying the material, in conformity with ISO 11469: 2000. Excluded from this criterion are extruded plastic materials and the light-guide of flat panel displays.
   - Plastic parts shall be of one polymer or compatible polymers, except for the cover, which shall consist of no more than two types of polymer, which are separable

   Verification:
   All products carrying the EU Ecolabel will be deemed to comply. Other type I ecolabels fulfilling the above criteria can also be accepted. Alternatively the bidder must provide a written guarantee that this criterion will be met.

2. ***Substances in plastic parts hazardous to health***
   Plastic parts heavier than 25g do not contain flame retardant substances or preparations that are assigned any of the following risk phrases as defined in Council Directive 67/548/EEC:
   - R45 (may cause cancer).
   - R46 (may cause heritable genetic damage).
   - R60 (may impair fertility).
   - R61 (may cause harm to the unborn child).

   Verification:
   All products carrying the EU Ecolabel will be deemed to comply. Other type I ecolabels fulfilling the above criteria can also be accepted. Other appropriate means of proof will also be accepted.

Contract performance clauses

For notebooks the availability of compatible batteries and power supplies and of the keyboard and its parts shall be guaranteed for at least 3 years from the time that production ceases.

Verification:
All products carrying the EU Ecolabel, will be deemed to comply. Alternatively the bidder must provide a written guarantee that this criterion will be met.

3.3 PCs, notebooks and monitors - Explanatory notes

Explanatory notes

- Upgrading or replacing products: The above criteria will ensure that it is relatively easy to upgrade components within the products purchased and that spare parts will be available. The decision about whether to upgrade or replace products will need to be taken on a case-by-case basis however, considering in particular whether the potential energy efficiency gains achievable through buying a new product would outweigh the impacts of early disposal.
- Award criteria: Contracting authorities will have to indicate in the contract notice and tender documents how many additional points will be awarded for each award criterion. Environmental award criteria should, altogether, account for at least 10 to 15 % of the total points available.

4 Imaging equipment - GPP criteria

4.1 Imaging equipment - Core GPP criteria

Subject matter

Purchase of energy efficient [printers, copiers, MFDs, scanners].

Specifications

1. Appliances [with a printing function] with a maximum operating speed of more than 45 sheets per minute for A4 size paper must be equipped with automatic double-sided copying (a duplex-unit). All other devices with a lower maximum operating speed must at least offer a manual option (copiers) or an extra software-based option (printers, multifunction devices) for double-sided printing on A4 size paper.

2. All products must meet the latest ENERGY STAR (available at www.eu-energystar.org) standards for energy performance.
   Verification:
   All products carrying the ENERGY STAR, will be deemed to comply. Any other appropriate means of proof, such as a technical dossier of the manufacturer or a test report from a recognised body demonstrating that the criteria are met will also be accepted.

Contract performance clauses

The bidder must guarantee the availability of spare parts for at least 3 years from the time that production ceases.
Verification:
All products carrying any type I Ecolabel fulfilling this criterion will be deemed to comply. Alternatively the bidder must provide a written guarantee that this criterion will be met.

Imaging devices - Comprehensive GPP criteria

Subject matter

Purchase of [printers, copiers, MFDs, scanners] with low environmental impacts throughout the lifecycle.

Specifications

1. Appliances [with a printing function] with a maximum operating speed of more than 45 sheets per minute for A4 size paper must be equipped with automatic double-sided copying (a duplex-unit). All other devices with a lower maximum operating speed must at least offer a manual option (copiers) or an extra software-based option (printers, multifunction devices) for double-sided printing on A4 size paper.

Specifications

2. All products must meet the latest ENERGY STAR (available at www.eu-energystar.org) standards for energy performance.
   Verification:
   All products carrying the ENERGY STAR will be deemed to comply. Any other appropriate means of proof, such as a technical dossier of the manufacturer or a test report from a recognised body demonstrating that the criteria are met will also be accepted.

3. For devices with a printing function the 'Declared A-weighted Sound Level' (LWAd) according to ISO 9296, measured in accordance with ISO 7779, shall not exceed the limits set by the following formula:
   LWAd: 0.035 x CPM + 5.9 (B)
   Where CPM = Copies per minute.
   The devices shall additionally not exceed 7.5 (B) LWAd except for devices with a CPM >71.
   Verification:
   All products carrying any type I ecolabel fulfilling this criterion will be deemed to comply. Other appropriate means of proof will also be accepted.

Award criteria

Additional points will be awarded for:

1. Ease of disassembly:
   - Plastic parts heavier than 25g shall have a permanent marking identifying the material, in conformity with ISO 11469: 2000.
   - Plastic parts shall be of one polymer or compatible polymers, except for casings.

   Verification:
   All products carrying any type I ecolabel fulfilling this criterion will be deemed to comply. Alternatively the bidder must provide a written guarantee that this criterion will be met.

2. Substances in plastic parts hazardous to health:
   Plastic parts heavier than 25g do not contain flame retardant substances or preparations that are assigned any of the following risk phrases as defined in Council Directive 67/548/EEC:
   - R45 (may cause cancer).
   - R46 (may cause heritable genetic damage).
   - R60 (may impair fertility).
   - R61 (may cause harm to the unborn child).

   Verification:
   All products carrying any type I ecolabel fulfilling this criterion will be deemed to comply. Other appropriate means of proof will also be accepted.

Contract performance clauses

The bidder must guarantee the availability of spare parts for at least 3 years from the time that production ceases.
Verification: All products carrying any type I ecolabel fulfilling this criterion will be deemed to comply. Alternatively the bidder must provide a written guarantee that this criterion will be met.

4.3 Imaging equipment - Explanatory notes

- Award criteria: Contracting authorities will have to indicate in the contract notice and tender documents how many additional points will be awarded for each award criterion. Environmental award criteria should, altogether, account for at least 10 to 15 % of the total points available.

5 Cost considerations

It is recommended to apply a "total cost of ownership methodology" when awarding the contract. This means that instead of considering just the purchase price of the product when assessing the one offering best value for money, the contracting authority will consider the life cycle cost (LCC) over the estimated period of ownership of the device. This would cover the purchase price, the cost of maintenance and other services, the cost of energy consumption and other consumables (such as paper and ink) for a device, and any disposal costs. This will allow the authority to take into account environmental aspects in both the quality assessment (through environmental technical specifications and/or award criteria) and the price (through inclusion of the Life cycle cost).

As with any electricity-using product, purchasing energy efficient models is generally a win-win option – reducing running costs, and also reducing environmental impacts. Generally, the energy efficiency of the product has relatively little impact on the purchase price, certainly if you are aiming for a model within the 25% most efficient on the market. The EU Energy Star website has a useful tool for calculating the possible financial savings of buying a more efficient product: http://www.eu-energystar.org/calculator.htm.

The picture is more complicated with regards to the replacement of PCs. In purely commercial terms, a report by the UK National Audit Office[3] indicates that it may be financially more prudent to replace office IT equipment every 3 years, rather than the 5 years typical within the public sector. This is because the equipment will have residual value and can be resold at 3 years and operating costs are kept low.

A Commission study on the Costs & Benefits of GPP in 2007[4] examined the cost implications of purchasing green (ecolabelled) IT devices – computers, monitors and imaging equipment products:

Computers

For computers the differences between the green and the non-green version are calculated to amount to between 3% higher to 7% lower costs for the green version. However, there are a number of uncertainties that might have significant influence on the results: Usage behaviour, costs for repair, influence of the on-site service for the overall product lifetime, and rapid changes in the market (e.g. due to prices and variability of components) lead to rapidly changing product composition and product prices.

Notebooks

For notebooks the differences between the green and the non-green version are calculated to amount to between 6% and 24%, with the green version being more expensive than the non-green version. The energy savings of the green version have no major influence on the overall costs, with a typical saving of €8 over 4 years.

[3] *http://www.nao.org.uk/publications/nao_reports/06-07/0607531es.pdf*
[4] *Study on costs/benefits of Green public procurement in Europe, Öko-Institut & ICLEI 2007, available at: http://ec.europa.eu/environment/gpp/index_en.htm*

Printers and copiers

- The green version of single-function Ink Jet printers as specified in the Costs and Benefits study (i.e. automatic duplex unit and meeting energy star requirements) is more expensive than the conventional ('non-green') version. This is mainly due to the quite high price of the automatic duplex unit (between 38 and 45 % higher than the non-green version). As the printing volume is quite low, these higher costs cannot be compensated for by the lower paper consumption.

- In contrast, the LCC of the green version of the single-function Electro-photography[5] (EP) printers as specified in the Costs and Benefits study (i.e. automatic duplex unit and meeting energy star requirements) is between 7 and 11% lower than the LCC of the non-green version. Even though the purchase price of the printers with an automatic duplex unit is between 20 and 25% higher than the price of the non-green version, the lower costs during the use phase overcompensate this difference due to the much lower paper consumption.

- With about 38% for multifunctional EP devices the most important cost saver is the use of the duplex function. Large multifunctional EP devices come with a duplex unit, so no extra costs have to be assigned to this function. It is more critical whether users actually use the duplex function or rather abstain from using it. Cost savings due to a better electricity standard are negligible.

- In all cases it can be seen that the use of recycled paper leads to cost reductions as the price for recycled paper in Germany is lower compared to the price for conventional paper. Combining the use of the green version of the printers with the use of recycled paper leads to lower additional costs for IJ printers and to higher savings for EP printers.

[5] Electro-photography (EP) is a marking technology characterised by illumination of a photoconductor in a pattern representing the desired hard copy image via a light source, development of the image with particles of toner using the latent image on the photoconductor to define the presence or absence of toner at a given location, transfer of the toner to the final hard copy medium, and fusing to cause the desired hard copy to become durable. Colour EP is distinguished from monochrome EP in that toners of at least three different colours are available in a given product at one time.

6 Relevant EU legislation and information sources

6.1 Ecolabels and other criteria sources

- Agreement between the Government of the United States of America and the European Community on the coordination of energy-efficiency labelling programs for office equipment (Energy Star criteria): http://eur-lex.europa.eu/LexUriServ/site/en/oj/2006/l_381/l_38120061228en00260104.pdf
- Blue Angel - Computers RAL-UZ 78: http://www.blauer-engel.de/englisch/navigation/body_blauer_engel.htm
- Blue Angel - Office Printing Devices RAL-UZ 122: http://www.blauer-engel.de/englisch/navigation/body_blauer_engel.htm
- Blue Angel - Reprocessed Toner Modules RAL-UZ 55: http://www.blauer-engel.de/englisch/navigation/body_blauer_engel.htm
- Preparatory studies for Eco-design Requirements of EuPs (Contract TREN/D1/40-2005/LOT3/S07.56313): Lot 3 - Personal Computers (desktops and laptops) and Computer Monitors. Final Report (Task 1-8). IVF Industrial Research and Development Corporation: http://extra.ivf.se/ecocomputer/downloads/Eup%20Lot%203%20Final%20Report%20070913%20published.pdf
- EcoDesign of EuP Products: Preparatory Studies LOT 4: Imaging Equipment: Copiers, Faxes, Printers, Scanners: MFD: http://www.ecoimaging.org
- European Ecolabel for Personal Computers: http://eur-lex.europa.eu/LexUriServ/site/en/oj/2005/l_115/l_11520050504en00010008.pdf
- European Ecolabel for Portable Computers: http://eur-lex.europa.eu/LexUriServ/site/en/oj/2005/l_115/l_11520050504en00350041.pdf
- Nordic Swan – Personal Computers, version 5.0: http://www.svanen.nu/SISMABDesktopDefault.aspx?tabName=CriteriaDetailEng&menuItemID=7056&pgr=48
- Nordic Swan – Imaging Equipment, version 5.0: http://www.svanen.nu/SISMABDesktopDefault.aspx?tabName=CriteriaDetailEng&menuItemID=7056&pgr=15
- Nordic Swan – Toner cartridges: http://www.svanen.nu/SISMABDesktopDefault.aspx?tabName=CriteriaDetailEng&menuItemID=7056&pgr=8
- TCO '05 – Desktops: http://www.tcodevelopment.com/tcodevelopment1200/Datorer/TCO05/TCO05_Desktopversion_1.0.pdf
- TCO '05 – Notebooks: http://www.tcodevelopment.com/tcodevelopment1200/Datorer/TCO05/TCO05_Notebook_computers_version_2.0.pdf

- TCO '03 – Displays: http://www.tcodevelopment.se/tcodevelopment1200/Datorer/TCO03_Displays/TCO03_FPD_version_3_0.pdf
- TCO '99 – Printers: http://www.tcodevelopment.com/tcodevelopment1200/Datorer/TCO99/TCO99_Printers_2_1.pdf

6.2 European legislation

- Regulation (EC) No 106/2008 of the European Parliament and of the Council of 15 January 2008 on a Community energy-efficiency labelling programme for office equipment: http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2008:039:0001:0007:EN:PDF
- Directive 2005/32/EC on the eco-design of Energy-using Products (EuP): http://eur-lex.europa.eu/LexUriServ/site/en/oj/2005/l_191/l_19120050722en00290058.pdf
- Directive 2002/95/EC on the Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment: http://eur-lex.europa.eu/LexUriServ/site/en/consleg/2002/L/02002L0095-20060701-en.pdf
- Directive 2002/96/EC on Waste Electrical and Electronic Equipment (WEEE): http://eur-lex.europa.eu/LexUriServ/site/en/consleg/2002/L/02002L0096-20031231-en.pdf
- Directive 2006/66/EC on batteries and accumulators and waste batteries and accumulators and repealing Directive 91/157/EEC: http://eur-lex.europa.eu/LexUriServ/site/en/oj/2006/l_266/l_26620060926en00010014.pdf

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