EU GPP Criteria for Office IT Equipment (Draft revision v2: 14/05/15)

Green Public Procurement (GPP) is a voluntary instrument. This document provides the EU GPP criteria developed for the Office IT Equipment product group. The accompanying Technical Background Report provides full rationales supporting the reasons for selecting these criteria and references for further information.

The criteria are split into Selection Criteria, Technical Specifications, Award Criteria and Contract Performance Clauses, with the latter to be developed further based on stakeholder input. For each criteria area two sets of criteria are presented:

- The core criteria are those suitable for use by any contracting authority across the Member States and address the key environmental impacts. They are designed to be used with minimum additional verification effort or cost increases.
- The comprehensive criteria are for those who wish to purchase the best products available on the market. These may require additional verification effort or a slight increase in cost compared to other products with the same functionality.

1. Definition and Scope

The criteria for Office IT Equipment encompass computers and display devices. For the purpose of these GPP criteria the following scope shall apply, which reflects the Agreement between the USA and the EU [1] as amended by Energy Star v6.1 for Computers and v6.0 for Displays:

Stationary computers
- Desktop Computers (incl. Integrated Desktop Computers and Thin Clients)
- Small-scale servers
- Workstations

Display devices
- Computer monitors

Portable computers
- Notebook Computers (including subnotebooks)
- Two-In-One Notebook

[1] Regulation (EC) No 106/2008 of 15 January 2008 on a Community energy-efficiency labelling programme for office equipment

- Tablet Computers
- Portable All-In-One Computer
- Mobile Thin Client

Note on requirements for Central Government procurement

Article 6 and Annex III of the Energy Efficiency Directive (2012/27/EU), which had to be transposed into national law by June 2014, set out specific obligations for public authorities to procure certain energy efficient equipment. This includes the obligation to purchase only those products that:

> *'Comply with energy efficiency requirements not less demanding than those listed in Annex C of the Agreement between the Government of the United States of America and the European Community on the coordination of energy-efficiency labelling programmes for office equipment ('Energy Star')* [1]'

This obligation is limited to central government and for purchases above the thresholds set out in the procurement directives. Moreover, the requirements have to be consistent with cost-effectiveness, economic feasibility, wider sustainability, technical suitability and sufficient competition. These factors can differ between public authorities and markets. For more guidance on the interpretation of this aspect of Article 6 and Annex III of the EED regarding procurement of energy-efficient products, services and buildings by central government authorities, please see points 33-42 of the Commission guidance document [2].

2. Key Environmental Impacts

The criteria for Office IT Equipment focus on the most significant environmental impacts during the life cycle of the products, which have been divided into four discrete categories:

a) Energy consumption;
b) Hazardous substances;
c) Product lifetime extensions;
d) End of life management.

[1] OJ L 63, 6.3.2013, p. 5.

[2] COM/2013/0762 final, Communication from the Commission to the European Parliament and the Council, *Implementing the Energy Efficiency Directive – Commission Guidance*

In each category, criteria are provided at the core and comprehensive level of ambition for technical specifications, as well as award criteria and, where relevant, contract performance clauses.

Evidence from life cycle assessments suggest that environmental criteria for Office IT Equipment should make a distinction based on the form factor of the computer (e.g. desktop, notebook, tablet) and the use pattern of computers and displays:

- *Those that are more energy intensive to run:* For desktop computers and displays the most significant environmental impacts are associated with electricity consumed during their use.
- *Those that use less energy to run:* For notebooks and tablets, which use proportionally less electricity and consist of more advanced miniaturised components, the most significant environmental impacts relate to the manufacturing of their sub-assemblies such as motherboards, hard drives, batteries and display units.
- *Those that are portable:* The conditions and stresses which portable products are exposed to in the workplace or in the outside environment will influence their lifespan.

Whilst criteria addressing energy use are familiar to procurers and have a direct influence on performance, the potential for EU GPP criteria to directly influence the production of single computer components is considered to be limited. This is in part because of the difficulty in identifying the potential for improvements because of issues such as confidentiality, for example, in the case of CPU and motherboard production.

A different focus is therefore required. By improving product design life (e.g. design for durability and upgrading), indirectly extending the lifetime of products by facilitating re-use and by enabling important metals and Critical Raw Materials to be easily extracted and recovered from products at the end of their life, the impacts of the manufacturing phase can be reduced as impacts associated with primary production stages and resource extraction can be avoided.

Product lifetime extension through improved durability, upgradeability and repairability has, as a result of LCA evidence and market analysis, been given specific attention in the criteria. Evidence relating to the reasons for early failure or replacement of products, together with common improvement specifications brought forward by manufacturers, inform the criteria. The potential to extend the life of a product during and after its service life with the public authority has also addressed through opportunities for upgrading and repairing products, and also through the potential for the equipment to be re-used and therefore given a second life.

The extraction and recovery of important metals and Critical Raw Materials from computer and display products at the end of their life has the potential to increase the EU's resource efficiency and reduce the impact of making new IT products. The criteria therefore reflect the state of the art for encouraging the selective dismantling and disassembly of equipment.

Key Environmental Impacts	**GPP Approach**
• Energy consumption and resulting Greenhouse Gas emissions from production and use. • Air, soil and water pollution, bioaccumulation and effects on aquatic organisms due to raw material extraction and processing, and hazardous substances used in products. • Use of finite resources and critical raw materials to produce IT products. • Generation of potentially hazardous waste electronic equipment upon its final disposal	• Purchase energy efficient models • Purchase products with a restricted amount of hazardous constituents and with a reduced potential for hazardous emissions upon disposal • Design for durability, upgradeability and repairability • Product life extension upon the end of its service life • Design for dismantling in order to improve resource efficiency • End of life management to maximise the recovery of resources

Please note that the order of impacts does not necessarily translate to the order of their importance. Detailed information about the office IT equipment product group can be found in the Technical Background Report.

3. EU GPP Criteria for Office IT equipment

Core criteria	Comprehensive criteria
SUBJECT MATTER	
Purchase of computers and/or displays with low environmental impacts throughout their lifecycle.	Purchase of computers and/or displays with low environmental impacts throughout their lifecycle.

A. Energy criteria

Core criteria	Comprehensive criteria
TECHNICAL SPECIFICATIONS	
A1. Minimum Energy performance for computers The energy efficiency performance of computers shall meet the energy efficiency requirements of the latest version of the Energy Star standard. *The version in force at the time of publication is 6.1 and updates can be followed at this weblink:* *http://www.eu-energystar.org/* *Annex III of Directive 2012/27/EU on energy efficiency, requires that computers purchased by central government shall meet the latest EU version of Energy Star.* **Verification:** The tenderer shall submit test reports carried out according to the test methods laid down in the latest version of the Energy Star. These shall be supplied upon award of the contract. Energy Star registrations under the latest version in the USA shall be accepted provided that testing according to European input power requirements have been carried out. Products holding the EU Ecolabel for personal, notebook and tablet computers (Commission Decision 201xx/xxx/EUxx) or another relevant Type 1 Eco-label fulfilling the listed requirements will be deemed to comply.	**A1. Minimum Energy performance for computers** The energy efficiency performance of computers shall meet the energy efficiency requirements of the latest version of the Energy Star standard. *The version in force at the time of publication is 6.1 and updates can be followed at this weblink:* *http://www.eu-energystar.org/* *Annex III of Directive 2012/27/EU on energy efficiency, requires that computers purchased by central government shall meet the latest EU version of Energy Star.* **Verification:** The tenderer shall submit test reports carried out according to the test methods laid down in the latest version of the Energy Star. These shall be supplied upon award of the contract. Energy Star registrations under the latest version in the USA shall be accepted provided that testing according to European input power requirements have been carried out. Products holding the EU Ecolabel for personal, notebook and tablet computers (Commission Decision 201xx/xxx/EUxx) or another relevant Type 1 Eco-label fulfilling the listed requirements will be deemed to comply.

A2. Minimum energy performance of monitors The energy efficiency performance of monitors shall meet the energy efficiency requirements of the latest version of the Energy Star standard. *The version in force at the time of publication is 6.0 and updates can be followed at this weblink:* *http://www.eu-energystar.org/* *Annex III of Directive 2012/27/EU on energy efficiency, requires that computers purchased by central government shall meet the latest version of Energy Star.* **Verification:** The tenderer shall submit test reports carried out according to the Energy Star test methods for the monitor models. These shall be supplied upon award of the contract. Energy Star registrations in the USA shall be accepted provided that testing according to European input power requirements have been carried out. Products holding the EU Ecolabel for Displays Commission Decision 201xx/xxx/EUxx) or another relevant Type 1 Eco-label fulfilling the listed requirements will be deemed to comply.	**A2. Minimum energy performance of monitors** The energy efficiency performance of monitors shall meet the energy efficiency requirements of the latest version of the Energy Star standard. *The version in force at the time of publication is 6.0 and updates can be followed at this weblink:* *http://www.eu-energystar.org/* *Annex III of Directive 2012/27/EU on energy efficiency, requires that computers purchased by central government shall meet the latest version of Energy Star.* **Verification:** The tenderer shall submit test reports carried out according to the Energy Star test methods for the monitor models. These shall be supplied upon award of the contract. Energy Star registrations in the USA shall be accepted provided that testing according to European input power requirements have been carried out. Products holding the EU Ecolabel for Displays (Commission Decision 201xx/xxx/EUxx) or another relevant Type 1 Eco-label fulfilling the listed requirements will be deemed to comply.
AWARD CRITERIA	
A3. Improvement in the energy consumption upon the specified Energy Star standard Points will be awarded If the product is more energy efficient than the E_{TEC_MAX} value for computers and the P_{ON_MAX} value for monitors. These shall be calculated in comparison with the minimum Energy Star performance requirement (see Criterion A1 and A2). A maximum of X points may be awarded. Points shall be awarded in proportion to the improvement in energy efficiency in accordance to the award criteria matrix in Annex I.	**A3. Improvement in the energy consumption upon the specified Energy Star standard** Points will be awarded If the product is more energy efficient than the E_{TEC_MAX} value for computers and the P_{ON_MAX} value for monitors. These shall be calculated in comparison with the minimum Energy Star performance requirement (see Criterion A1 and A2). A maximum of X points may be awarded. Points shall be awarded in proportion to the improvement in energy efficiency in accordance to the award criteria matrix in Annex I.

An improved energy efficiency could alternatively be awarded on the basis of Life Cycle Costing, with the improvement potential expressed as lower electricity costs over the expected service life of the product. **Verification:** The same as for A1 and A2	For computers with discrete graphic display units the overall points available for criterion A3 and A4 shall be awarded in the proportion 60:40. *An improved energy efficiency could alternatively be awarded on the basis of Life Cycle Costing, with the improvement potential expressed as electricity costs over the expected service life of the product.* **Verification:** The same as for A1 and A2.
A4. Discrete graphics units in desktop and integrated computers Points shall be awarded for improvements upon the performance of discrete graphics cards (dGfx) in desktop and integrated desktop computers. A maximum of X points may be awarded. Points shall be awarded in proportion to the verified improvement upon the Energy Star $TEC_{graphics}$ allowance in accordance to the award criteria matrix in Annex I. *An improved energy efficiency could alternatively be awarded on the basis of Life Cycle Costing, with the improvement potential expressed as electricity costs over the expected service life of the product.* **Verification:** The applicant shall provide test reports obtained from the graphics unit manufacturer verifying the total energy demand of the unit for all Energy Star modes. These shall be supplied upon award of the contract.	**A4. Discrete graphics units in desktop and integrated computers** Points shall be awarded for improvements upon the performance of discrete graphics cards (dGfx) in desktop and integrated desktop computers. A maximum of X points may be awarded. Points shall be awarded in proportion to the verified improvement upon the Energy Star $TEC_{graphics}$ allowance in accordance to the award criteria matrix in Annex I. *An improved energy efficiency could alternatively be awarded on the basis of Life Cycle Costing, with the improvement potential expressed as electricity costs over the expected service life of the product.* **Verification:** The applicant shall provide test reports obtained from the graphics unit manufacturer verifying the total energy demand of the unit for all Energy Star modes. These shall be supplied upon award of the contract

B. Hazardous Substances criteria

Core criteria	Comprehensive criteria
SELECTION CRITERIA	
	B1. Supplier chemical management system *This criterion shall be used in conjunction with Criterion B2 which requires declarations based on the system.* The tenderer shall demonstrate implementation of a supplier chemical management system to identify and monitor the presence of REACH Candidate List substances at concentrations of greater than 0.10% (weight by weight) in the product. The system shall, as a minimum, comprise the following elements: • Use of screening tools such as the IEC 62474 declarable substance list [3] to identify Candidate List substances of relevance to the product, which can then be communicated to suppliers; • Periodic requests for declarations from suppliers identifying substances that may be present in sub-assemblies; • Random spot testing for selected Candidate List substances of relevance to the product(s) **Verification:** The tenderer shall provide documentation which describes the system and its procedures, as well as documentary evidence of implementation.

[3] International Electrotechnical Commission (IEC), IEC 62474: Material declaration for products of and for the electrotechnical industry, http://std.iec.ch/iec62474

TECHNICAL SPECIFICATIONS	
B2. Declaration for REACH Candidate List substances The tenderer shall provide a declaration of the presence of any REACH Candidate List substances in the product in accordance with Article 33(2) of the REACH Regulation. **Verification:** The tenderer shall provide a declaration identifying specific substances that are present.	**B2. Declaration for REACH Candidate List substances** The tenderer shall provide a declaration of the presence of any REACH Candidate List substances in the product in accordance with Article 33(2) of the REACH Regulation. **Verification:** The tenderer shall provide a declaration identifying specific substances that are present.
	B3. Plasticisers in external cables The following plasticisers shall not be present in the external AC and DC power cords. (a) Phthalate plasticisers: DEHP, BBP, DBP, DIBP, DMEP, DIPP, DPP, DnPP and DnHP. *Maximum allowable concentration limit*: 0.01% by weight of the cable sheath per phthalate (b) Medium Chained Chlorinated Paraffins (MCCP's) Alkanes C14-17 *Maximum allowable concentration limit*: 0.01% by weight of the cable sheath. **Verification:** Verification shall be according to the specified test method and control concentration limits: (a) Phthalate plasticisers: DEHP, BBP, DBP, DIBP, DMEP, DIPP, DPP, DnPP and DnHP. *Test method:* EN 14372. (b) Medium Chained Chlorinated Paraffins (MCCP's) Alkanes C14-17 *Test method*: IEC 61249-2-21 (detection of chlorine) The tenderer shall provide a test report for the power cords of each model supplied

AWARD CRITERIA	
	B4. Hazardous end of life emissions from motherboard laminates and power cords Points shall be awarded if the product uses motherboard laminate and power cord materials that are demonstrated in fire testing simulations of improper disposal to have reduced Toxic Equivalent emissions for the following substances: • Polybrominated dibenzo dioxins and furans; • Polychlorinated dibenzo dioxins and furans. The total emissions from the materials upon testing shall be less than or equal to the following thresholds: • Motherboard laminate: 125 ng I-TEQ/kg • Power cord: 0.14 ng I-TEQ/g The following test methods shall be used: • Motherboard laminate: ISO 5660 or equivalent • Cables: ISO 19700 or equivalent. • Quantification of emissions: EN 1948 and ISO 11338 or their equivalent. The simulated conditions shall be IEC 60695-7-50 fire type 1b with a heat flux of 50 kW/m^2 for laminates and fire type 3a for power cords. **Verification:** The tenderer shall provide a test report with the emissions results for the motherboard laminate material and power cord used in each model supplied.

C. Product lifetime extension

Upgradeability, replaceability and repairability

Core criteria	Comprehensive criteria
TECHNICAL SPECIFICATIONS	
C1. Warranty and service agreements The tenderer shall provide a minimum two year warranty effective from delivery of the product. This warranty shall cover repair or replacement and include a service agreement with a pick-up and return option. The warranty shall guarantee that the goods are in conformity with the contract specifications at no additional cost. It shall cover battery defects[4]. **Verification:** A copy of the warranty and service agreement shall be provided by the tenderer. They shall provide a declaration that they cover the conformity of the goods with the contract specifications, including all indicated usage.	**C1. Warranty and service agreements** The tenderer shall provide a minimum three year warranty effective from delivery of the product. This warranty shall cover repair or replacement and include a service agreement with a pick-up and return option. The warranty shall guarantee that the goods are in conformity with the contract specifications at no additional cost. It shall cover battery defects [4]. **Verification:** A copy of the warranty and service agreement shall be provided by the tenderer. They shall provide a declaration that they cover the conformity of the goods with the contract specifications, including all indicated usage.
C2. Continued availability of spare parts The tenderer shall guarantee the availability of spare parts, including as a minimum those identified in criterion C3, for at least three years from the date of purchase. Parts with improved specifications shall be backwardly compatible[5]. **Verification:** The tenderer shall provide a declaration that backwardly compatible spare parts, including rechargeable batteries (if applicable), will be	**C2. Continued availability of spare parts** The tenderer shall guarantee the availability of spare parts, including as a minimum those identified in criterion C3, for at least five years from the date of purchase. Parts with improved specifications shall be backwardly compatible[5]. **Verification:** The tenderer shall provide a declaration that backwardly compatible spare parts, including rechargeable batteries (if applicable), will be

[4] Defects shall be considered to include failure to charge as well as detection of the battery's connection. A progressive drop in battery capacity due to usage shall not be considered to be a defect.

[5] Compatible with previous models

made available to the contracting authority or through a service provider.	made available to the contracting authority or through a service provider.
C3. Design for reparability The following components of computers, if applicable, shall be easily accessible and replaceable by the use of universal tools (i.e. widely used commercially available tools as screwdriver, spatula, plier, or tweezers): Computers (i) HDD/SSD, (ii) Memory, (iii) Rechargeable battery, Displays (i) Screen assembly and LCD backlight (ii) Power and control circuit boards (iii) Stands The tenderer shall provide clear disassembly and repair instructions (e.g. hard or electronic copy, video) to enable a non-destructive disassembly of products for the purpose of replacing key components or parts for upgrades or repairs. This shall be made available in hard copy or via a service provider and/or the manufacturer's webpage. **Verification:** A manual shall be provided by the tenderer which shall include an exploded diagram of the device illustrating the parts that can be accessed and replaced. It shall also be confirmed which parts are covered by service agreements under the guarantee.	**C3. Design and support for reparability** The following components of computers, if applicable, shall be easily accessible and replaceable by the use of universal tools (i.e. widely used commercially available tools as screwdriver, spatula, plier, or tweezers): Computers (i) HDD/SSD, (ii) Memory, (iii) Rechargeable battery, (iv) Screen assembly and LCD backlight, (v) Keyboard and mouse pad, Displays (i) Screen assembly and LCD backlight (ii) Power and control circuit boards (iii) Stands The tenderer shall provide clear disassembly and repair instructions (e.g. hard or electronic copy, video) to enable a non-destructive disassembly of products for the purpose of replacing key components or parts for upgrades or repairs. This shall be made available in hard copy or via a service provider and/or the manufacturer's webpage. **Verification:** A manual shall be provided by the tenderer which shall include an exploded diagram of the device illustrating the parts that can be accessed and replaced. It shall also be confirmed which parts are covered by service agreements under the guarantee.

C4. Ease of replacement for rechargeable batteries Rechargeable batteries shall not be glued or soldered into portable products. Simple instructions on how the rechargeable battery packs are to be removed shall be marked on the base cover of the product or provided in the user instructions. **Verification:** The tenderer shall provide photographic evidence of how the battery is installed in the product, the steps required to remove and cover markings. A copy of relevant user instructions shall also be provided. The Contracting Authority reserves the right to request a visual inspection of a random selection of the supplied products.	**C4. Ease of replacement for rechargeable batteries** Rechargeable batteries shall not be glued or soldered into portable products. The rechargeable battery shall be easy to extract by a professional user or repair service provider, complying with the following requirements: - For notebooks and portable all-in-one computers manually without tools; - For sub-notebooks in a maximum of three steps[6] using a screwdriver; - For tablets and two-in-one notebooks in a maximum of four steps using a screwdriver and spudger; Simple instructions on how the rechargeable battery packs are to be removed shall be marked on the base cover of the product or provided in the user instructions. **Verification:** The tenderer shall provide photographic verification of how the battery is installed in the product, the steps required to remove it and cover markings. A copy of relevant user instructions shall also be provided. The Contracting Authority reserves the right to request a visual inspection of a random selection of the supplied products.
AWARD CRITERIA[7]	
C5. Cost competitiveness of spare parts The tenderer shall provide a price list for, as a minimum, the component parts listed in C3. Points shall be awarded according to the competitiveness of the replacement costs.	**C5. Cost competitiveness of spare parts** The tenderer shall provide a price list for, as a minimum, the component parts listed in C3. Points shall be awarded according to the competitiveness of the replacement costs.

[6] A step consists of an operation that finishes with the removal of a part or with a change of tool.

[7] Instead of setting two separate award criteria on spare parts and warranties, this could be merged into one criterion, evaluating the overall offer including the length of the warranty, its comprehensiveness and the spare parts offer.

Verification: The tenderer shall provide a price list for original or backwardly compatible spare parts, including rechargeable batteries (if applicable).	**Verification:** The tenderer shall provide a price list for original or backwardly compatible spare parts, including rechargeable batteries (if applicable).
C6. Longer warrantees and service agreements Points in accordance to the award criteria matrix in Annex I shall be awarded to each additional year of warranty and service agreement offered that is more than the minimum technical specification. **Verification:** A copy of the warranty and service agreement shall be provided by the tenderer. They shall provide a declaration that they cover the conformity of the goods with the contract specifications, including all indicated usage.	**C6. Longer warrantees and service agreements** Points in accordance to the award criteria matrix in Annex I shall be awarded to each additional year of warranty and service agreement offered that is more than the minimum technical specification. For portable devices 0.3x additional points shall also be awarded where a commercial guarantees provides a battery replacement in the case of defects or a capacity loss of more than 50%. **Verification:** A copy of the warranty and service agreement shall be provided by the tenderer. They shall provide a declaration that they cover the conformity of the goods with the contract specifications, including all indicated usage.

Notebook battery quality and lifetime

Core criteria	Comprehensive criteria
AWARD CRITERIA	
C7. Rechargeable battery life and endurance Points shall be awarded for improved endurance greater than 300 cycles (with 80% capacity retention) respectively in accordance to the award criteria matrix in Annex I. *The minimum battery life in hours shall be set according to the Contracting Authority's requirements.* **Verification:** The tenderer shall provide a test report for the battery cells or packs showing compliance according to the IEC EN 61960 'endurance in cycles' test carried out at 25°C and at a rate of either 0.2 I_t A or 0.5 I_t A (accelerated test procedure). Partial charging may be used to comply as long as the software is factory installed as the default setting and the tender requirements on battery life are met at the partial changing level complying with the cycle requirement.	**C7. Rechargeable battery life and endurance** Points shall be awarded for improved endurance greater than 500 cycles (with 80% capacity retention) respectively in accordance to the award criteria matrix in Annex I.[8] *The minimum battery life in hours shall be set according to the Contracting Authority's requirements.* **Verification:** The tenderer shall provide a test report for the battery cells or packs showing compliance according to the IEC EN 61960 'endurance in cycles' test carried out at 25°C and at a rate of either 0.2 I_t A or 0.5 I_t A (accelerated test procedure). Partial charging may be used to comply as long as the software is factory installed as the default setting and the tender requirements on battery life are met at the partial changing level complying with the cycle requirement.

Disk drive reliability and durability

Core criteria	Comprehensive criteria
AWARD CRITERIA	
	C8. Notebook computer drives Points shall be awarded where the primary data storage drive used in notebooks is tested and verified to meet at least one of the following requirements:

[8] The cycle performance may be achieved using software which partially charges the battery. In this case the applicant shall pre-install the software as the default charging routine.

	(i) The HDD drive shall withstand a half sine wave shock of 400 G (operating) and 900 G (non-operating) for 2 ms without damage to data or operation of the drive. (ii) The HDD drive head should retract from the disc surface in less than or equal to 300 milliseconds upon detection of the notebook having been dropped. (iii) A solid state storage drive technology such as SSD or eMMC is used. **Verification:** The applicant shall provide a specification for the drive or drives integrated into the product. This shall be obtained from the drive manufacturer and for option (i) shall be supported by a test report according to IEC 62131 or equivalent and for option (ii) IEC 60068, Part 2-31: Ec (Freefall, procedure 1)

Notebook durability testing

Core criteria	Comprehensive criteria
AWARD CRITERIA	
	C9: Notebook durability testing Points shall be awarded in accordance to the award criteria matrix in Annex I for products that have passed durability tests carried out according to IEC 60068. *The tests applicable shall be specified in the ITT to reflect the conditions of use defined for the product.* Functional performance requirements and test specifications are provided in Annex II of the criteria document. **Verification:** The applicant shall provide test reports showing that the model has been tested and has met the functional performance tests. Testing and verification shall be carried out by a third party. Products holding the EU Ecolabel for personal, notebook and tablet computers (Commission Decision 201xx/xxx/EUxx) or another relevant Type 1 Eco-label fulfilling the listed requirements will be deemed to comply.

	C10: Tablet durability testing Points shall be awarded in accordance to the award criteria matrix in Annex I for products that have passed durability tests carried out according to IEC 60068, or equivalent. Functional performance requirements and test specifications are provided in Annex II of the criteria document. **Verification:** The applicant shall provide test reports showing that the model has been tested and has met the functional performance tests. Testing and verification shall be carried out by a third party. Products holding the EU Ecolabel for personal, notebook and tablet computers (Commission Decision 201xx/xxx/EUxx) or another relevant Type 1 Eco-label fulfilling the listed requirements will be deemed to comply.

D. End-of-life management

Design for recycling

Core criteria	Comprehensive criteria
TECHNICAL SPECIFICATIONS	
	D1(a) Recyclability of plastics casings, enclosures and bezels Parts shall not contain moulded-in or glued-on metal inserts unless they can be removed with commonly available tools. Disassembly instructions shall show how to remove them. **Verification:** The tenderer shall detail the tools required to remove any plastic parts containing metal inserts. Visual evidence shall be provided to support compliance.

	D1(b) Recyclability of plastic casings, enclosures and bezels The presence of the following treatments and additives shall not significantly impact upon the recyclability of the plastic when tested according to ISO 180[9] or equivalent: - Paints and coatings - Flame retardants and their synergists **Verification:** The tenderer shall provide valid mechanical/physical test reports carried out according to ISO 180 or equivalent. Third party test reports obtained from plastics recyclers, resin manufacturers or independent pilot tests shall be accepted.
D2. Marking of plastic casings, enclosures and bezels Plastic parts with a mass greater than 100 grams shall be marked in accordance with ISO 11469 and ISO 1043-1. or equivalent. Printed wiring boards, extruded plastics and plastics in the display unit of monitors are exempted. **Verification:** The tenderer shall identify the plastic parts by their weight, their polymer composition, and their ISO 11469 and ISO 1043, or equivalent, markings. The dimension and position of the marking shall be visually illustrated.	**D2. Marking of plastic casings, enclosures and bezels** Plastic parts with a mass greater than 25 grams for tablet computers and 100 grams for computers and monitors shall be marked in accordance with ISO 11469 and ISO 1043, sections 1 and 4, or equivalent. Printed wiring boards, extruded plastics and plastics in the display unit of monitors are exempted. **Verification:** The tenderer shall identify the plastic parts by their weight, their polymer composition, and their ISO 11469 and ISO 1043, or equivalent, markings. The dimension and position of the marking shall be visually illustrated.

[9] For the purposes of this criterion a significant impact is defined as a >25% reduction in the notched izod impact of a recycled resin as measured using ISO 180.

	D3. Monitor dismantling potential Points shall be awarded for the time efficient manual dismantling and extraction of the following components from monitors: (i) Printed Circuit Boards >10 cm^2 (ii) Thin Film Transistor unit and film conductors in display unit >100 cm^2 (iii) LED backlight units Extraction shall be possible using widely used commercially available tools (i.e. pliers, screw-drivers, cutters and hammers as defined by ISO 5742, ISO 1174, ISO 15601, or equivalent). The time required to extract the key components shall not exceed the following thresholds: a) 400 seconds for screen sizes smaller than 25 inches; b) 500 seconds for screen sizes greater than or equal to 25 inches and smaller than 40 inches; c) 600 seconds for screen sizes greater than or equal to 40 inches and smaller than 55 inches. **Verification:** The tenderer shall provide a 'dismantling test report' recording and providing a detailed description of the dismantling sequence, extraction steps and timing for the target parts and components. The disassembly test shall be carried out by a specialized recycling firm that is a permitted treatment operation in accordance with Article 23 of the Waste Framework Directive. See Annex III for the timed dismantling method to be used.

Design for dismantling

Core criteria	Comprehensive criteria
AWARD CRITERIA	
	D4. Computer dismantling potential Points shall be awarded for the time efficient manual dismantling and extraction of the following components from computers (*excluding tablets, subnotebooks and two-in-one notebooks*): All products (i) Printed Wiring Boards relating to computing functions >10 cm^2 Stationary computer products e.g. desktops (ii) Internal Power Supply Unit (iii) HDD drives Portable computer products e.g. notebooks (iv) Rechargeable battery (v) HDD and optical drives (excluding SSD) Extraction shall be possible using widely used commercially available tools (i.e. pliers, screw-drivers, cutters and hammers as defined by ISO 5742, ISO 1174, ISO 15601, or equivalent). The maximum time threshold required to extract the key components shall not exceed 600 seconds. Points shall be awarded in proportion to reduction the time required to extract the components relevant to the product. A maximum of X points shall be awarded in accordance to the award criteria matrix in Annex I. **Verification:** The tenderer shall provide a 'dismantling test report' recording and

	providing a detailed description of the dismantling sequence and extraction steps for the target parts and components that are relevant to the product. The disassembly test shall be carried out by a specialized recycling firm that is a permitted treatment operation in accordance with Article 23 of the Waste Framework Directive. See Annex III for the timed dismantling method to be used.

End of life management

Core criteria	**Comprehensive criteria**
SUBJECT MATTER	
Procurement of end-of-life management services for Office IT Equipment	
TECHNICAL SPECIFICATION	
D5. Secure computer sanitisation, re-use and recycling Tenderers shall provide a re-use and recycling service for Office IT equipment that has reached the end of its service life. The tenderer shall demonstrate how they will extend the service life of the equipment by sanitising data storage *(Unless carried out in-house. The requirements to be specified by the contracting authority),* servicing and then supplying it for re-use in the EU. *Depending on an assessment of the condition of the equipment, the contracting authority may define a minimum re-use target to be met (e.g. 50% of provided equipment).* Equipment that is not possible to re-use shall be delivered to permitted recycling facilities[10] so it is recycled in full compliance with the requirements in Annex VII of the WEEE Directive.	**D5. Secure computer sanitisation, re-use and recycling** Tenderers shall provide a re-use and recycling service for Office IT equipment that has reached the end of its service life. The tenderer shall demonstrate how they will extend the service life of the equipment by sanitising data storage *(Unless carried out in-house. The requirements to be specified by the contracting authority),* servicing and then supplying it for re-use in the EU. *Depending on an assessment of the condition of the equipment, the contracting authority may define a minimum re-use target to be met (e.g. 70% of provided equipment).* Equipment that is not possible to re-use shall be delivered to permitted recycling facilities so it is recycled in full compliance with the requirements in Annex VII of the WEEE Directive.

[10] If the public authority is aware that there are no recycling facilities within a reasonable radius then it may be more appropriate to ask for the equipment to be delivered at an official WEEE collection point.

Equipment dating back to prior to Energy Star v4.0 for notebooks and v5.0 for stationary computers and monitors shall be recycled unless it can be refurbished to meet, as a minimum, these requirements. **Verification:** The tenderer shall provide details of the arrangements for collection of the equipment, as well as the re-use and recycling routes to be used. This shall include the details of all certified WEEE handler(s)[11] to be used.	Equipment dating back to prior to Energy Star v4.0 for notebooks and v5.0 for stationary computers and monitors shall be recycled unless it can be refurbished to meet, as a minimum, these requirements. **Verification:** The tenderer shall provide details of the arrangements for the collection of the equipment, as well as re-use and recycling routes. This shall include the details of all certified WEEE handler(s)[11]to be used.
AWARD CRITERIA	
D6. Improvement in the re-use targets Points shall be awarded to tenderers offering higher levels of re-use. **Verification:** The tenderer shall provide details of how the additional level of re-use will be achieved	**D6. Improvement in the re-use targets, recycling upgrading levels and equipment tracking** Points shall be awarded to tenderers offering higher levels of re-use. Points shall be awarded to tenderers offering equipment servicing according to PAS141 (UK) or equivalent standards. To qualify for additional points, equipment that is not possible to re-use shall be dismantled and recycled in full compliance with EN 50625-1 or equivalent The tenderer shall additionally be awarded points for operating a tracking system with a unique identifier for each item of equipment from the Contracting Authority. The destination for equipment shall be reported to the Contracting Authority and verified using the tracking system. **Verification:** The tenderer shall provide details of how the additional level of re-use will be achieved and (if applicable) the proposed tracking system to be

[11] WEEE handlers shall be permitted in compliance with Article 23 of Directive 2008/98/EC.

	used. Appropriate documentation to demonstrate compliance with the PAS 141 (UK) standard or equivalent and the EN 50625-1 standard on treatment or equivalent shall be provided.
CONTRACT PERFORMANCE CLAUSES	
D7. Reporting on equipment status and destination The successful tenderer shall provide a report on the status of the equipment collected one year after collection. The report shall: - Identify the proportion of items re-used or recycled; - Provide certificates verifying the proper treatment according to the WEEE Directive of the equipment that could not be re-used.	**D7. Reporting on equipment status and destination** The successful tenderer shall provide a report on the status of the equipment collected one year after collection. The report shall: - Identify the proportion of items re-used or recycled; - Provide certificates verifying the proper treatment according to the WEE Directive of equipment that could not be re-used. - *The location or end-destination of the equipment (in case a tracking system is used)*

Proposed Annex I: Award criteria matrix

Award criteria	*Bonus points (Max.Y)*	*Tenderer scoring*
A3. Improvement in the energy consumption upon the specified Energy Star standard (Core and Comprehensive criteria)	• over 80% lower: x points • 60-79% lower: 0.8x points • 40-59% lower: 0.6x points • 20-39% lower: 0.4x points • 10-19% lower: 0.2x points	
A4. Discrete graphics units in desktop and integrated computers (Core and Comprehensive criteria)	• over 50% lower: x points • 40-49% lower: .0.4x points • 30-39% lower: 0.6x points • 20-29% lower: 0.4x points • 10-19% lower: 0.2x points	
B4. Hazardous end of life emissions from motherboard laminates and power cords (Comprehensive criteria)	Fulfillment of criteria = X points Non-fulfillment of criteria = no points	
C5. Cost competitiveness of spare parts (Core and Comprehensive criteria)	Fulfillment of criteria = X points Non-fulfillment of criteria = no points	
C6. Longer warranties and services agreements (Core criteria)	• +4 years or more: x points • +3 years: 0.75x points • +2 years: 0.5x points • +1 year: 0.25x points	
C6. Longer warrantees and service agreements (Comprehensive criteria)	• +3 years or more: x points • +2 years : 0.6x points • +1 year: 0.3x points For portable devices 0.3x additional points shall also be awarded where a commercial guarantees provides a battery replacement in the case of defects or a capacity loss of more than 50%.	

C7. Rechargeable battery life and endurance (Core criteria)	• 1000 cycles or more: x points • 800 cycles or more : 0.75x points • 500 cycles or more: 0.5x points • Up to 499 cycles: 0.25x points	
C7. Rechargeable battery life and endurance (Comprehensive criteria)	• 1000 cycles or more: x points • 800 cycles or more : 0.6x points • Up to 799 cycles: 0.3x points	
C8. Notebook computer drives (Comprehensive criteria)	Fulfillment of criteria = X points Non-fulfillment of criteria = no points	
C9: Notebook durability testing (Comprehensive criteria)	• Accidental drop (x/4 points) • Resistance to shock (x/4 points) • Resistance to vibration (x/4 points) • Screen resilience (x/8 points) • Temperature stress (x/8 points)	
C10: Tablet durability testing (Comprehensive criteria)	• Accidental drop (x/2 points): • Screen resilience (x/2 points):	
D4. Computer dismantling potential (Comprehensive criteria)	• over 60% lower: x points • 31-60% lower: 0.6x points • 10-30% lower: 0.3x points	
D6. Improvement in the re-use targets, recycling upgrading levels and equipment tracking (Comprehensive criteria)	Fulfillment of criteria = X points Non-fulfillment of criteria = no points	
	SUM	

Proposed Annex II: Notebook and Tablet durability test specifications

Test	Test conditions and performance benchmarks	Test method
Accidental drop *(Notebooks and tablets)*	*Specification:* The notebook or tablet shall be dropped from 76 cm of height onto a surface consisting of a minimum of 30mm of wood over a non-yielding surface. One drop shall be made on the top, bottom, right, left, front and rear side, as well as each corner. *Functional requirement:* The notebook or tablet shall be switched off during the test but shall successfully boot up following each test. The casing shall remain integral and the screen undamaged following each test.	IEC 60068 Part 2-31: Ec (Freefall, procedure 1)
Screen resilience *(Notebooks and tablets)*	*Specification:* Two loading tests shall be carried out. A load of 50kg shall be evenly applied to the screen lid (for notebooks) or screen (for tablets) over a minimum area of 176cm. A minimum load of 25kg shall be applied to an area with a diameter of 3cm. The notebook or tablet shall be placed on a flat surface during each test. *Functional requirement:* The screen surface and pixels shall be inspected for the absence of lines, spots and cracks after application of each loading.	The test equipment and setup used shall be confirmed by the tenderer.
Resistance to shock	*Specification:* A minimum of a 40G peak half-sine wave pulse shall be applied three times for a duration of a minimum of 6 ms to the top, bottom, right, left, front and rear side. *Functional requirement:* The notebook shall be switched on and running a software application during the test. It shall continue to function following the test.	IEC 60068 Part 2-27: Ea Part 2-47
Resistance to vibration	*Specification:* Randomised sinusoidal vibrations in the frequency 5-250Hz shall be applied for a minimum of 1 sweep cycle per axis to the top, bottom, right, left, front and back axis. *Functional requirement:* The notebook shall be switched on and running a software application during the test. It shall continue to function following the test.	IEC 60068 Part 2-6: Fc Part 2-47
Temperature stress	*Specification:* *The notebook shall be subjected to a minimum of four 24 hour exposure cycles in a test chamber. The notebook shall be operational during a cold cycle at -25oC and a dry heat cycle at*	IEC 60068 Part 2-1: Ab/e Part 2-2: B

	+40oC. The notebook shall be non-operational during a cold cycle at -50oC and dry heat cycling between +35 and +60oC. *Functional requirement:* *The notebook shall be checked that it functions following each of the four exposure cycles.*	

Proposed Annex III: Protocol for the dismantling test

(a) Terms and definitions

(i) Target parts and components: Parts and/or components that are targeted for the extraction process.

(ii) Disassembly step: An operation that finishes with the removal of a part or with a change of tool.

(b) Operating conditions for the extraction

(i) Personnel: The test shall be carried out by one person.

(ii) Test sample: The sample product to be used for the test shall be undamaged.

(iii) Tools for extraction: The extraction operations shall be performed using manual or power-driven standard commercially available tools (i.e. pliers, screw-drivers, cutters and hammers as defined by ISO 5742, ISO 1174, ISO 15601).

(iv) Extraction sequence: The extraction sequence shall be documented and, where the test is to be carried out by a third party, information provided to those carrying out the extraction. The sequence shall be defined as a series of steps that shall be followed by the third party.

(v) Measurement: The extraction time measurement consists of the measurement with an instrument of the time elapsed between the starting of the first step listed in the extraction sequence documentation and the end of the last one.

(c) Recording of the test conditions and steps

(i) Documentation of steps: The individual steps in the extraction sequence shall be documented and the tools associated with each step shall be specified.

(ii) Recording media: Photos shall be taken and a video recorded of the extraction of the components with a time code displayed recording the elapsed time during the recording. The video and photos shall enable clear identification of the steps in the extraction sequence.