Copiers, Printers, Multifunctional Machines – Environmental Considerations for the RFP/RFI Process

Below are suggested environmental considerations for the RFI/RFP process for this contract category. This category covers copiers, digital duplicators, facsimile machines, mailing machines, multifunctional devices, printers, and scanners. Recent updates to this category include questions based on a new EPEAT standard (Electronic Products Environmental Assessment Tool) on "Imaging Equipment," which is defined as copiers, printers, mailing machines, multifunctional devices, printers and scanners (not medical devices). Hundreds of products are EPEAT registered to meet this standard.

	#	Question	Preferred Response	Definition	Rationale
	1.	Does the product's primary package contain postconsumer recycled content? (Yes/No) If yes, what percentage?	Yes, highest %	The primary packaging surrounds the product. For example the paper wrap surrounding a roll of toilet paper is primary packaging. (Secondary packaging surrounds a group of products, such as the box containing rolls of toilet paper.) Postconsumer recycled content material is a material or finished product that has served its intended use and has been diverted or recovered from waste destined for disposal, having completed its life as a consumer item.[i] Basically, it is the material collected from recycling programs. It is calculated as a percentage of the total weight of the product.	Buying recycled-content products ensures that the materials collected in recycling programs will be used again in the manufacture of new products. According to EPA, recommending postconsumer recycled content levels for items will have the most positive impact on reducing the amount of solid waste requiring disposal.[ii] Purchasers should prefer products with the highest postconsumer recycled content that also meet other considerations. Use of postconsumer recycled content is fundamental to closing the loop in the recycling process, using fewer natural resources, and based on EPA's ReCon Tool, can reduce greenhouse gas emissions. There are exceptions to the use of postconsumer recycled content in sterile barrier packaging (ISO 11607-1).
	2.	Is this product packaged without polystyrene? (Yes/No)	Yes	Polystyrene (CAS 9003-53-6) is a plastic polymer from the monomer styrene. It comes in many forms: sheet, expanded or extruded foam, or as oriented polystyrene. What is commonly known as Styrofoam™ refers only to the extruded form of polystyrene. Packaging refers to all materials (primary, secondary, etc) used to transport and	Also referred to as 'PS' with the SPI (Society of the Plastics Industry) resin code 6, polystyrene is difficult for hospitals to recycle and there are alternatives. Polystyrene is made with styrene.[iii] The International Agency for Research on Cancer (IARC) classifies styrene as a possible carcinogen.[iv] Foam blowing agents (called hydrochlorofluorocarbons,

				protect a product from damage. **Alternatives** to polystyrene packaging are available.	HCFCs) used to make polystyrene foam are compounds that have an ozone depletion potential[v].
	3.	Does this product (including printed circuit boards and plastics) contain less than 1000 ppm halogenated organic flame retardants by weight of homogenous material? (Yes/No)	Yes	Halogenated organic flame retardants are intended to inhibit ignition and the spread of flames. Halogenated chemicals are chemicals that contain bromine, chlorine, fluorine or iodine bonded to a carbon atom. Homogeneous means uniform composition throughout, such as individual types of plastics or paper. Homogenous material, as defined by RoHS, is a unit that cannot be mechanically disjointed into single materials, or any material that is not mechanically divisible (disassembled, cut or ground) into separate material constituents. Mechanically disjointed means the materials can be, in principle, separated by mechanical actions such as unscrewing, cutting, crushing, grinding and abrasive processes.[vi] Guidance for suppliers on testing is available.	Halogenated organic flame retardants and/or their breakdown products tend to be persistent bioaccumulative and toxic (PBT) in the environment. They are widely found in the environment and in humans with Americans having some of the highest levels of them in their bodies. Some halogenated organic flame retardants are carcinogenic. These compounds are used in electronic housings, circuit boards and plastic enclosures. Alternatives exist that reduce the concern for environmental and human health effects. The European Union has a ban on some brominated flame retardants. In Europe, the Restriction of Hazardous Substances Directive (RoHS) restricts the use of PBDE's and PBB's in electronic equipment. Examples include, but are not limited to: Tetrabromobisphenol-A (CAS 79-94-7), Hexabromocyclododecane (CAS 25637-99-4), Deca-BDE (1163-19-5), Octa-BDE (CAS 32536-52-0), Penta-BDE (CAS 32534-81-9), Tris (2-chloroisopropyl phosphate) (TCPP) (CAS 13674-84-5), Tris(2-chloroethyl) phosphate (TCEP) (CAS 115-96-8), TDCP (Tris (1,3-dichloro-2-propyl) phosphate (CAS 13674-87-8)
	4.	Is this product and its components free of intentionally added phthalates? (Yes/No) If no, please specify.	Yes	Phthalates are esters of phthalic acid mainly used as plasticizers (substances added to plastics to increase their flexibility, transparency, durability, and longevity). They are used primarily to soften polyvinyl chloride (PVC). Some phthalates include: Di-2-ethyl hexyl phthalate (DEHP) CAS 117-81-7, Benzylbutylphthalate (BBP) CAS 85-68-7, Di-n-hexyl phthalate (DnHP) CAS 84-75-3, Di-isodecyl phthalate (DIDP) CAS 68515-49-1 or 26761-40-0, Dibutyl phthalate (DBP) CAS 84-74-2	People can be exposed through the use of products containing these chemicals. In 2002, the FDA issued a Public Health Notification for PVC devices containing DEHP. DEHP is also listed as a carcinogen on the Prop 65 list. The National Research Council has also noted the importance of looking at cumulative exposure from multiple phthalates. Five phthalates are listed as reproductive toxicants by Prop 65.

	5.	Is this product EPEAT registered? (Yes/No) *If "yes" to Question #5, the next set of questions are not needed as they are covered in EPEAT requirements.*	Yes	EPEAT is the Electronic Products Environmental Assessment Tool helping identify greener electronics. Through a collaboration of stakeholders from business, advocacy, government and academic areas, EPEAT develops environmental standards for categories of electronic products . Through a self-registry and verification process, supplier products are listed as meeting either the Bronze, Silver or Gold levels (Gold being the highest). EPEAT has over 300 copiers, printers, etc., registered to their new "Imaging Standard". For more info, www.epeat.net.	EPEAT-registered products meet strict criteria. From fewer toxins in manufacturing to efficient operation and easier recycling, EPEAT-registered products offer a reduced environmental impact across their lifecycles. The lifecycle benefits of purchased products can be calculated using the Electronics Environmental Benefits Calculator (EEBC). The federal government requires 90% of applicable purchases by EPEAT-registered. For additional purchasing resources, see http://www.epeat.net/resources/purchaser/.

If not EPEAT registered, respond to the following questions:					
		Question	**Preferred Response**	**Definition**	**Rationale**
	5.	Is this product free of polyvinyl chloride (PVC) in the coating of cables and wires? (Yes/No)	Yes	Polyvinyl chloride (PVC) shall be defined as a plastic polymer used in a wide array of products. It is the third most widely produced plastic. Intentionally added means a substance is deliberately added in the production of the product. (Similar to EPEAT requirement)	Production and incineration of PVC releases dioxins and other harmful chemicals. Dioxins are widely distributed throughout the environment in low concentrations and are persistent, bioaccumulative and toxic (PBT). Dioxins are potent toxicants with many health impacts even at low exposure levels.
	6.	Does this product contain postconsumer recycled plastic content? (Yes/No) If yes, what percentage of total plastic (by weight)?	Yes, highest %	Postconsumer recycled content material is a material or finished product that has served its intended use and has been diverted or recovered from waste destined for disposal, having completed its life as a consumer item.[vii] Basically, it is the material collected from recycling programs. It is calculated as a percentage of total weight of the product. Steel is excluded from consideration as it commonly contains recycled content. This does not include preconsumer (sometimes referred to as postindustrial) recycled content which are recovered materials obtained from manufacturers.[viii] Required EPEAT Criteria	Buying recycled-content products ensures that the materials collected in recycling programs will be used again in the manufacture of new products. According to EPA, recommending postconsumer recycled content levels for items will have the most positive impact on reducing the amount of solid waste requiring disposal.[ix] Purchasers should prefer products with the highest postconsumer recycled content that also meet other considerations. Use of postconsumer recycled content supports closing the loop in the recycling process, and, based on EPA's ReCon Tool, helps avoid generating greenhouse gas emissions.

	7.	Is this product free of intentionally added mercury in light sources? (Yes/No/NA)	Yes/NA	Mercury is a naturally occurring element that is found in air, water and soil. It exists in several forms: elemental or metallic mercury, inorganic mercury compounds, and organic mercury compounds. Intentionally added means a substance is deliberately added in the production of the product. EPEAT requires reporting on the amount of mercury in light sources and an optional criteria can be met if no mercury is contained in light sources.	Medical facilities use a large variety of mercury-containing equipment and products.[x] Mercury is persistent bioaccumulative and toxic (PBT) and is found in thermometers, sphygmomanometers, dental amalgam, lab reagents, cleaners, electrical switches, and other scientific apparatus. Mercury is a potent neurotoxicant that can affect the brain, spinal cord, and peripheral nerves. It is also toxic to the kidneys. Efforts in health care are intended to reduce exposure to patients and staff, address workplace safety, and safely handle products at the end of life.
	8.	Does this product contain a percentage of biobased plastic materials from renewable resources? (Yes/No/NA) If yes, what percentage of total plastic (by weight)	Yes/No Highest %	Biobased is a material that is composed of biological materials, including renewable agricultural (plant, animal, and/or marine) and/or forestry materials. This is required EPEAT criteria for Imaging Equipment. Biobased material content is a percentage calculated by dividing the weight of biobased plastic material, divided by the full weight of the plastic material in the part or product. The following may be excluded from the calculation of percentage: printed circuit boards, labels, cables, connectors, electronic components, optical components, electrostatic discharge (ESD) components, and electromagnetic interference (EMI) components. Products that do not contain plastics can declare “Not Applicable”.	
	9.	Is this product compliant with the EU’s Restriction of Hazardous Substances Directive (RoHS)? (Yes/No)	Yes	RoHS restricts mercury and cadmium at no more than 100ppm, and hexavalent chromium and lead at 1000ppm. Although RoHS does not apply to electronic medical products until 2014, responsible suppliers should manufacture equipment free of intentionally added heavy metals to prevent exposure.	Heavy metals are persistent bioaccumulative and toxic. Heavy metals may enter the human body through food, water, air, or absorption through the skin when they come in contact with humans in agriculture and in manufacturing, pharmaceutical, industrial, or residential settings. They may build up in biological systems and become a significant health hazard. Cadmium is an extremely toxic metal.[xi] Lead accounts for most of the cases of pediatric heavy metal poisoning (Roberts 1999)[xii].

	10.	For this product, does the supplier offer a Take-Back Program for reuse or recycling? (Yes/No)	Yes	Product take-back programs offer potential business benefits that are significant - fostering a stronger bond with customers, reducing manufacturing and waste expenses, and reusing resources are a few. Product take-backs are a part of Extended Producer Responsibility (EPR), or Product Stewardship, means whoever designs, produces, sells or uses a product takes primary responsibility for minimizing its environmental impact through all stages of the product's life cycle. And the producer, having the greatest ability to minimize impacts, has the most responsibility.	Electronic products contain many toxic chemicals and materials of concern including mercury, lead, polyvinyl chloride and brominated flame retardants. Therefore it is essential that electronic products are properly disposed of at the end of their useful life. One strategy is to support product stewardship through manufacturer take-back programs. In Europe, the waste electronic and electrical equipment (WEEE) directive was passed in 2006 to force manufacturers of electronics to mitigate these risks by taking back and recycling used product in order to divert it from landfills, illegal dumps and unsafe disassembly practices.
	11.	If this product has plastic parts weighing more than 100 grams, are plastic parts free of adhesives, coatings, paints, pigment that not compatible with reuse and recycling? (Yes/No/NA)	Yes/NA	Plastic parts >100 g shall not contain adhesives, coatings, paints, finishes, or pigments that are not compatible with reuse and recycling. Printed circuit boards, labels, cables, connectors, electronic components, optical components, electrostatic discharge (ESD) components, and electromagnetic interference (EMI) components are excluded. Adhesives, coatings, paints, finishes, or pigments required for safety, legal, or technical requirements are exempt. For products that do not contain plastic parts weighing >100 g, manufacturers may declare "Not Applicable".	This is an EPEAT requirement for Imaging Equipment to restrict materials not compatible with reuse and recycling
	12.	Does each plastic part weighing more than 100 grams consist of only one recyclable plastic type? (Yes/No/NA)	Yes/NA	Preference is for each plastic part >100 g to consist of only one recyclable plastic type. Printed circuit boards, labels, cables, connectors, electronic components, optical components, electrostatic discharge (ESD) components, electromagnetic interference (EMI) components and hoses/tubes for transporting fluid within the unit are excluded. For products that do not contain plastic parts weighing >100 g, manufacturers may declare "Not Applicable".	This supports the recyclability of plastic parts .at the end of product life.

	13.	Does this product meet the rate of reusability of components and recyclability of materials and components by weight in the product based on requirements of the European WEEE Directive? (Yes/No/NA)		The definition of reusability and recyclability is in accord with Article 7 of the Directive 2002/96/EC of the European Parliament and of the Council on Waste Electrical and Electronic Equipment in that it includes component, material and substance reuse but excludes reuse of whole products in calculating the reusable/recyclable rate. Unless the Directive incorporates whole product reuse in the recycling/recovery targets of Article 7, this exclusion will apply. Though the Directive applies these rates to the rate of "component, material and substance reuse and recycling" within a country, applied to a given type of product, the targets are defined as X% "by an average weight per appliance". This criterion translates these targets into a reusable/recyclable rate per each appliance (e.g. product).	This is required in EPEAT standard for Imaging Equipment.
	15.	Is this product ENERGY STAR labeled? (Yes/No/NA)	es	ENERGY STAR qualified imaging equipment includes copiers and fax machines; digital duplicators; printers, scanners and all-in-one devices; and, mailing machines.	Models that meet the most recent ENERGY STAR requirements are 40% more energy efficient, and feature efficient designs that help equipment run cooler and last longer. If all businesses replaced their stock of imaging equipment with new units meeting current ENERGY STAR requirements, Americans would save 4 billion kWh per year - nearly 10% of current commercial imaging equipment consumption.
	16	Does this product have duplex capabilities? (Yes/No)	Yes	Automatic duplex printing enables the printer to turn the page over and print on the back side of each page.	Duplex printing enables users to more efficiently use paper by printing on the back side. This reduces the use of paper by as much as 50%.
	17.	Is this product compatible with 100% postconsumer recycled paper? (Yes/No)	Yes	Machines would be compatible with paper made with 100% postconsumer recycled content.	Tests have shown paper made with recycled content to be as compatible in copiers as virgin paper.

	18.	Does this product have a standby power level with an ACW Power Draw of less than or equal to 1 W as measured in accordance with IEC 62301 or ENERGY STAR relevant test method? (Yes/No)	Yes		This is a required element in EPEAT to set a standard for energy efficiency.
	19.	Is this product's primary and secondary packaging free of elemental chlorine as a bleaching agent to bleach virgin or recovered content fibers? (Yes/No/NA)	Yes	The primary packaging surrounds the product. For example the paper wrap surrounding a roll of toilet paper is primary packaging. (Secondary packaging surrounds a group of products, such as the box containing rolls of toilet paper.) Postconsumer recycled content material is a material or finished product that has served its intended use and has been diverted or recovered from waste destined for disposal, having completed its life as a consumer item.[xiii] Basically, it is the material collected from recycling programs. It is calculated as a percentage of the total weight of the product. (Required EPEAT) This pertains to paper-based packaging.	Buying recycled-content products ensures that the materials collected in recycling programs will be used again in the manufacture of new products. According to EPA, recommending postconsumer recycled content levels for items will have the most positive impact on reducing the amount of solid waste requiring disposal.[xiv] Purchasers should prefer products with the highest postconsumer recycled content that also meet other considerations. Use of postconsumer recycled content is fundamental to closing the loop in the recycling process, using fewer natural resources, and based on EPA's ReCon Tool, can reduce greenhouse gas emissions. There are exceptions to the use of postconsumer recycled content in sterile barrier packaging (ISO 11607-1).

[i] Glossary, Comprehensive Procurement Guidelines, U.S. Environmental Protection Agency, http://www.epa.gov/epawaste/conserve/tools/cpg/glossary.htm viewed September 2011

[ii] Background Document for the Final Comprehensive Procurement Guideline (CPG) III and Final Recovered Materials Advisory Notice (RMAN) III, U.S. EPA, September 1999, EPA530-R-00-002

[iii] U.S. Environmental Protection Agency, "Air Toxics- Styrene," http://www.epa.gov/ttnatw01/hlthef/styrene.html, website viewed June 2011

[iv] Ibid

[v] *Phaseout of HCFC*s, Ozone Layer Depletion, U.S. EPA, http://www.epa.gov/ozone/title6/phaseout/classtwo.html viewed September 2011

[vi] RoHS Producer Support Booklet, National Measurement Office, 2010, pg 6, http://www.bis.gov.uk/assets/bispartners/nmo/docs/rohs/support-literature/producer-support-booklet.pdf

[vii] Glossary, Comprehensive Procurement Guidelines, U.S. Environmental Protection Agency, http://www.epa.gov/epawaste/conserve/tools/cpg/glossary.htm viewed September 2011

[viii] Reusable Vocabulary, U.S. EPA, http://www.epa.gov/osw/wycd/catbook/you.htm viewed September, 2011

[ix] Background Document for the Final Comprehensive Procurement Guideline (CPG) III and Final Recovered Materials Advisory Notice (RMAN) III, U.S. EPA, September 1999, EPA530-R-00-002

[x] EPA: Information for Health Care Providers, http://www.epa.gov/hg/healthcare.htm#facilities, viewed August 30, 2011

[xi] OSHA, http://www.osha.gov/SLTC/metalsheavy/index.html

[xii] http://www.lef.org/protocols/prtcl-156.shtml#comm

[xiii] Glossary, Comprehensive Procurement Guidelines, U.S. Environmental Protection Agency, http://www.epa.gov/epawaste/conserve/tools/cpg/glossary.htm viewed September 2011

[xiv] Background Document for the Final Comprehensive Procurement Guideline (CPG) III and Final Recovered Materials Advisory Notice (RMAN) III, U.S. EPA, September 1999, EPA530-R-00-002