LENOVO ELECTRONICS END OF LIFE STANDARD FOR SUPPLIERS – STD-00031

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1. INTRODUCTION

Lenovo is committed to protect the environment and to pursue environmental leadership in all of its business activities. As a part of this commitment, it is Lenovo's desire to do business only with suppliers who are environmentally responsible and to encourage environmental awareness with these suppliers. Further, there is increasing interest from customers and governments for information on the environmental attributes, data security and brand protection of Lenovo's products and how they are disposed of at end of life. This standard will identify the minimum requirements for suppliers that dispose of Lenovo electronics in a variety of programs.

2. SCOPE

This document details the minimum environmental requirements applicable to Lenovo electronics that will be disposed of; either through Resale (Reuse), Refurbish/Repair (Reuse), Recycling, Universal Waste Disposal, and Hazardous Waste Disposal. Lenovo's Environmental Management System requires each facility that provides services to Lenovo to meet these requirements. This is a global standard and it is applicable to suppliers providing the following services:

- Asset Recovery Services
- Dismantling & Scrapping
- Recycling of Materials
- Disposal of non-Hazardous Waste
- Disposal of Hazardous Waste
- Surplus Buyer (Broker/Resellers)
- End of Lease Services
- Handler/Collector/Transporter
- Warranty Depot and Parts Fulfillment

These requirements apply to both Lenovo branded and non-Lenovo branded hardware.

For programs where recyclers are defined by country or other relevant authorities based on recycling regulation requirements (e.g. recycling consortia or schemas), Lenovo approvals may not be required.

3. *TERMS AND DEFINITIONS*

3.1 Downstream Suppliers: Includes any entity to which a recycler transfers used or end of life electronic equipment, components, or materials including reuse, refurbishing, demanufacturing, processing, materials recovery, energy recovery, incineration, and disposal facilities.

3.2 Handler: A firm who collects or transports end-of-life equipment to a supplier where de-manufacturing for disposal, compacting, shredding, or other treatments are performed.

3.3 Hazardous Waste: Any Waste that poses substantial or potential threats to public health or the environment. (1) and in addition any waste so designated by a national, state or local government.

3.4 Other Managed Waste: For purposes of supplier evaluations, this applies to polychlorinated biphenyls (PCBs).

3.5 Products: All products that Lenovo manufactures, markets, distributes or services and their supplies, subassemblies and parts, major new feature releases, field maintenance tools, field use materials and Lenovo branded and non-branded products.

3.6 Product End-of-Life Management (PELM): PELM is the reuse, refurbishing, de-manufacturing, dismantling, reclamation, shredding, recycling, treatment and disposal of products, parts, and options when they are taken out of service, reach end of life, and/or scrapped. This includes the recovery and reuse of products, parts subassemblies, and components, including scrap electronic and electrical components such as disk drives, printed wiring boards, power supplies, cables and cords, etc. Lenovo branded and non-branded products owned or accepted by Lenovo (including trade-ins and customer returns or take back) are included in this definition.

3.7 Brokers and/or Resellers: Companies that purchase Lenovo surplus and/or used products, parts, and options whether owned by Lenovo or taken position by Lenovo from external customers for the purpose of reselling to end users for the original intended use.

3.8 Refurbisher/Remanufacturer: Lenovo locations or suppliers who refurbish end-of-life information technology (IT) equipment for the purpose of reselling to end users. For the purpose of these requirements, Refurbishers do not perform de-manufacturing for disposal, compacting, shredding, or other treatments on end-of-life products and product waste. Re-manufacturers with whom Lenovo contracts must either be approved by Lenovo Global Environmental Affairs or use Lenovo approved PELM suppliers for processing products and product waste generated from the refurbishing process.

4. REQUIREMENTS

4.1 End of Life Supplier Initial and Sustaining requirements:

In all cases all applicable laws and regulations must be adhered to. If a requirement in this document is in direct conflict of a law or regulation, the law or regulation will take precedence.

All Lenovo End of Life Supplier Candidates must go through a rigorous initial process as well as ongoing sustaining requirements, this process is outlined below:

A comprehensive Lenovo Pre-Audit document must be completed, signed and dated by appropriate individual at each facility. This document requires information that includes: facility specific information, processing capabilities, environmental, health, safety, logistics, documentation, downstream suppliers, data security, insurance information and employee training. This document is considered to be the supplier's self-declaration.

The Pre-Audit information will be verified by Lenovo Global Environmental Affairs and if the supplier is deemed suitable an Environmental Onsite Audit will be performed. This audit will be performed by a qualified Lenovo Employee or a designated third party contracted by Lenovo.

If the supplier facility is approved an onsite audit will be performed every three years and depending on what service is contracted an annual desktop audit could also be required. In addition Lenovo or its contracted third party will be allowed to enter the approved facility at any time during normal business hours for an unannounced surveillance audit if asked.

In parallel a comprehensive financial and business process review will be completed by the business area within Lenovo requiring the service.

4.2 Pre-Qualification Requirements:

Supplier must comply with the current version of the Responsible Business Association (RBA) "FKA" Electronic Industry Citizenship Coalition (EICC) Code of Conduct.

Supplier must have and maintain all required operating permits, licenses and authorizations, Import/Export permits required to carry out electronics end of life disposition. All of the above must be kept up to date.

Suppliers must ensure that all downstream vendors also meet and comply with this standard.

Suppliers must at a minimum have an ISO 9001 or 14001 certifications. In countries where Lenovo has products registered in the EPEAT program: R2, eStewards or other EPEAT accepted certifications are required for Recyclers, Product Take Back and Asset Recovery Providers. In other countries, Lenovo strongly encourages its suppliers to obtain the following certifications: OSHAS 18001, R2:2013 and/or eStewards, NAID, WEEE certifications, WEEELabex certification etc… In some cases these certifications will be required in certain geographies or circumstances over and above the EPEAT program.

4.3 Responsible Management Strategy Requirement:

Lenovo requires its suppliers to follow the R2:2013 hierarchy of Reuse, Materials Recovery, Energy Recovery or Land Disposal unless there are special circumstances outlined in the Lenovo Statement of Work.

- A link to the R2:2013 standard can be found here: https://sustainableelectronics.org/r2-standard

In addition to any restrictions imposed by law, Materials that are or contain the following, whether broken (including shred) or intact, must not be landfilled:

- Cathode ray tubes (CRTs),
- Flat panel displays (e.g., liquid crystal displays (LCDs) and plasma screens)
- Circuit boards
- Mercury lamps or switches
- Batteries, all types
- Any other electronic components containing lead, mercury, cadmium, hexavalent chromium, beryllium, or polychlorinated biphenyls (PCBs).

4.4 Health and Safety:

Lenovo suppliers must have a Health and Safety Program that minimizes the incidence of work-related injury and illness. The program must, on an on-going basis, identify potential workplace hazards, assess associated risks and implement controls as indicated by the results of the risks assessment. The program must also identify and ensure compliance with applicable OHS legal requirements. Employee Safety Circles or similar programs are encouraged as a safe and health work environment enhances the quality of products and services, consistency of production and worker retention and morale. Modeling ones program or obtaining OHSAS 18001 is strongly encouraged. The health and safety areas that Lenovo will be verifying are the following:

Occupational Safety for Workers: Exposure to potential safety hazards are to be controlled through proper design, engineering and administrative controls, preventative maintenance and safe work procedures (including lockout/tag out) and ongoing safety training. Where hazards cannot be adequately controlled by these means, workers are to be provided with appropriate, well-maintained personal protective equipment. Workers shall not be disciplined for raising safety concerns.

Emergency Preparedness: Emergency situations and events are to be identified and assessed, and their impact minimized by implementing emergency plans and response procedures, including: emergency reporting, employee notification and evacuation procedures, worker training and drills, appropriate fire detection and suppression equipment, adequate exit facilities and recovery plans.

Occupational Injury and Illness: Procedures and systems are to be in place to prevent, manage, track and report occupational injury and illness, including provisions to: a) encourage worker reporting; b) classify and record injury and illness cases; c) provide necessary medical treatment; d) investigate cases and implement corrective actions to eliminate their causes; and d) facilitate return of workers to work.

Industrial Hygiene: Worker exposure to chemical, biological and physical agents is to be identified, evaluated, and controlled. Engineering or administrative controls must be used to control overexposures. When hazards cannot be adequately controlled by such means, worker health is to be protected by appropriate personal protective equipment programs.

Physically Demanding Work: Worker exposure to the hazard of physically demanding tasks, including manual material handling and heavy or repetitive lifting, prolonged standing and highly repetitive or forceful assembly tasks is to be identified, evaluated and controlled

Machine Safeguarding: Production and other machinery shall be evaluated for safety hazards. Physical guards, interlocks and barriers are to be provided and properly maintained where machinery presents an injury hazard to workers.

4.5 Site Security:

Facility - processes and physical locations must be designed and maintained in a manner to ensure the protection of Lenovo electronic waste from the time of receipt, including any transit or third-party transfer, - until final disposition. Security systems must be risk based and must include the following security protection:

- Access controls that prohibit unauthorized physical access to areas that contain electronic waste.
- Alarm system
- Closed-circuit television (CCTV)
- Building construction, fencing and gates, lighting
- Security process controls – employee badging and identification, HR processes, concealed theft prevention, incident reporting and escalation, training, facility yard controls. Criminal background checks for employees.
- Business process controls - disposition, inventory control, loading and unloading as well as in-transit controls (such as driver requirements, security seals, and truck security).
- Audit Capabilities – that ensure access control systems (physical and electronic) log all access attempts, both authorized and unauthorized. To include archiving of log data for a period of at least 6 months.

4.6 Data Destruction:

- Supplier must have a well-defined information security management program which includes data security handling procedures, training program, and data breach investigation plans which encompasses reuse as well as media handling.
- The Information Security Management Program must include periodic reviews and updates of policies, standards, and process documents. As well as an audit function to review security access controls and personnel who have access to electronic data storage media and/or devices.
- Data storage devices shall be adequately stored and protected from theft until all storage media are rendered inoperable and unreadable.
- All data-containing devices and storage media such as hard drives, and recording media such as CDs, DVDs, tapes, or other similar items must either be fully erased or destroyed by shredding, crushing, shearing, melting, incinerating, or perforating the memory resident material.
- Data sanitization/erasure shall be conducted in accordance with the requirements of, and procedures set forth by the NIST 800-88 revision 1 Guidelines for Media Sanitizations. To include additional procedures implemented to address imperfections in Solid State hard drives and other similar technologies which may prohibit standard data sanitization methods to be unsuccessful.
- The supplier will perform a full software verification on each wiped disk to confirm that the wiping of all sectors was successful.
- If all sectors on data equipment cannot be successfully erased, the device must be physically destroyed. Data Destruction Reports with HDD or SDD serial number tied to original system must be available.
- Supplier shall maintain documentation verifying data destruction, including serial numbers, dates, and methods of destruction for data containing devices destined for reuse.
- Data Sanitization Audits: Supplier shall have process in place in which samples of wiped drives are audited periodically by a party (internal to Supplier organization) independent from the data wiping group, to ensure integrity of data destruction process.

4.7 Insurance Guidelines:

The supplier will need to be able to demonstrate that it has evaluated the risks per their processing activities and that it has adequate insurance or reserves to cover liabilities, including environmental pollution and worker health and safety, arising from its operations in each of its fields of activities and the geographic areas in which it operates.

The minimum level of Commercial Liability Insurance shall be considered $1,000,000 per occurrence.

A Commercial Field Underwriter or Risk Manager in the Insurance field should be used to determine whether Pollution Liability Insurance is required. The recycler must inform this party of their environmental, health and safety risks.

Automobile Liability Insurance covering all owned, non-owned and hired vehicles in the amount of One Million Dollars ($1,000,000) combined single limit.

Property and transit insurance covering Lenovo's interests in property value in various forms of process. In no event shall coverage be less than the actual cash value of property including labor, materials and equipment to be used for completion of the services performed under this contract against all risks of direct physical loss, excluding earthquake and flood, for an amount equal to the full amount of the contract.

Lenovo reserves the right to require additional insurance coverage.

4.8 Closure Plan: Supplier shall develop and keep current a written Closure plan and a sufficient financial instrument that assures proper closure of the facility and assures against abandonment of any electronics recycling products, components, or materials.

Examples of a sufficient financial instrument as referenced above are: trust, insurance policy or any instrument that protects its money so that it may only be spent for one purpose which is clean up in event of a closure, bankruptcy, etc.

Closure plans, including closure cost estimates, documenting how materials will be managed and how the facility will be properly decommissioned at the time of closure must be maintained and updated at least every two years.

4.9 Transboundary Movement:

All exports and imports of Material will comply with existing international waste trade agreements and legal requirements.

Suppliers shall obtain all permits, licenses and authorizations required for export prior to initiating any shipment of Materials. Suppliers shall ensure all sub-vendors used in all tiers of the disposition chain comply with this requirement.

Lenovo does not permit hazardous waste to be exported from developed (OECD) to developing (non-OECD) countries either directly or through intermediaries.

No Equipment or Materials shall be exported from developed countries to developing countries for the sole purpose of disposal.

***Special Note**:* Beyond the basic terms and conditions, agreements with brokers and/or resellers to purchase surplus or used equipment directly from Lenovo for the purpose of reselling to end users or other resellers should include the requirement not to resell in to non-OECD countries, without specific approval from Lenovo.

4.10 Reporting:

Product End of Life Suppliers must report quarterly the following:

(1) The method and location of hazardous waste treatment and/or disposal,

(2) Type and weight of Lenovo's hazardous material shipped,

(3) Year to date quantities, in metric tons of total processed in the following categories:

- *reused or resold*
- *recycled*
- *incinerated with energy recovery*
- *incinerated as treatment*
- *landfill disposal*
- *In addition to the above what amount of this waste was considered hazardous waste.*

4.11 Audit Cost:

Audit related cost arrangements will be negotiated on a case by case basis.

5. REFERENCES:

(1) “Resources Conservation and Recovery Act”, US EPA