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## S T A N D A R D S

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**Energy Management Subcommittee**

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**SCTE OPERATIONAL PRACTICE**

**SCTE 207 2020**

**Cable Operator Recycling  
Recommended Practices**

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## **1. Introduction**

### **1.1. Executive Summary**

The cable broadband industry depends on electronic equipment to enable the product and services delivered to the millions of subscribers around the world. This document identifies resources to help aid the cable operator in best disposal of end of life equipment.

### **1.2. Scope**

The following outlines the recommended practices for the management of cable operator's e-scrap. The scope and primary objective is to ensure proper e-scrap management from both environmental and financial perspectives covering:

1. Guiding principle for electronic equipment end of life management
2. Best practices for proper recycling of electronic equipment
3. End of life electronic equipment financial models
4. Recommendations for data collection on electronic recycling that will provide industry trend information

### **1.3. Benefits**

Proper handling of end of life equipment can benefit both the bottom line as well as the environment. For example, when dealing with failed or obsolete equipment, the cable operator has several choices on how to remove the property from the organization. The removal of the equipment should be approached with a strategic mindset to help optimize the total cost of ownership and environmental impacts.

### **1.4. Intended Audience**

Network operations, critical facility managers, and inside plant employees responsible for materials leaving the network would benefit from this document.

### **1.5. Areas for Further Investigation or to be Added in Future Versions**

None at time of publication.

## **2. Normative References**

The following documents contain provisions, which, through reference in this text, constitute provisions of this document. At the time of Subcommittee approval, the editions indicated were valid. All documents are subject to revision; and while parties to any agreement based on this document are encouraged to investigate the possibility of applying the most recent editions of the documents listed below, they are reminded that newer editions of those documents might not be compatible with the referenced version.

### **2.1. SCTE References**

- No normative references are applicable.

## 2.2. Standards from Other Organizations

- No normative references are applicable.

## 2.3. Published Materials

- No normative references are applicable.

## 3. Informative References

The following documents might provide valuable information to the reader but are not required when complying with this document.

### 3.1. SCTE References

- No informative references are applicable.

### 3.2. Standards from Other Organizations

- No informative references are applicable.

### 3.3. Published Materials

- No informative references are applicable.

## 4. Compliance Notation

<i>shall</i>	This word or the adjective “ <i>required</i> ” means that the item is an absolute requirement of this document.
<i>shall not</i>	This phrase means that the item is an absolute prohibition of this document.
<i>forbidden</i>	This word means the value specified shall never be used.
<i>should</i>	This word or the adjective “ <i>recommended</i> ” means that there may exist valid reasons in particular circumstances to ignore this item, but the full implications should be understood and the case carefully weighted before choosing a different course.
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## 5. Guiding Principles For Electronic Equipment End Of Life Management

The overall guiding recycling principles for cable operators is to promote and maintain sustainable recycling standards that reduce our environmental impact, meet regulatory requirements and reduce operational expenses through resource conservation and waste reduction.

- Used equipment has value and risk
- Best practices/responsible recycling should be used in the disposition of used equipment
- The shared benefits of establishing an industry infrastructure to manage used equipment can provide optimized efficiency and value while maintaining compliance to existing and future regulations. Standard qualification requirements should be developed for the selection of industry service providers
- Industry volumes and trends of used equipment assets, especially those assets which could potentially be categorized as regulated waste streams at the state or federal level, should be tracked and reported
- “Green Procurement” should drive the selection and acquisition of new equipment that is more supportive of circular economy principles
- Each organization should develop its own plan based on the industry principles and practices
- Implementation requires a team approach – coordinating Operations, Finance and Support
- The cable telecommunications industry can show leadership by implementing an e-scrap/asset management strategy

## 6. Process For Recycling: R2 Reference

The “*Responsible Recycling (R2) Practices for Electronic Recyclers*”<sup>1</sup> is currently recognized as our go to model for adopting a sustainable e-scrap management system for cable owners/operators. The R2 standard outlines in detail 13 critical concepts that should be incorporated into the cable industry process for choosing a recycling solution provider:

- Environmental, Health, and Safety Management System
- Reuse, Recover Hierarchy of Responsible Management
- Legal Requirements
- On-Site Environment, Health, and Safety
- R2 Focus Materials
- Reusable Equipment and Components
- Tracking Throughput
- Data Destruction
- Storage
- Facility Security
- Insurance, Closure Plan, and Financial Responsibility
- Transport
- Recordkeeping

All local codes and regulations shall be adhered to when managing e-scrap. The cable operator should select e-scrap management partners that follow the R2 standard.

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<sup>1</sup> Access the latest R2 reference: <https://sustainableelectronics.org/r2-standard>

Although, R2 is the go-to model, there are other certifications that exist, such as e-Steward.

## 7. Financial Modeling Of E-Scrap

The financial model is based on a risk/reward (financial payback) system. Operators have options when dealing with the end of life electronic equipment. Those choices are based on what is best suited to their administrative strategies. In the spirit of diverting waste, operators have four choices when dealing with surplus end of life electronic equipment.

These include:

- A. **Repurpose/ Reuse** equipment in cable operator footprint  
Low Risk/Reward – no CAPEX to replace equipment. In addition, some equipment components may be redeployed, repurposed or sold as part of the end of life process.
- B. **Resale** of used equipment through auction, consignment, vendor or asset recovery  
Low to High Risk – Original system owner travels with equipment/ Reward – financial payback based on equipment market conditions. Note: de-branding and removal of licenses should be considered prior to resale.
- C. **Recycling** (no reuse)  
Low Risk/Reward – variable value based on commodity value
- D. **Destruction** of equipment containing electronic data  
Low Risk destruction of equipment/Reward – no financial liability based on data leakage. This new scrap can now be recycled via traditional means since any privacy or confidential information has been destroyed.

## 8. Recommended Data Reporting

**Introduction:** The cable industry has developed a method for collecting electronics by R2 Certified electronics recyclers. The majority of equipment that has met end-of-life, surplus, or decommission status ends up with recyclers. The SCTE Standards Working Group for Recycling has determined there are multiple benefits to the collection of this data. The data should be compiled so the industry along with the cable providers has a point of reference to determine how much electronics are being recycled. Other industries have been scrutinized for their lack of green sustainable initiatives including the recycling of electronics.

- A. **Repurpose / Reuse:** The CAPEX avoidance may be quantified for management insight as well as to determine the amount of budget dollars that might be available for other initiatives.
- B. **Resale / Consignment:** Data points for e-waste should include OEM, model, serial number, quantity, weight, shipment date, sale/destruction date, proceeds and origin. Some states such as California require reporting by location from where the equipment was picked up. Consumables such as clamps and bolts do not require OEM, model or serial number details. Certificates of Destruction should be available for e-waste items.
- C. **Recycling / Destruction:** Data points for e-waste should include OEM, model, serial number, quantity, weight, shipment date, sale/destruction date, proceeds and origin. Some states such as California require reporting by location from where the equipment was picked up. Consumables such as clamps and bolts do not require OEM, model or serial number details. In addition, quantities may or may not be available for consumable. For example, the items may be placed into a recycling collection bin so the quantity of ground rods and nuts for example will not be available. Certificates of Destruction should be available for e-waste items. Refer to “Equipment Recycling List for the Cable Industry Appendix A.

**Equipment destined for recycling:** The four data points that need to be captured for equipment that will be recycled):

1. Type
2. Weight
3. Count of pieces
4. Date of Destruction

(e.g. DVR's @ 16,000 Lbs 2,000 pieces)

**Equipment destined for resale or external reuse:** There are four data points that need to be captured for equipment that will be reused or stored for future use. If equipment is **sold or donated**, it is recommended that serial number and model be captured as well.

1. Type
2. Weight
3. Count of pieces
4. Date of Destruction

(e.g. DVR's @ 16,000 Lbs 2,000 pieces)

*\*Recommended if equipment is surplus, sold or donated: **Serial Number and Model** along with documentation of date of destruction.*

*\*Note, an operator may track additional equipment information based on internal policies.*

**Data consolidation:** A central repository of the data should be established for all SCTE-member organizations who agree to participate in this Recommended Practice for Recycling. The purpose of this data repository will be to track the amount of e-scrap cable telecommunications operators recycle. Recyclers who have a relationship with the cable operator should also have access to entering data on behalf of the cable operator.

**Annual Report:** An annual report provided to the MSOs showing the progress the cable industry is making should be produced by the data repository manager.

## 9. Appendix A: Equipment Eligible For Recycling

### OSP – Outside Plant Active Devices

Amplifier Complete	Amplifier, LNA, LNB, LNC
Amplifier Housings	Amplifier, Line Extender, Complete
Amplifier Power Pak	Amplifier, Line Extender Housings
Amplifier Modules	Amplifier, Line Extender Power Pak
Amplifier Accessories, Pads, EQs, CBS	Amplifier, Line Extender Modules
Amplifier, Apartment, MDU	Amplifier, Line Extender Accessories

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Amplifier, Node Complete

Amplifier, Node Receiver

Amplifier, Node Housing

Amplifier, Node Forward XMTRS

Amplifier, Node Power Pak

Amplifier, Node Return XMTRS

Amplifier, Node Accessories

Amplifier, Micro-Node

**OSP – Construction Materials**

Air Compressors

Fuses

All Clamps, Three Hole, Curved, Straight

Ground Anchor

Anchors, ALL Construction

Ground Clamp

Batteries, Power Supplies, OTNs

Ground Rod

Bolts

Ground Wire

Brackets

Guard (Molding)

Circuit Breakers

Heat Shrink

Coax, Hard-Line

Keys

Combiner

Lags Screws

Conduit Accessories

Lashing wire

Conduit All Sizes & Makes

Lashing Wire Clamps

Connectors, Hard-Line

Locks

Couplers

Markers, Tags

Directional Couplers

Nuts

Disconnect Box

One & Two Hole Clamps

Disconnect Box Accessories

Pedestal Accessories

Down Guy Guards

Pedestals

Enclosures

Phone Hardware

Extension Arms

Power Inserter

Fiber Slicing Equipment

Power Supply Accessories, Wiring Harness's etc

Flags

Power Supply Cabinet

Power Supply Complete

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Power Supply Modules	Strand, All Sizes
Preforms, Dead Ends, Splices	Strand-Vise
Riser Conduit, Steel & PVC	Surge Protectors
Strand Link	Vaults

### **Installation Materials**

All Grounding & Bonding Clamps	Ground Wire
All Phone Accessories	HDMI Cables
All Splitters	House Amplifiers
Batteries	House Clips
Cable In-Conduit – CIC	House Hooks
CAT 5-6, Cable & Connectors	Lifts
Coax Cable, Connectors & Jumpers	MDU Enclosures
Composite Cables	Mud Rings
Conduit, All Sizes & Types	RCA Cables
Connectors, All	Screws
Demarcation Boxes	Span Clamps
Drive Pins	Staples
Drop Cable Clamps	Traps
Drop Identification Tags	Ty Raps, Cable Ties
Electrical Tape	Vehicle Accessories
Filters	Wall Plates
Ground Blocks	Wall Plates With Hardware
Ground Rod	

### **Headend & Fiber Transport Equipment**

All Coax and CAT Wire	All Fiber Jumpers
All Coax and CAT Connectors	All Gigabit Ethernet Equipment
All Fiber Accessories, Splice Enclosures, Splitters	Air conditioners, air handlers, etc.

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CMTSs	Modulators & Demodulators
Combiners	Processors
Edge QAMS	Racks, Power Strips
Fiber Cable	Routers
Fiber Enclosures	Servers
Generators	Status Monitoring & EAS Equipment
Laser Receivers	Switches
Laser Transmitters	UPS, And All Batteries

### **Customer Premise Equipment**

Amplifier, Drop & House	Phone Modems (eMTAs and batteries)
Coax Cable	power cords
Data Modems	power supplies
Ethernet Cables	Remote Controls, RF, IR & Batteries
HDMI Cable	RF Splitters
Home Automation Equipment and returns	Routers – wired and WiFi
IRD Receivers	Set Top Terminals, Analog, Digital, DTAs, Gateways
Jumpers	Turning Adaptors
Micro Node UPS & Batteries	

### **Office - Safety Equipment – Tools – Test Equipment**

All Broadcast Studio Equipment	All Notebooks, tablets
All CCTV Equipment	All Power Tools & Battery PAKS
ALL Computer Equipment & Accessories	All Safety Tools/Equipment
All Hand Tools	All Signal Leakage Equipment
ALL LAN & WAN Equipment	All Telemetry Equipment
ALL Local Access & Studio Equipment	All Test Equipment, Analyzers, Scopes

All Workstations	PSDN Routers
CRTs	Safety Equipment, Signs, Cones
FSM - Field Strength Meters	Security Equipment – badge readers, fingerprint, biometric equipment
Furniture, Chairs, Desks	TDRs
Head Sets	Telephones & Telephone Switch Equipment, PBXs
Ladders	UPSs & Batteries
Led, LCD Monitors and Projectors	VPN Routers
OTDRs	
Printers	

Note: Some items such as CPE are tracked at the serial number level though their entire lifecycle. Other items such as brackets and bolts are placed in recycling bins so specific quantities and weights may not be individually tracked.

## 10. Appendix B: Cable Terminology

**Backup Power Devices:** equipment containing either battery or non-grid/primary sources of power (including solar photovoltaic systems)

**Cable Owner/Operator:** company responsible for delivery of TV, phone, high speed data, security, wireless services across the globe to millions of customers

**Circular Economy (Circularity):** A systematic approach to “designing out waste and pollution, keeping products and materials in use, and regenerating natural systems.” (Ellen MacArthur Foundation)

**Construction Materials:** equipment and support hardware necessary to build cable systems

**Customer Premise Equipment:** electronic devices located at the end of the outside plant and attached or in the subscriber’s facility

**Datacenter:** Consolidated computer facility for the distribution and processing of data throughout a network

**Decommissioning:** process in which old equipment is removed from service and replaced with updated electronic equipment

**Design for Sustainability:** Product, services, and network design, using circular economy concepts and environmental sustainability approaches

**Equipment:** devices, gear, or product responsible for the delivery of customer product and services

**E-scrap:** materials discarded from operations no longer supporting the delivery of customer product by cable operator

**Fiber Transport Equipment:** electronic devices containing laser emitting ports outputting over glass based cable

**Fiber:** May have low value or cost to fully recycle

**Green Procurement:** consideration for both environmental and bottom line during the product lifecycle management by cable operator including support circular economy and modularity concepts designs to extend product life cycle and minimize total cost of ownership

**Headend Equipment:** electronic devices, cabling and power gear sitting in front of outside plant

**Hubsite:** facility space typically in a non-raised floor, minimally manned, limited square footage building located between customer premise and larger facility such as data center and/or headend

**Installation Materials:** equipment and support hardware necessary to build cable systems

**Line Equipment:** materials and devices located between facilities and/or customer premise; including but not limited to, amplifiers, nodes, batteries, power supplies, coaxial and fiber cable, and WiFi access points

**MSO:** see Cable Operator (Multiple System Operator)

**Office Tools:** business support devices used by technical and non-technical employees supporting both product and business operations

**Recycling:** ethical disposal of e-scrap by cable operator for the purpose of reintroducing commodities (promoting circular economy)

**Reuse:** equipment removed from service and stored or sold for the purpose of reuse or re-deployment) within the MSO customer serving or business support network

**Outside Plant Active Devices:** all of the equipment between the customer premise and headend

**Safety Equipment:** devices and materials aimed to protect cable professionals while working on or around hazardous conditions

**Secondary Market Purchase:** Purchasing used equipment for deployment in a cable provider's network.

**Test Equipment:** devices used to ensure compliance or performance of systems are being upheld and met in a safe and predictable manner

**Total Cost of Ownership (TCO):** Full-cost accounting that considers financial and environmental costs of assets, products and, systems from design through use and disposal.

## 11. Appendix C: Electronics Recycling Definitions And Acronyms

(Referenced from: [Electronic Recycling Directory](#))

**Assay.** Chemical analysis to determine the presence and concentration of elements in a sample.

**Asset Management.** Services guiding use and retirement through the life of electronic equipment. Includes tracking, inventory, recordkeeping, storage, maintenance, updating, and reuse.

**Asset Recovery.** Electronics resellers or reclaimers bid on surplus property generated by companies, government agencies and institutions.

**Basel Action Network (BAN).** A non-government organization that advocates the prohibition of the export of “hazardous waste” (as defined by the Basel Convention – above) from OECD to non-OECD countries.

**Basel Convention.** A multilateral agreement negotiated under the United Nations Environment Program (UNEP) that regulates the trade of hazardous waste. Currently, more than 160 countries are party to the convention, which entered into force in 1992. The U.S. has signed, but not ratified, the Convention.

**Battery.** Device that stores electricity. Below is a list of battery scrap types quoted on ScrapIndex.com :

Alkaline battery scrap—common sorted carbon/zinc “flashlight” batteries including types D, C, AA, AAA, etc.

Dry cell battery scrap

Edison battery scrap

Gold-plated button battery scrap— common round button style batteries plated with gold and commonly used in hearing aids & wrist watches

Gell cell battery scrap— sorted gell filled batteries, and may include common gell cell motorcycle batteries 12 & 24 volt commercial emergency back-up lighting batteries.

Lithium button battery scrap— common round button style batteries containing lithium.

Lithium Ion battery scrap—

Mixed lithium content battery scrap— assorted batteries that contain lithium or lithium alloys.

Mercury/ silver oxide battery scrap— contain mercury and silver oxide. An analysis of the content should be provided.

Mixed mercury content battery scrap— may contain a variety of scrap batteries that contain mercury and silver oxide. An analysis of the content should be provided.

Mixed nickel content battery scrap— assorted sizes of common household Nickel/Cadmium Batteries and Nickel/Metal Hydride, sorted to be free of common alkaline batteries. May include spent rechargeable or non-rechargeable batteries. May not include wet cell batteries.

Nickel button battery scrap— round button style batteries commonly used in hearing aids & wrist watches

Dry cell NiCd battery scrap— common household sorted Nickel/Cadmium Batteries, sorted to be free of common alkaline batteries. May include spent rechargeable or non-rechargeable batteries. May not include wet cell batteries.

Nickel/metal hydride battery scrap— household sorted Nickel/Metal Hydride Batteries, sorted to be free of common alkaline batteries. May include spent recharge able or non-rechargeable batteries. May not include wet cell batteries.

Wet cell NiCd battery scrap— whole wet cell Nickel/Cadmium Batteries. Must be packaged to the buyers specification

**Bid.** Terms and conditions for submitted for evaluation and consideration by the Generator. The most attractive terms and conditions a Processor will offer.

**Brokering.** The buying and selling of units, components or scrap by consignment. A broker typically does not physically accept and store the material but rather buys the units or components for immediate resale.

**Brominated Flame Retardants (BFRs).** Chemicals used in plastics and other products to reduce potential for burning. Brominated flame retardants (BFRs) are used in some electronics plastics.

**Cards.** Printed circuit boards.

**Case.** The shell surrounding and holding the parts of a computer. Chassis.

**Cathode Ray Tube (CRT).** The tube in conventional televisions and computer monitors. A vacuum or picture tube device that converts an electronic signal into a visual image.

**Cellular Devices tablets, and Pagers.** Handheld communication device using cellular networks to transmit voice or data signals. Includes cell-enabled Personal Digital Assistants (PDAs).

**Central Processing Unit (CPU).** A processing device, including a case and all its contents, such as the primary printed circuit board, additional printed circuit boards, one or more disc drives, interior wiring and a power cord.

**Certification.** Registration of a facility that has passed a third party audit by an accredited certifying body to a recognized standard. In the case of the electronics recycling industry, there are currently 4 primary certifications:

**Consignment.** Resale of certain equipment may be sold through specialized vendors. Equipment ownership remains with the consignor until the point of sale. Both the consignor and consignee share in the proceeds.

**Customer Premise Equipment (CPE).** Any terminal such as a set-top box or modem located at a subscriber's premise used for connecting to a carrier's telecommunication system.

**Certified Destruction.** An electronics recycling system in which the generator of an item receives assurance, such as in the form of a certificate, that the item has been processed to render it inoperable. Often this means shredding the item. Purpose is to protect intellectual property.

**Computers, Desktop.** Computers designed to be used on a work surface and require standard AC power plug for a primary source of power.

**Computers, Portable.** Computer that contains a CPU and operates using a self-contained battery or external AC/DC adaptor.

**Commodity.** Materials from either original sources (e.g., ore) or derived from recycling and recovery processes (e.g., smelting) that can be used in manufacturing processes.

**Components.** Electronic parts – such as integrated circuits, transistors, resistors, capacitors, etc.

**Connectors.** Contacts and similar components to provide conductivity between boards and parts. Often contain precious metals.

**Connectors, External.** In scrap, sorted connectors free of or trimmed from wire.

**Consolidation Facility.** A facility where used electronics from multiple collection sites are temporarily stored before shipment to a recycling, reuse, or processing facility.

**Copper, No. 1 and No. 2.** Generally, No. 1 copper consists of copper clippings, punchings and so on that are clean and unalloyed, whereas the lesser-priced No. 2 should have a minimum 94-percent copper content. These items are known as "candy" and "cliff" when traded internationally by wire.

**Cullet.** Glass recovered in the recycling of cathode ray tubes (CRTs), when it is cleaned and crushed is called "cullet" and can then be remelted into new glass for industrial use (I.e., "glass-to-glass" recycling).

**Data Removal.** Removing data from a computer hard drive.

**Data Security Services.** Consulting and implementation regarding identity assurance, access control, encryption, compliance, information management and fraud protection – including data destruction.

**Daughterboard.** A circuit board that plugs into and extends the circuitry of another circuit board, which may be the computer's main board (see motherboard).

**Degauss.** A process used to erase the data from hard drives by demagnetizing them.

**Deman.** Short for demanufacturing.

**Demanufacturing.** The disassembly of an electronics device to capture resellable parts and recyclable materials.

**Display Devices.** Displays an image using a variety of technologies including CRT, LCD, plasma and rear-projection. Excludes products where the display is not the primary function.

**Diagnostic Testing.** Testing to determine what parts of electronic equipment work.

**Dynamic-Random-Access Memory Chips (DRAM).** Chips which hold electronic data temporarily and are vital components of computers.

**Electronic Equipment.** Including – but not limited to (see Cable Eligibility List PG XXX):

Other electronic equipment commonly recycled.

Computers and peripheral equipment – central processing units (CPU's), monitors, printers, keyboards, scanners, storage devices, servers, networking systems;

Office Equipment - fax machines, copiers, imaging systems, printing systems, telephones and telecommunications equipment

Consumer electronics – televisions, video cassette recorders, camcorders, digital cameras, control boxes, stereo systems, compact disc players, radios, cell phones, pagers, personal digital assistants (PDAs), calculators, organizers, and game systems.

Industrial/Commercial equipment – control systems, test, measurement, workstations, medical, financial, security, navigation, entertainment, automotive, aerospace, military.

**Electronics Recyclers.** Provide processing and services that include: de-manufacturing, materials and parts recovery, materials processing, refurbishing, repair, resale, asset management and data security services.

**Electronics Scrap.** In various forms and from different sources, e.g.:

Whole, non-working electronics equipment (see “electronics equipment”).

From de-manufactured equipment – includes Printed Circuit Boards, Connectors & Connector Parts, Components – including integrated circuits as well as discrete devices.

From manufacturing processes – includes Pastes/Powders, Crucibles & Slags, Sputtering targets, Solutions, Scrap metals, Solders, Sweeps.

**EMS.** See Environmental Management System

**End of life.** When a product's value to the user, generally the first user, has been expended and the product is available for reuse, recycling or disposal.

**Erasure.** Deleting the data on hard drives or other computer storage devices. There are several techniques that can be used including software overwrite, firmware execution (i.e., Secure Erase), or degaussing (demagnetization).

**e-Stewards** a formal certification program for electronics recyclers that couples the e-Stewards requirements for electronics recyclers with the EMS requirements of ISO 14001.

**Environmental Management System (EMS).** Standardized methods by which a facility can reduce its environmental impact.

**Environmentally Sound Management (ESM):** ESM standards establish specific criteria and performance standards that electronics recyclers must meet. Generally, ESM standards address.

**Ferrous metal.** Metal composed predominantly of iron, e.g., steel.

**Flat Panel.** A TV or computer monitor using a flat panel display technology (e.g., “plasma”, Liquid Crystal Display/LCD) – as opposed to a Cathode Ray Tube (CRT).

**Gaylord.** A pallet-sized box in which electronic scrap is shipped.

**Generator.** Creates scrap resulting from a manufacturing process. In commercial context, a company with scrap available for recycling or refining.

**Grade.** Ratio of payable metal(s) that define(s) the payable metal contained in a refining lot.

**Hard Drive.** A unit that stores and provides access to data on an electromagnetically charged surface or set of surfaces. Hard drive and hard disk are used interchangeably, although hard drive refers to the mechanical aspects of the unit while hard disk refers to data storage.

**Hazardous Materials.** Materials posing risk and requiring special handling and regulatory compliance due to toxicity or adverse health, safety, or environmental effects if processed or transported without adequate safeguards. Include items containing polychlorinated biphenyls (PCBs), mercury, lead (e.g., CRT glass), batteries.

**HIPAA.** The U.S. federal Health Insurance Portability and Accountability Act (HIPAA) of 1996, includes provisions for the protection of private information in health records.

**Image, Audio and Video Devices.** Includes personal/portable and home/non-portable, devices that can transmit, record or play back an image, audio or video using a variety of technologies including mechanical, optical, and digital. Also Home theater in a Box (HTB)—bundled combinations of the above. Also Aftermarket Vehicle devices for installation in motor vehicles aftermarket.

**Imaging System.** Items such as security cameras, industrial inspection devices.

**Impurities.** Material in a refining lot whose presence is deleterious or undesirable.

**Integrated Circuits, mixed scrap.** Assorted integrated circuit chips, whole or sheardd, free of other types of components. May include ceramic or bakolite covered chips.

**Integrated Circuits, sorted scrap.** Homogeneous lot of integrated circuits.

**ISO 14001.** A generic international standard for Environmental Management Systems/EMS – not industry specific.

**ISO 27001.** Information security standard that is certified by an accredited body following successful completion of an audit.

**ISO 9001.** Certification that an organization has implemented a Quality Management System for all areas of the business including facilities, people, training, services and equipment.

**ISRI.** Institute of Scrap Recycling Industries: The trade association for the major recycling industries – including electronics as well as metals, plastics, paper and tires.

**IT Asset Disposition (ITAD).** Information Technology Asset Disposition (ITAD) is the process of redeploying or disposing of assets (such as computers) at the end of their initial use.

**Logistics.** The management of materials flow typically involving transportation and storage services.

**Loose Scrap.** Scrap that is not packaged. E.g., loaded into a container without packaging into a box or gaylord.

**Materials of Concern.** Materials that have been identified as hazardous, toxic or potentially hazardous that require special treatment and handling to avoid environmental, health or safety exposures.

**Metal Group:**

Ferrous. Iron-based – e.g., steel

**Non-Ferrous:** Non-iron-based – e.g., copper, aluminum, zinc, lead, nickel

**Precious:** Including gold, silver, platinum, palladium (also referred to as Noble Metals)

**Modem.** A computer device that converts digital signals to the modulated analog signals required for transmission over a telephone line, and vice versa.

**Monitor.** A display device containing a cathode ray tube or flat panel display, a case, interior wires, circuitry, a cable to the CPU and a power cord. Also called a video display unit (VDU).

**Motherboard.** A computer's main circuit board, often entailing the microprocessor, other coprocessors, memory, a basic input-output system, expansion slot and interconnecting circuitry (also see daughterboard). A motherboard is also called a system board or a mainboard.

**Multiprocessor.** A computer containing more than one central processing unit (CPU).

**Networking Systems.** Communications equipment that facilitates the interconnection and switching functions for complex networks of computers and telecommunications systems.

**Non-Ferrous Metal.** Metals with no or little iron content, e.g. copper, aluminum, lead, tin, zinc.

**OEM.** Original equipment manufacturer.

**OHSAS 18001.** A certification that an organization has demonstrated that a system is in place for occupational health and safety.

**Orphan Scrap.** Obsolete electronics previously manufactured by or bearing the brand name of a company which is no longer in business.

**Overwrite.** Software program routines that are used to erase data from hard drives and other data storage devices by writing random data over the existing data.

**Peripherals.** Auxiliary equipment to a computer, such as computer mice, keyboards, printers, etc. added or attached to a computer to expand its functionality.

**Populated Circuit Boards:** Circuit board containing chips and other plug-in devices. A fully populated circuit boards has all the devices it can hold.

**Precious metals.** Gold, silver, platinum-group metals. Also known as noble metals.

**Price.** The market value of metals in a refining lot. For instance, the price as quoted daily on the “London Fixing.” For metals with two fixings, the Second Fix generally governs. For rhodium and ruthenium, the Johnson Matthey Daily Base is often used. For copper, the London Metal Exchange or New York Mercantile Exchange cash settlement price.

**Printed Circuit Board (PCB).** See circuit board.

**Printing, Copying and Multi-function Devices.** Devices using all printing technologies, designed to reside on a work surface and that can print on media of up to 48” wide. Also Floor-standing copying and printing devices.

**Product Stewardship.** An environmental management strategy assigning responsibility for a product's environmental impact through all stages of the product's life cycle to those who design, produce, sell or use it.

**“R2:2013”** (Responsible Recycling Practices) A consensus standard developed to specifically address requirements specific to electronics recycling.

**“R2/RIOS”** A formal certification program for electronics recyclers that couples “R2” with the Recycling Industry Operating Standard (RIOS) for Environmental, Health, Safety and Quality Management Systems for the recycling industry.

**Redeployment.** The consolidation, testing and repair of usable electronics for reuse within the originating firm, institution or government agency.

**Recovery.** Extraction of metal values from scrap.

**Recycler.** See Electronics recycler.

**Refiner.** Facility in which impurities are removed and metals are purified chemically to elemental form.

**Refining charge.** Charge by the Processor based on the amount of payable metal(s) in a refining lot.

**Refining lot.** Precious metal bearing materials consolidated as a single batch to retain integrity throughout processing or refining.

**Refurbish.** Renew, replace parts, repackage, update electronics equipment for reuse.

**Remanufacturing.** The testing, repair or upgrading of obsolete electronics for resale. Some remanufacturers build whole units from individual recovered components (hard drives, mother boards, etc.).

**Reverse Logistics.** Return of an obsolete item to the producer through the original distribution system, which may include retailers and wholesalers.

**Roll-off Box.** Metal container usually 20' long and 8' wide, height 4'-8' used to store loose material. Rolls on and off a truck on built-in steel rollers. Holds roughly 17 tons.

**Sample.** A representative specimen of a refining lot taken after the refining lot is in homogeneous form.

**Sampling.** The process of obtaining a small portion of a larger weight from which valid inferences about the larger weight can be made.

**Secure Erase.** An program embedded in modern hard drives (“firmware”) that, when executed, facilitates the total erasure of data from the hard drive

**Service Provider.** In the case of electronics recycling, companies that provide a variety of support services (which could also include collection and recycling) such as brokering, financial, legal, data security, media, software, transportation, etc.

**Settlement.** Financial statement detailing refining and treatment charges, metal returned, penalties, advances and fees, cash and metal balances, etc.

**Shredder.** Equipment used to size reduce and separate electronics scrap by tearing it apart mechanically. Some shredder systems are large automated processes that produce separated streams of small pieces of materials for recycling.

**Smart Card/SIM Scrap.** Chips found in smart cards.

**Smelter.** A thermal processing operation where metals and other materials are separated.

**Smelting.** Melting scrap for a crude separation of precious metals from impurities, generally in preparation for refining.

**Set-Top Box.** Also known as a cable box is a device that contains a decoder and displays output to a television set.

**Standby Generator.** A back-up electrical system that automatically or manually be activated during a utility outage. These are used throughout the cable system to avoid service disruptions during a power outage.

**Take-Back Program (or Service).** A program, typically the responsibility of the original equipment manufacturer, to collect, recycle and/or reuse products that are no longer of use to the original customer.

**TCLP.** Toxics characteristics leaching procedure; a method authorized in federal regulations for determining a hazardous waste.

**Telephones and Telephone Answering Devices.** Telecommunication device with a handset or headset used for transmission of sound using a variety of technologies including wire-line and voice-Over Internet Protocol (VoIP).

**Video, Image and Audio Devices.** Includes personal/portable and home/non-portable, devices that can transmit, record or play back an image, audio or video using a variety of technologies including mechanical, optical, and digital. Also Home theater in a Box (HTB)—bundled combinations of the above.

**Waste.** Material too low in grade to be of sufficient economic value for recovery, reuse or recycling.

**White Box.** A standard-configuration personal computer produced by a small or locally based producer.

**Wires, External Unclipped.** Shall consist of wires and cables with connectors still attached. May include double insulated wires