Setting the global standard for secure and sustainable electronics reuse and recycling

Summary of R2 **CORE** Requirements

CORE Requirements apply to all R2 Certified facilities to ensure the secure and sustainable management of used electronic and IT equipment from the moment it enters the control of an R2 facility, and continuing throughout the reuse-recycling chain.

1. Scope

The Scope serves two primary purposes:

- Helps to ensure all R2 applicable processes are identified & covered in the certification.
- Provides transparency about the specific operations that have been audited and certified at a particular facility.

2. Hierarchy of Responsible Management Strategies

The purpose of Core 2 is to support a circular economy by extending the life of electronic devices through reuse whenever feasible.

- Requires evaluating for *Reuse First*. This includes electronic devices as well as parts and components. When reuse is no longer a viable option, the hierarchy calls for maximizing materials recovery.

3. EH&S Management System

The purpose of Core 3 is to create a structured management system that serves as the foundation and framework for managing R2 requirements and controls.

- Requires certification to an Environmental, Health & Safety Management System.
- Addresses some industry-specific EH&S hazards related to electronics reuse and recycling processes.

4. Legal and Other Requirements

The purpose of Core 4 is to ensure compliance with all applicable legal requirements.

- Requires plan for identifying, monitoring & demonstrating legal compliance, including proof of legality of import/exports. Customer or other requirements should also be included in plan.
- Addresses the fair and ethical treatment of workers.

5. Tracking Throughput

The purpose of Core 5 is to ensure that all streams of equipment and materials are identified, tracked and properly managed throughout processing.

- Requires detailed tracking and records of:
  - inbound streams of equipment and materials
  - changes to those streams as a result of internal processing
  - outbound streams that leave facility
- Negative value streams *(i.e. those that incur a cost to process)* cannot be stored longer than 1 year.

6. Sorting, Categorization and Processing

The purpose of Core 6 is to identify the status of equipment, components, and materials at any point throughout the process to ensure items follow the proper R2 processing pathway.

Core 6 relies on use of the REC *(R2 Equipment Categorization)* reference document for defining the processing status, physical condition, level of functionality and next applicable R2 processing steps.

- Key steps in the sorting and REC categorization process:
  - Identify & categorize data containing devices and R2 Controlled Streams
    (R2 Controlled Streams are those that require further R2 processing & controls)
  - Evaluate devices and components for reuse potential
  - Based on the REC categories assigned, direct items to next appropriate R2 processing path
- Determining the processing path for **ALL** materials streams must be done in conjunction with the *Core 2-Hierarchy (reuse first, followed by materials recovery).*

7. Data Security

The purpose of Core 7 is to ensure all data containing devices are secured from the moment they enter the control of an R2 Facility, and that data is effectively sanitized in one of two ways:

- Physical destruction according to requirements in *Core 7-Data Security* -**OR-**
- Enhanced sanitization methods (both logical & physical) according to the specialized Process Requirements in *Appendix B-Data Sanitization*.

Data sanitization may be performed by the facility **or** outsourced to a verified downstream vendor that meets the Downstream Vendor Qualifications in *Appendix A-Downstream Recycling Chain.*

FOCUS MATERIALS INCLUDE:
Circuit Boards • Mercury Batteries • CRT Glass PCBs (Polychlorinated Bi-Phenyls)

8. Focus Materials

Focus Materials (FMs) require special handling and processing due to the risks of the materials, and/or the processes used to recover them. The purpose of Core 8 is to ensure all FMs, *including those contained* ***within*** *electronic items*, are identified and properly managed.

- Requires a detailed FM Management Plan that defines the methods used for processing FMs
- Requires verification of downstream vendors and flowchart of downstream recycling chain.
- Requires evaluating ***all*** items (including FMs, non-FMs, and non electronic equipment) in accordance with *Core 2-Hierarchy* when determining next appropriate processing step.

9. Facility Requirements

The purpose of Core 9 is to ensure R2 Facilities maintain an environmemt for processing and storage that is safe and legally compliant. Key requirements address:

- Conditions for where and how items should be processed and stored.
- Evaluating site risks and maintaining adequate insurance to cover those risks.
- Planning for proper closure of the facility in the event it unexpectedly ceases operation.

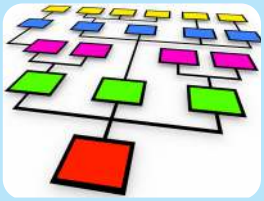
10. Transport

The purpose of Core 10 is to ensure the safe, secure and legal transport of all items.

- Reusable items require proper packaging to prevent damage during transport.
- Focus Materials or other items may require special packaging and handling to prevent releases and other safety risks.
- Data containing items must be appropriately secured and tracked.
- All items transported in compliance with legal requirements as defined in the Facility's *Legal Compliance Plan (see Core 4)*, and with appropriate shipping documentation. All transporters must meet the applicable identified requirements.

Summary of R2 **PROCESS** Requirements

*The Process Requirements in Appendices A-F are **additional** requirements that apply **only** to facilities that perform these specific processes. If any of the processes below are performed by a facility, they must be audited and included in the facility's scope of certification. Any Process Requirements that have been certified at a facility will be listed on the facility's R2 Certificate. For more information on determining which Process Requirements are needed, view the Guidance on Appendix Applicability which can be found in the PROCESS Requirement Section of the R2 Knowledge Base on the SERI website.*



A. Downstream Recycling Chain

APPLIES TO: Any facility that transfers *R2 Controlled Stream(s)* to a downstream vendor or buyer.

The purpose of this section is to ensure all R2 requirements will continue to be met throughout the entire downstream recycling chain until final disposition (i.e. documented as working and sanitized *OR* materials are recovered and ready to re-enter manufacturing stream).

Key requirements in this section include:

- Requirements for verifying both R2 and non-R2 Downstream Vendors (DSVs).
- Tracking and documenting flow of equipment and materials throughout the downstream chain.*
- Pollution liability insurance for R2 Facilities that manage negative value streams.

**NOTE:* Downstream tracking and verification can stop at the first R2v3 Certified DSV since that vendor has already been audited and verified through the certification process. Facilities that choose to stop tracking at the first R2v3 facility, must register their downstream chain with SERI.

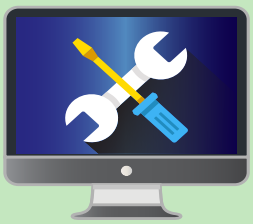
B. Data Sanitization

APPLIES TO: Facilities with the specific skills and competency to provide the enhanced level of services and security controls specified in Appendix B.

Building on the *Core 7-Data Security* requirements, the Data Sanitization requirements in Appendix B require:

- More robust sanitization processes and security controls.
- Specific device tracking and sanitization records.
- Expertise to perform logical data sanitization (sometimes referred to as data wiping) to enable reuse of devices.

NOTE: R2 Facilities that perform logical data sanitization MUST be certified to Appendix B.



C. Test and Repair

APPLIES TO: Facilities that perform testing and/or repair of electronic devices or components.

The purpose of this section is to ensure the safety, quality and functionality of all reusable devices.

Key requirements in this section include:

- Certification to a quality management system (RIOS ***or*** ISO 9001) to serve as the foundation for quality management. The requirements in *Appendix C-Test and Repair* build on that quality foundation.
- Development of a Reuse Plan that includes test and repair procedures, product safety plans, quality assurance plans, and the maintenance of test records.
- Use of the REC *(R2 Equipment Categorization)* to provide guidance on cosmetic descriptions and levels of functionality that are used to grade any reusable items.
- Equipment and components most be processed within 1-year from receipt.
- Technical competency requirements for workers.

D. Specialty Electronics Reuse

APPLIES TO: Facilities that specialize in the assessment and verification of specialty electronics for reuse. This includes industrial or commercial grade equipment such as medical devices, commercial telecom equipment, laboratory equipment, or other electronics not intended for the consumer market.

This type of equipment often requires very specialized testing equipment, or even a live working environment to confirm functionality -- which can make testing of these devices infeasible.

The purpose of this section is to enable the reuse of Specialty Electronics by providing a structured verification process that can be used in place of testing when certain specific conditions are met.

Key Requirements in this section include:

- Facilities certifying to *Appendix D-Specialty Electronics Reuse* must also certify to *Appendix C-Test and Repair*.
- Full testing and repair of Specialty Equipment is required when possible. When full testing is not possible, specific verifications and conditions are required.

NOTE: This Process Requirement will not eliminate the ability for most R2 facilities to sell small amounts of Specialty Equipment for reuse under the 1% rule in Core Requirement 6(e)(3)(A).

E. Materials Recovery

APPLIES TO: A broad range of facility types engaged in recovering the materials contained in electronics. These typically fall into two main categories:

- Facilities that specialize in the breakdown* of electronics and are recovering material streams such as circuit boards, wires, metals, plastic, etc. *(*Includes mechanical processing as well as destructive manual dismantling)*
- Facilities that further process those recovered material streams for more refined or specific material recovery. This includes processes such as smelting circuit boards for precious metals recovery.

Key Requirements in this section include:

- Additional risk assessments, controls and monitoring because of the higher risk that materials recovery operations pose to worker safety and the environment.
- Pollution liability insurance is required due to the hazards associated with materials recovery.

F. Brokering

APPLIES TO: Facilities that source electronic equipment or materials and control the delivery from the supplier *directly to* a downstream vendor without physically receiving or processing it. This applies to two different types of operations:

- Organizations that *exclusively* engage in brokering activities and do not physically receive or process used electronic equipment, components or materials.
- Facilities that perform brokering services *in addition to* other R2-related activities.

Key Requirements in this section include:

- Certification to a Quality Management System (RIOS or ISO 9001).
- Verification of the entire downstream chain according to the Downstream Vendor Qualifications in Appendix A to ensure all R2 requirements are met.

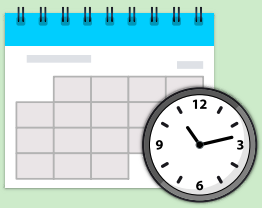
NOTE: If brokering is the only R2-related activity taking place, the requirements in *CORE 3-Environmental Health & Safety Management System* and *CORE 9-Facility* would not apply since used electronic equipment/materials do not pass through the facility.

Summary of R2 **CODE OF PRACTICES (COP)**

The Code of Practices is the guiding document for the R2 Certification Program. The Code of Practices has been developed to ensure that certification bodies and accreditation bodies follow the same set of guidelines to implement the R2 Certification Program. This summary highlights key areas of the R2v3 Code of Practices of particular importance to R2 Facilities.

Scope

- The scope statement specifies the R2 PROCESS Requirements and material types that have been audited and certified at the location(s) listed on the R2 Certificate. The purpose of the scope statement is to provide transparency about the capabilities each R2 Certified facility.
- Activities included in the scope must be demonstrated, with audit evidence for each of the associated processes and materials. An activity that has yet to be implemented cannot be certified.
- R2 processes and materials streams under the control of a facility cannot be excluded from the audit and scope of R2 certification.
- The COP includes specific terminology to be used when defining a Facility's Scope Statement. The required terms are based on the R2 PROCESS Requirements that apply to the Facility's operation, and are intended to provide more consistent and transparent descriptions about the capabilities of each facility.



Audit Durations

- The amount of time required to conduct an effective audit directly correlates to a facility's scope and the number of employees. The more complex the operations, the more R2 audit time required.
- Audit time calculations for R2 CORE Requirements are found in *Table 4 of the COP*
- Additional audit time is assigned for each PROCESS Requirement that is being audited. These calculations are found in *Tables 5a-5c of the COP*
- Where nonconformities are identified through an R2 audit, additional audit time may be required to review and verify the effectiveness of corrective actions.

Audit Preparation

It is essential that all required records/evidence are available during every audit, and that the auditor is able to witness live operations in order to demonstrate that R2 requirements are implemented and maintained.

- **Certification and Recertification Audits -**
  - Auditors are required to ensure all activities are operational with associated audit evidence.
  - A complete cycle of internal audits must also be reviewed. Any nonconformities (NCs) from the internal audit that are still open at the time of the Certification/Recertification audit will be written as an NC by the Certification Body auditor. (*Conducting internal audits in a timely manner - with enough time to close NCs - will reduce the audit time required to close NCs at the CB level.)*
- **Process Requirements (Appendices)** are audited during every audit of the certification cycle.
- **Remote Surveillance Audit** - One surveillance audit during the certification cycle may be conducted remotely. The decision to conduct a virtual audit is at the sole discretion of the CB. To be eligible, the facility must meet certain criteria as required in the COP, such as appropriate technologies, electronically accessible documents, etc.
- **Documents and records** - Records must be accessible to the auditor -- especially in the case of remote audits. Auditors are required to take copies of certain records/documents and include them in the audit report. *(See Table 7 of the COP for list of documents.)*

Corrective Action Requirements

- An auditor's job is to assess a Facility's conformance to the R2 Standard. In areas where the Facility is unable to demonstrate evidence of meeting an R2 requirement, the auditor will record a nonconformity.
- CB auditors record minor and major NCs. Generally, the designation of a minor vs. a major is based on the seriousness of the issue and the nature of the missing evidence.
- The COP requires that certain deficiencies be considered as major nonconformities. For instance:
  - Failure to identify a Focus Material stream in the FM Management plan
  - Failure to identify a Downstream Vendor in downstream recycling chain flowchart.
  - Due diligence not performed effectively for shipments of Controlled Streams
  - Failure to maintain a valid SERI Licensing Agreement
- CB will assign additional follow-up audit time for each NC. This allows CB time to verify corrective actions have been taken and close the NCs.
- Time-Frames for closing NCs are defined in the COP. Some CBs, however, may have more stringent time-frames. The CB is required to define the time necessary to review the NCs, and the associated corrective actions, to ensure closure.

Special CB Audits

The CB may conduct additional "special audits" at their discretion. Special audits could be conducted for reasons such as:

- Verifying changes in the R2 Facility's operations
- Investigating complaints or allegations
- Closure of NCs
- Resolution of suspension issues.

SERI Assurance Activities

SERI monitors and works to improve the R2 Certification Program through activities such as:

- **Audit package reviews** that evaluate the quality of evidence included in the audit report and used to demonstrate the facility's implementation of R2 requirements. Areas of concern are used to identify areas where additional R2 Auditor Training or Knowledge Base resources are needed.
- **Spot inspections** of R2 Facilities conducted by SERI or a SERI representative. These assessments are conducted as part of SERI's quality control program and not always in response to a complaint or concern. Any concerns resulting from the audit are communicated to the Facility's CB.
- **Witness audits** are announced assessments conducted by SERI or a SERI representative in conjunction with a planned CB audit of an R2 Facility. The SERI assessor evaluates the audit team's understanding of the R2 Standard as well as the R2 Facility's application of the R2 Standard.