

Amended March 31, 2023

This Registry Procedure is incorporated by reference into the Batteries Regulation made under the *Resource Recovery and Circular Economy Act, 2016*.

Section 1, Battery Supply Data Verification, establishes how producers:

- determine battery supply data;
- verify battery supply data; and
- verify the weight of post-consumer recycled content of batteries.

Section 2, Battery Management Performance, establishes how:

- battery processors will calculate and verify the Recycling Efficiency Rate (RER) of their processing facilities; and
- producers, or producer responsibility organizations (PROs) on their behalf, will conduct third-party audits verifying the resources recovered from the management of batteries used and collected in Ontario.

Section 1 – Battery Supply Data Verification

Determining Supply Data

The Batteries Regulation requires producers to submit to the Authority the weight of the batteries they supply into Ontario for the purpose of determining the producer's management requirement. This weight must exclude the weight of any packaging that may be supplied with the batteries.

To determine the weight of batteries supplied into Ontario, the producer may need to determine how many battery units are supplied into Ontario.

a) Determining the number of battery units

Battery producers may choose one of the following methodologies to determine the number of units supplied into Ontario:

1. The actual number of battery units.
2. The number of battery units calculated using the formula set out in [Appendix A](#) to determine the Ontario portion of the battery units supplied into Canada.

The options described above do not reduce the obligation of a producer to provide accurate supply data or limit the ability of an Authority inspector to review the data and related records for the purpose of determining compliance.

b) Determining battery weight

Battery producers may choose one of the following methodologies to report the weight of the batteries they supply into the Ontario market:

1. The actual weight of the batteries.
2. The weight of batteries calculated using the unit to weight conversion calculators provided by the Registrar. See [Appendix B](#) for the unit to weight conversion for single-use and rechargeable batteries.

The options described above do not reduce the obligation of a producer to provide accurate supply data or limit the ability of an Authority inspector to review the data and related records for the purpose of determining compliance.

Verification of Battery Supply Data

The Batteries Regulation requires battery producers to verify the supply data they submit to the Authority, in accordance with this procedure.

Beginning in 2022, verification will be required for supply data. The verification must include an opinion on the accuracy of the supply data and the qualifications of the verifier to provide the opinion. The verifier must:

- Assess and document the reasonableness of the producer's methodology for determining the battery supply; and
- Obtain and review supporting evidence as required.

It is the intention of the Registrar to develop more detailed verification procedures, in a public consultation process with registrants and other interested parties. Producers must now follow [Appendix C - Batteries and ITT/AV Supply Verification](#) to verify the supply data they submit to the Authority.

Reduction of Management Requirement

Producers who supply batteries containing post-consumer recycled content, i.e., content that was recovered from products or packaging that were used by consumers, may reduce the supply weight used to derive their management requirement by the weight of that recycled content in each year the recycled content was used. This reduction is limited to a maximum reduction of 50% and applies only to the battery category that contains the recycled content.

Verification of the weight of post-consumer recycled content provided in 2020 and 2021 was not required. This did not reduce the obligation of a producer to provide accurate data or limit the ability of an Authority inspector to review the data and related records for the purpose of determining compliance.

As of 2022, verification is required for the weight of post-consumer recycled content. To do so, a producer must submit the following, on or before the supply data reporting deadline:

- a. the weight of the recycled content in the batteries for which supply data is being provided;
- b. the category and type of battery; and
- c. third party verification of the recycled content claim.

Third party verification may be done by Underwriters Laboratories of Canada (ULC), Intertek, or another third party proposed by a producer that is qualified to provide such verification.

Section 2 – Battery Management Performance

Definitions and Background

A “battery processor”, as defined in the Batteries Regulation, means a person who processes, for the purpose of resource recovery, batteries used by a consumer in Ontario.

For the purposes of this procedure, a downstream processor is a person that receives materials derived from batteries used and collected in Ontario. The materials are provided by a battery processor to a downstream processor for the purpose of further processing. A downstream processor is not a battery processor for the materials it receives from the upstream processing of batteries.

For the purposes of this procedure, recovered resources that can be used to satisfy the management requirements under the Batteries Regulation include:

- materials used or destined to be used by a person for the making of new products or packaging;
- materials used to enrich soil;
- materials used as aggregate; and
- batteries that are reused or refurbished.

The weight of the recovered resources must only count once, must not be counted by more than one producer, and the following cannot be used to satisfy the management requirements under the Batteries Regulation:

- materials derived from batteries that were not used and collected in Ontario;
- materials that are land disposed;
- materials that are incinerated;
- materials that are used as fuel or a fuel supplement; and
- materials that are stored, stockpiled, used as a daily landfill cover or otherwise deposited on land.

Resource recovery includes the recovery of resources from:

- batteries; and
- materials derived from the batteries by a battery processor and sent to a downstream processor for resource recovery.

“Recycling efficiency rate” (RER), as defined in the Batteries Regulation, means the ratio of the weight of resources recovered from batteries received by a battery processor, to the weight of batteries received by that battery processor.

“Primary battery”, as defined in the Batteries Regulation, means a battery that can be used only once (i.e., a single-use battery).

“Rechargeable battery” means a battery that can be recharged to be used more than once.

Calculation and Verification of RER

Every battery processor is required to determine the RER, which must be reported to the Authority.

a) Calculation of RER

The RER for a calendar year is calculated for single-use batteries and rechargeable batteries as follows:

$$(R / TW) \times 100\%$$

Where:

“R” is the weight of the recovered resources derived from all batteries received by the processor in a calendar year and shall not include more than 15% in the form of aggregate.

“TW” is the total weight of all batteries received by the processor in the same calendar year.

If the processor’s facility processes both single-use and rechargeable batteries, the RER must be calculated separately for single-use and rechargeable batteries.

If batteries are received by a battery processor and transferred as intact or unprocessed batteries to another entity for processing, those batteries are not to be included in the calculation of the RER by the battery processor transferring the batteries. Instead, those batteries are to be included in the calculation of the RER of the battery processor receiving and processing those batteries.

If batteries are received by a battery processor and transferred as intact or unprocessed batteries to another entity for refurbishment, those batteries are not to be included in the calculation of the RER by the battery processor transferring the batteries.

b) Downstream processing

A battery processor must include the resources recovered from a downstream processor in its RER.

As an example, Processor A receives 100 tonnes of batteries. Processor A separates the components of the batteries with the following results:

- 70 tonnes of metal (to be sent to a smelter)
- 8 tonnes of chemicals (to be sent to a battery manufacturer)
- 22 tonnes of plastic (to be sent to a plastic recycler)

The smelter is not a downstream processor.

All 70 tonnes sent to the smelter count as recovered resources. Processor A has recovered 70 tonnes that can count as recovered resources in the RER formula above. Note, should the smelter receive whole batteries, rather than metal recovered from batteries, the smelter is a battery processor and not a downstream processor, as it is receiving batteries for the purpose of resource recovery.

The battery manufacturer is not a downstream processor.

All 8 tonnes of the chemicals sent to the battery manufacturer count as recovered resources. Processor A has recovered 8 tonnes that can count as recovered resources in the RER formula above.

The plastic recycler is a downstream processor.

Assuming the plastic recycler's verified efficiency is 50%, 11 of the 22 tonnes sent from processor A is destined to be used to make new products or packaging.

Therefore, processor A can count those 11 tonnes as recovered resources in the RER formula above.

In total 89 tonnes of resources were recovered from the initial 100 tonnes of batteries.

Therefore, Processor A can report an RER of 89%.

c) RER requirements and timing considerations

For the 2020-2021 and 2022 performance periods, producers who choose to meet their resource recovery obligation using the services of a battery processor, directly or through a PRO, may use any battery processor that is:

- (a) registered with the Authority; or
- (b) not required to register with the Authority because it processed less than 300 tonnes of batteries for the purpose of fulfilling producer responsibilities in the previous calendar year.

The Batteries Regulation requires that, beginning in 2023, all battery processors, including a battery processor that may not be required to register and report, must have an average RER, calculated and verified in accordance with this procedure, of at least:

- 80%, for single-use batteries weighing 5kg or less, and
- 70%, for rechargeable batteries weighing 5kg or less.

Under the Batteries Regulation, a registered battery processor's first report must be submitted to the Registrar no later than April 30, 2022. In this first report, the battery processor must include a verified RER for the 2021 calendar year.

The list of battery processors that meet the RER thresholds, based on this first report, will be published on the Registry and communicated to registered producers and PROs by June 30, 2022, as noted in the table below:

Annual report	Year reported on	Approved processor list published	Processor approval period
April 30, 2022	2021	June 30, 2022	2023 to 2025

For the 2023 to 2025 performance periods, producers, and PROs on behalf of producers, who are meeting battery management obligations using recovered resources from battery processing, may only do so with a battery processor that meets the RER calculation and verification requirements described in this procedure, and that is either:

- (a) on this list; or

- (b) not required to register with the Authority because it processed less than 300 tonnes of batteries for the purpose of fulfilling producer responsibilities in the previous calendar year.

This list will be updated to reflect new market entrants.

If a battery processor did not process batteries prior to 2022, the battery processor must contact the Registrar, by email to registry@rpra.ca, to confirm the appropriate RER data to be used in place of 2021 RER data.

Following the April 30, 2022, report, battery processors that processed 300 tonnes or more of batteries for the purpose of fulfilling producer responsibilities in the previous calendar year must submit an annual report no later than April 30 every year, which must include a verified RER for the previous calendar year.

The verified RERs will be averaged by the Registrar every three years and an updated list of battery processors that meet the RER requirements, based on this average, will be published on the Registry and communicated to registered producers and PROs by June 30 of every third year, as noted in the table below:

Annual report	Years reported on	Approved processor list published	Processor approval period
April 30, 2023 April 30, 2024 April 30, 2025	2022 to 2024 (three-year average RER)	June 30, 2025	2026 to 2028
April 30, 2026 April 30, 2027 April 30, 2028	2025 to 2027 (three-year average RER)	June 30, 2028	2029 to 2031
And so on			

For each three-year period, producers, and PROs on behalf of producers, who are meeting battery management obligations using recovered resources from battery processing, may only do so with a battery processor that meets the RER calculation and verification requirements set out in this procedure, and is either:

- (a) on the list for that period; or
- (b) not required to register with the Authority because it processed less than 300 tonnes of batteries for the purpose of fulfilling producer responsibilities in the previous calendar year.

The list will be updated to reflect new market entrants.

If a battery processor is a new entrant at any time after 2022, the battery processor must contact the Registrar, by email to registry@rpra.ca, to confirm the appropriate RER data to be used to establish the battery processor’s average RER.

d) Verification of RER

The RER must be verified by a licensed engineering practitioner who holds a license, limited license or temporary license under the Professional Engineers Act. The verifier must prepare a verification report which must include:

- a description of the methodology used by the verifier;
- the information reviewed by the verifier; and
- the results of the verification.

The battery processor must submit the verification report on or before April 30 of each reporting year as part of their annual report.

Management of Batteries

Where the Batteries Regulation requires a producer to audit the practices and procedures implemented to comply with the management requirements in the applicable years, the audit must be carried out by an independent auditor. The audit report prepared by the auditor must include an opinion on the accuracy of the reported data.

Where a producer has retained the services of a PRO, the PRO can arrange for the independent auditor to undertake the audit report on the producer's behalf. Where that PRO has more than one producer client, a single audit report may be submitted on behalf of all their producer clients.

In reaching an opinion, the auditor is expected to:

- Assess and document the reasonableness of the battery producer's methodology, or the PRO's methodology where a producer has retained a PRO, to develop the data that is required to be prepared and submitted to the Authority;
- Obtain and review supporting evidence, as required.

The first audit report is due April 30, 2024, for the performance periods January 1, 2022, to December 31, 2023. It is the intention of the Registrar to develop more detailed verification procedures, in a public consultation process with registrants and other interested parties.

Appendix A – Determining the Ontario portion of battery units supplied into Canada

The estimated amount of batteries supplied into Ontario can be determined by using the formula:

$$(P1/P2) \times \text{Canada National Sales}$$

“P1” is the population of Ontario, as reported by Statistics Canada in the most recent official census,

“P2” is the total population of provinces and territories in Canada in which the producer sells batteries in, as reported by Statistics Canada in the most recent official census.

“Canada national sales” is the total units of batteries that a producer sold in Canada in the calendar year.

Appendix B - Batteries Weight Conversion Factors

Single-Use Batteries Weight Conversion Factors by Chemistry and Size

Battery Types by Material	Weight (kg)
Alkaline Manganese - Button Cell	0.0015
Zinc-Air - Button Cell	0.0026
Silver Oxide - Button Cell	0.0023
Lithium - Button Cell	0.0026
Lithium - AA	0.0145
Lithium - AAA	0.0076
Lithium - Primary	0.0100
Zinc-Carbon – 6 V oblong lantern	1.2700
Zinc-Carbon – 6 V square lantern	0.6000
Zinc-Carbon – 9 V	0.0375
Zinc-Carbon - D	0.0945
Zinc-Carbon - C	0.0483
Zinc-Carbon - AA	0.0170
Zinc-Carbon - AAA	0.0097
Alkaline Manganese - AAA	0.0112
Alkaline Manganese - AA	0.0234
Alkaline Manganese - C	0.0689
Alkaline Manganese - D	0.1445
Alkaline Manganese – 9 V	0.0455
Alkaline Manganese – 6 V square lantern	0.7485
Alkaline Manganese – 6 V oblong lantern	1.5855

Rechargeable Weight Conversion Factors by Chemistry and Size

Size	Chemistry	Weight (kg)
4 V	Lead Acid	1.330
6 V	Lead Acid	1.626
9 V	Nickel-Cadmium	0.035
	Nickel-Metal Hydride	0.042
12 V	Lead Acid	2.043
N	Nickel-Cadmium	0.010
	Nickel-Metal Hydride	0.011
AAA	Nickel-Cadmium	0.0105
	Nickel-Metal Hydride	0.013
	Other	0.011
AA	Nickel-Cadmium	0.0215
	Nickel-Metal Hydride	0.0271
	Other	0.022
A	Nickel-Cadmium	0.032
	Nickel-Metal Hydride	0.040
C	Nickel-Cadmium	0.073
	Nickel-Metal Hydride	0.080

		Other	0.058
Sub C		Nickel-Cadmium	0.0529
		Nickel-Metal Hydride	0.055
D		Nickel-Cadmium	0.145
		Nickel-Metal Hydride	0.1628
		Other	0.104
F		Nickel-Cadmium	0.231
		Nickel-Metal Hydride	0.2613
Pin Cell		Lithium-Ion	0.001
Button Cell		Lithium-Ion	0.0025
Prismatic Single Cell		Lithium-Ion	0.0217
Cylindrical Single Cell		Lithium-Ion	0.0418
Pouch Cell	55-500 typical nominal mAh	Lithium-Ion	0.0052
	501-1000 typical nominal mAh	Lithium-Ion	0.0158
	1001-2000 typical nominal mAh	Lithium-Ion	0.030
	2001-5000 typical nominal mAh	Lithium-Ion	0.055
	>5001 typical nominal mAh	Lithium-Ion	0.112

Rechargeable Weight Conversion Factors by Application

Application	Chemistry	Weight (kg)
Cell Phones E.g. cellular phones, smartphones	Lithium Cobalt Oxide (LCO)	0.028
	Lithium Nickel Manganese Cobalt Oxide (NMC)	0.053
Cameras/Games E.g. video game controller	Lithium-Ion (Includes: Lithium Cobalt Oxide, Lithium Nickel Manganese Cobalt Oxide, Lithium Manganese Oxide)	0.215
Others portable E.g. power banks, shavers, toothbrushes, drones, cordless mice, remote controls, MP3, cordless landline phones	Nickel-Metal Hydride (NiMH)	0.042
	Lithium-Ion (Includes: Lithium Nickel Manganese Cobalt Oxide, Lithium Manganese Oxide, Lithium Iron Phosphate)	0.215
	Lead Acid (PbA)	0.806
Tablets	Lithium-Ion (Includes: Lithium Cobalt Oxide, Lithium Nickel Manganese Cobalt Oxide)	0.246
Laptops/Portable PC	Lithium Cobalt Oxide (LCO)	0.341

	Lithium Nickel Manganese Cobalt Oxide (NMC)	0.438
Cordless tools E.g. gardening tools, cordless tools, power tools	Lithium Nickel Manganese Cobalt Oxide (NMC)	0.495
	Nickel-Metal Hydride (NiMH)	0.923
	Nickel-Cadmium (NiCd)	1.182
	Lead Acid (PbA)	1.556
E-bikes	Lithium-Ion (Includes: Lithium Nickel Manganese Cobalt Oxide, Lithium Manganese Oxide, Lithium Cobalt Oxide, Lithium Iron Phosphate)	2.802
Industrial excluding mobility E.g. pallet lifters, forklifts, energy storage for industrial use, other non-portable	Any Nickel (Includes Nickel-Cadmium Nickel-Metal Hydride)	2.963
	Lithium-Ion (Includes Lithium Manganese Oxide, Lithium Cobalt Oxide, Lithium Nickel Manganese Cobalt Oxide, Lithium Nickel Cobalt Aluminium Oxide, Lithium Iron Phosphate)	2.984
Lighting E.g. security lighting, shielded or full cut-off lamps, control and power lines	Nickel-Cadmium (NiCd)	2.963
Medical E.g. measuring instruments, medical carts and beds, portable defibrillators	Lithium Cobalt Oxide (LCO)	2.984
Uninterruptible Power Supply (UPS)	Lithium Iron Phosphate (LFP)	2.984
Telecom	Lithium Nickel Manganese Cobalt Oxide (NMC)	2.984
Personal Mobility Devices/ Light Electric Vehicles E.g. golf carts, mobility scooters	Lithium Nickel Manganese Cobalt Oxide (NMC)	3.284
Off-Grid Energy Storage Eg. solar/wind energy systems, RV/boat energy storage	Lithium Iron Phosphate (LFP)	2.984

Appendix C - Batteries and ITT/AV Supply Data Verification

This verification procedure is applicable to all obligated battery and ITT/AV producers and should be read in conjunction with Ontario Regulation 30/20: Batteries and Ontario Regulation 522/20: Electrical and Electronic Equipment.

Purpose

Under the Batteries and EEE regulations, batteries, and ITT/AV producers (“producers”) are required to report supply data each year in order to establish their management requirement for the following year.

Producers are also required to verify their supply data. The purpose of this verification procedure is to provide sufficient guidance to producers and the qualified person who will be verifying their data to ensure consistent reporting.

Definitions

For the purposes of this verification procedure:

“Consumer” means any the end user of a product. It includes an individual who obtains the product for the individual’s own use and a business that obtains the product for the business’s own use.

“Large single-use battery producer” means a battery producer with a minimum management requirement greater than or equal to 50,000 kilograms of single-use batteries in the previous calendar year.

“Large rechargeable battery producer” means a battery producer with a minimum management requirement greater than or equal to 5,000 kilograms of rechargeable batteries in the previous calendar year.

“Large ITT/AV producer” means an ITT/AV producer with a minimum management requirement greater than or equal to 200,000 kilograms in the previous calendar year.

“Performance period” means the applicable time period, set out under section 4 of the Batteries and EEE Regulations, during which a producer is responsible for collecting or managing batteries and ITT/AV.

“Post-consumer recycled content” means content that was recovered from products or packaging that was used by consumers. Note the following:

- Battery producers that supply batteries containing post-consumer recycled glass, metal or plastic may reduce their supply weight by the weight of that recycled content up to a maximum of 50% of the supply weight.
- ITT/AV producers that supply ITT/AV containing post-consumer recycled glass or plastic or batteries supplied with ITT/AV that contain post-consumer recycled content may reduce their supply weight by the weight of that recycled content up to a maximum of 50% of the supply weight.

“Product” means material that is a thing, part of a thing, or combination of things intended for use by a consumer, subject to any alternative meaning or meanings that may be provided for in the regulations.

“Qualified person” means an individual, either an employee of the business or a hired third-party, who has one of the following designations and is not the same person who prepared the supply report. The “qualified person” will be referred to as the **“Verifier”** for the rest of the document:

- CPA, (Chartered Professional Accountant) in Canada
- CPA (Certified Public Accountant) in the US
- ACCA (Association of Chartered Certified Accounts) Qualification
- CIA (Certified Internal Auditor)
- CPB (Certified Professional Bookkeeper) in Canada
- RPA (Registered Professional Accountant) in Canada

To be considered “Qualified”, the present status of the Verifier holding one of the above designations must be active and in good standing with the relevant association who issues the designation.

“Small single-use battery producer” means a battery producer with a minimum management requirement less than 50,000 kilograms of single-use batteries in the previous calendar year.

“Small rechargeable battery producer” means a battery producer with a minimum management requirement less than 5,000 kilograms of rechargeable batteries in the previous calendar year.

“Small ITT/AV producer” means an ITT/AV producer with a minimum management requirement less than 200,000 kilograms in the previous calendar year.

“Supply” means:

- (a) to offer the product for sale, expose it for sale or possess it for sale,
- (b) to distribute the product, whether for consideration or not, and
- (c) to lease the product, offer it for lease, expose it for lease or have it in possession for lease.

“Verifier” has the same meaning as “Qualified person” for the purpose of this procedure.

“Weight of batteries” means the weight of batteries supplied to consumers separately from other products, excluding the weight of any printed paper or packaging that may be supplied with the batteries.

“Weight of ITT/AV” means the weight of ITT/AV including all components, parts, or peripherals, including batteries, that are provided with the product at the time of supply to the consumer, but must exclude the weight of any printed paper or packaging supplied with the product.

For compliance purposes:

- (a) The requirement to include a description of the verification processes in the verification statement will be satisfied by a reference to this procedure if the Verifier completes the verification steps below and provides a conclusion based on carrying out those steps. Where these verification steps are carried out and the verifier is able to give a conclusion, no other verification steps are required.
- (b) It is recognized that in a particular situation it may not be possible for the Verifier to carry out one or more of these verification steps and, as a result, the Verifier may carry out other verification steps. If so, the verification statement is expected to identify the verification steps that could not be carried out, the reason why, and a description of the verification steps that were carried out instead of or in addition to these verification steps.

- (c) In the event that a Verifier is unable to give a conclusion after carrying out the verification steps below, a producer has the option of (a) providing a report that reflects that outcome and a description of the exceptions, or (b) retaining the Verifier to carry out additional verification steps as may be recommended by the Verifier and preparing a report that includes a description of those additional verification steps.
- (d) Nothing in this verification procedure limits the ability of an inspector to review the records and data and require records or data.

Reporting Requirements

Producers are expected to verify their supply data using this verification procedure. The verification report is expected to include the results of applying these specific verification steps and the qualifications of the Verifier. The Verifier is expected to be qualified as set out in the definitions section above.

Producers can choose to provide the actual weight of the new batteries and ITT/AV supplied or use the Weight Conversion Factors (the “WCF”) in this verification procedure to calculate the weight. In this verification procedure, the weight of the batteries and ITT/AV means either the actual weight or the corresponding weight based on the WCF found in [Table 1](#) and [Table 2](#).

To determine the calculated weight of the batteries and ITT/AV supplied, producers multiply the units of new batteries and ITT/AV supplied for a product category (i.e., cell phone batteries) within a product type (i.e., Lithium Cobalt Oxide) by the corresponding WCF. To determine the number of units provided into Ontario, producers can choose to use either the actual units or the calculated units of batteries and ITT/AV supplied using the following formula:

$$(P1/P2) \times \text{Canada National Sales}$$

“P1” is the population of Ontario, as reported by Statistics Canada in the most recent official census.

“P2” is the total population of provinces and territories in Canada in which the producer sells batteries in, as reported by Statistics Canada in the most recent official census.

“Canada National Sales” is the total units of batteries/ITT/AV producer sold in Canada in the calendar year.

Application and Review of the Verification Procedure

In 2022, **all** registered producers were expected to submit a Verification Report to RPRA. Producers that enter the Ontario Market after 2022 are also expected to submit a Verification Report to RPRA verifying their current-year supply data. Producers will need to work with a Verifier to submit a report to RPRA verifying the supply data being submitted.

Producers that supply a combination of tires, batteries and ITT/AV can choose to submit the result in a single report. However, the obligated materials must be verified separately.

From 2023 and onwards, large single-use battery, large rechargeable battery and large ITT/AV producers are expected to provide a Verification Report prepared in accordance with this Verification Procedure.

Small single-use battery, small rechargeable battery, and small ITT/AV producers who submitted a Supply Data Report and sufficient Supply Data Verification Report in 2022 will not be required to submit a Verification Report in 2023. A percentage of small producers selected annually will be

subject to an inspection. If exceptions are identified during the inspection, a comprehensive review may be carried out.

It is the intention of the Registrar to review this verification procedure periodically to determine whether there is a need to consider changes, including the frequency of the verification process.

Verification Steps

Under the Batteries Regulation, producers that supply batteries containing post-consumer recycled glass, metal or plastic may reduce their supply weight by the weight of that recycled content up to a maximum of 50% of the supply weight.

Under the EEE Regulation, ITT/AV producers that supply ITT/AV containing post-consumer recycled glass or plastic or batteries supplied with ITT/AV that contain post-consumer recycled content may reduce their supply weight by the weight of that recycled content if applicable. ITT/AV producers may also reduce their supply weight by the weight of products with a manufacturer's warranty or right to repair.

For this reason, battery and/or ITT/AV producers are required to validate the following:

- Annual supply weight before management reduction, and
- If applicable, the weight of management reduction (i.e., post-consumer recycled content, manufacturer's warranty or right to repair).

The verification steps below address each component separately.

Verification Steps for Annual Supply before Management Reduction

Battery and ITT/AV producers can meet their supply data reporting requirement by providing a report prepared by a Verifier using the following verification steps:

1. Document responses for the following questions:
 - What is the producer's marketing process, including how products are supplied in Ontario (e.g., ecommerce, retail sales, etc.)?
 - How are products supplied in Ontario tracked separately from products supplied in other provinces?
 - How is a SKU (Stock Keeping Unit) set up in the producer's ERP/database/system, and what product specifications are included (e.g. product weight, product description, brand name, etc.)?
 - What are the producer's obligations based on the definition of a producer? (Refer to the corresponding Regulation.)
 - What are the brand names of products for which the producer has collection and resource recovery obligations?
 - What is the producer's methodology for determining how the products were supplied in Ontario (refer to the definition of "supply" in definition section)?
 - What is the producer's step-by-step process for preparing the product supply report, including what systems or applications are used to track product supply and what reports are used? (Ensure that all details required to understand how the product supply report is prepared are documented.)
 - What is the producer's methodology for determining the weight of the products supplied in Ontario?
 - How does the producer determine which products are included in the product supply report and which ones, if any, are excluded, based on the definitions in the Batteries and EEE Regulations?

2. Select a sample of obligated SKUs in accordance with [Table 3](#) and perform the following for each:
 - If actual weight is used, agree it to the manufacturer’s specifications.
 - If calculated weight is used, compare the calculation to the WCFs in [Table 1](#) and [Table 2](#) to determine if the products were reported in the correct categories and if the WCFs were applied correctly.

3. Validate the accuracy of the product units reported.
 - If actual number of units is used, agree it to the producer’s sales records to validate the total units reported.
 - If calculated number of units is used:
 - Agree the Ontario population to the most recent Statistics Canada official census,
 - Agree the population of each province and territory in Canada in which the producer sells batteries and/or ITT/AV to the most recent Statistics Canada official census, and
 - Recalculate the number of Ontario units supplied based on the following formula:

$$(P1/P2) \times \text{Canada National Sales}$$

“P1” is the population of Ontario, as reported by Statistics Canada in the most recent official census.

“P2” is the total population of provinces and territories in Canada in which the producer sells batteries in, as reported by Statistics Canada in the most recent official census.

“Canada National Sales” is the total units of batteries/ITT/AV producer sold in Canada in the calendar year.

4. Select a sample of non-obligated SKUs in accordance with [Table 3](#). For each sample selected, verify that they do not meet the definition of “battery” or “ITT/AV,” as applicable, based on the SKU selected.

5. Confirm the accuracy and completeness of the reporting of obligated products supplied to the Ontario market by sampling one month’s data and comparing the raw sales report with the obligated product supply report. Select samples in accordance with [Table 3](#) and scrutinize the variances and validate if they are reasonable.

6. Select a sample in accordance with [Table 3](#) of manual adjustments made to the product supply report and assess if they are reasonable. For example:
 - Products supplied into Ontario and subsequently shipped out of Ontario will result in an adjustment to the supply report.

If a producer supplies both batteries and ITT/AV products, the two obligated materials must be verified separately, however, the producer can choose to submit the results in a single report.

Verification Steps for Management Reduction

Batteries:

Verification steps to validate post-consumer recycled content:

Battery producers that claim post-consumer recycled content are expected to have a qualified third-party verification performed by an independent product certification organization, such as Underwriters Laboratories of Canada (ULC), Intertek, or another third party that is qualified to provide such verification. The verification is expected to include an opinion on the accuracy of the total weight of the post-consumer recycled content.

The third party is expected to do the following:

- 1) Document the producer's step-by-step methodology to determine the total weight of post-consumer content claimed.
- 2) Conduct a review of the actual bill of material and receipt for the specified products with recycled content. Trace and validate the weight of the recycled content in the batteries to the products supplied.
- 3) Identify what types of materials are included in the post-consumer product (i.e. only glass metal and plastic in batteries can count towards a reduction).
- 4) Assess the accuracy of the post-consumer content weight in the new product for which supply data is being reported.
- 5) Confirm that the post-consumer content was used toward the correct management reduction in the correct type of battery (i.e. post-consumer recycled content used in single-use batteries can be used to reduce the supply weight of single-use batteries and not rechargeable batteries, etc.).
- 6) Verify that the total post-consumer content claim is less than 50% of the total supply weight.

ITT/AV:

Verification steps to validate post-consumer recycled content:

ITT/AV producers that claim post-consumer recycled content are expected to have a qualified third-party verification performed by an independent product certification organization such as Underwriters Laboratories of Canada (ULC), Intertek, or another third party that is qualified to provide such verification. The verification is expected to include an opinion on the accuracy of the total weight of the post-consumer recycled content included.

The third party is expected to do the following:

- Document the producer's step-by-step methodology to determine the total weight of post-consumer content claimed.
- Conduct a review of the actual bill of material and receipt for the specified recycled content product. Trace the weight of the recycled content in the ITT/AV to the products supplied.
- Identify what types of materials are included in the post-consumer product (i.e. only glass and plastic contained in ITT/AV, and post-consumer recycled content in batteries supplied in or with ITT/AV can count towards a reduction), and
- Assess the accuracy of the post-consumer content weight in the new product for which supply data is being provided.

Verification steps to validate the manufacturer's warranty:

The Verifier is expected to do the following:

- Obtain and read the producer's corporate warranty policy.
- Select a sample of warranty claims in accordance with [Table 3](#) and agree the warranty period to the producer's warranty policy (eligible warranty periods start one year from the date of purchase).

- Recalculate the producer's total warranty reduction by taking the weight of the material for which the warranty was provided and applying a 5% reduction for each full calendar year under warranty after one year from the date of purchase.
- Select a sample of warranty claims in accordance with [Table 3](#) and ensure customers did not incur any additional charges by tracing to the replacement orders.

Verification steps to validate the right to repair:

The Verifier is expected to do the following:

- Validate if the producer provides information to the consumer at no charge regarding how to repair the product (e.g. online repair manual or free repair hard copy manual).
- Select a sample of repair orders in accordance with [Table 3](#) and document the following for each:
 - Whether the customer was charged for tools or parts;
 - Whether the information, tools, and parts are still available to the customer at the time the producer is reporting the supply data;
 - Whether the producer only applied a 10% reduction to the product category that offered a repair option. For any product type that does not have a repair order, confirm with management any policy or documentation to support the provision of repair tool/parts/information to the customer for free repair; and
- Recalculate the producer's total right to repair reduction by taking the weight of the product that provided a repair option and multiplying it by 10%.

Verification step to validate the maximum management reduction for ITT/AV:

- Verify the total management reduction claimed by the ITT/AV producer, including post-consumer content, warranty, and right to repair.
- Validate that this total is less than 50% of the total supply weight.

Table 1: Batteries Weight Conversion Factors**1.a. Single-Use Batteries Weight Conversion Factors by Chemistry and Size**

Battery Types by Material	Weight (kg)
Alkaline Manganese - Button Cell	0.0015
Zinc-Air - Button Cell	0.0026
Silver Oxide - Button Cell	0.0023
Lithium - Button Cell	0.0026
Lithium - AA	0.0145
Lithium - AAA	0.0076
Lithium - Primary	0.0100
Zinc-Carbon – 6 V oblong lantern	1.2700
Zinc-Carbon – 6 V square lantern	0.6000
Zinc-Carbon – 9 V	0.0375
Zinc-Carbon - D	0.0945
Zinc-Carbon - C	0.0483
Zinc-Carbon - AA	0.0170
Zinc-Carbon - AAA	0.0097
Alkaline Manganese - AAA	0.0112
Alkaline Manganese - AA	0.0234
Alkaline Manganese - C	0.0689
Alkaline Manganese - D	0.1445
Alkaline Manganese – 9 V	0.0455
Alkaline Manganese – 6 V square lantern	0.7485
Alkaline Manganese – 6 V oblong lantern	1.5855

1.b. Rechargeable Weight Conversion Factors by Chemistry and Size

Size	Chemistry	Weight (kg)
4 V	Lead Acid	1.330
6 V	Lead Acid	1.626
9 V	Nickel-Cadmium	0.035
	Nickel-Metal Hydride	0.042
12 V	Lead Acid	2.043
N	Nickel-Cadmium	0.010
	Nickel-Metal Hydride	0.011
AAA	Nickel-Cadmium	0.0105
	Nickel-Metal Hydride	0.013
	Other	0.011
AA	Nickel-Cadmium	0.0215
	Nickel-Metal Hydride	0.0271
	Other	0.022
A	Nickel-Cadmium	0.032
	Nickel-Metal Hydride	0.040
C	Nickel-Cadmium	0.073
	Nickel-Metal Hydride	0.080

		Other	0.058
Sub C		Nickel-Cadmium	0.0529
		Nickel-Metal Hydride	0.055
D		Nickel-Cadmium	0.145
		Nickel-Metal Hydride	0.1628
		Other	0.104
F		Nickel-Cadmium	0.231
		Nickel-Metal Hydride	0.2613
Pin Cell		Lithium-Ion	0.001
Button Cell		Lithium-Ion	0.0025
Prismatic Single Cell		Lithium-Ion	0.0217
Cylindrical Single Cell		Lithium-Ion	0.0418
Pouch Cell	55-500 typical nominal mAh	Lithium-Ion	0.0052
	501-1000 typical nominal mAh	Lithium-Ion	0.0158
	1001-2000 typical nominal mAh	Lithium-Ion	0.030
	2001-5000 typical nominal mAh	Lithium-Ion	0.055
	>5001 typical nominal mAh	Lithium-Ion	0.112

1.c. Rechargeable Weight Conversion Factors by Application

Application	Chemistry	Weight (kg)
Cell Phones E.g. cellular phones, smartphones	Lithium Cobalt Oxide (LCO)	0.028
	Lithium Nickel Manganese Cobalt Oxide (NMC)	0.053
Cameras/Games E.g. video game controller	Lithium-Ion (Includes: Lithium Cobalt Oxide, Lithium Nickel Manganese Cobalt Oxide, Lithium Manganese Oxide)	0.215
Others portable E.g. power banks, shavers, toothbrushes, drones, cordless mice, remote controls, MP3, cordless landline phones	Nickel-Metal Hydride (NiMH)	0.042
	Lithium-Ion (Includes: Lithium Nickel Manganese Cobalt Oxide, Lithium Manganese Oxide, Lithium Iron Phosphate)	0.215
	Lead Acid (PbA)	0.806
Tablets	Lithium-Ion (Includes: Lithium Cobalt Oxide, Lithium Nickel Manganese Cobalt Oxide)	0.246
Laptops/Portable PC	Lithium Cobalt Oxide (LCO)	0.341

	Lithium Nickel Manganese Cobalt Oxide (NMC)	0.438
Cordless tools E.g. gardening tools, cordless tools, power tools	Lithium Nickel Manganese Cobalt Oxide (NMC)	0.495
	Nickel-Metal Hydride (NiMH)	0.923
	Nickel-Cadmium (NiCd)	1.182
	Lead Acid (PbA)	1.556
E-bikes	Lithium-Ion (Includes: Lithium Nickel Manganese Cobalt Oxide, Lithium Manganese Oxide, Lithium Cobalt Oxide, Lithium Iron Phosphate)	2.802
Industrial excluding mobility E.g. pallet lifters, forklifts, energy storage for industrial use, other non-portable	Any Nickel (Includes Nickel-Cadmium Nickel-Metal Hydride)	2.963
	Lithium-Ion (Includes Lithium Manganese Oxide, Lithium Cobalt Oxide, Lithium Nickel Manganese Cobalt Oxide, Lithium Nickel Cobalt Aluminium Oxide, Lithium Iron Phosphate)	2.984
Lighting E.g. security lighting, shielded or full cut-off lamps, control and power lines	Nickel-Cadmium (NiCd)	2.963
Medical E.g. measuring instruments, medical carts and beds, portable defibrillators	Lithium Cobalt Oxide (LCO)	2.984
Uninterruptible Power Supply (UPS)	Lithium Iron Phosphate (LFP)	2.984
Telecom	Lithium Nickel Manganese Cobalt Oxide (NMC)	2.984
Personal Mobility Devices/ Light Electric Vehicles E.g. golf carts, mobility scooters	Lithium Nickel Manganese Cobalt Oxide (NMC)	3.284
Off-Grid Energy Storage Eg. solar/wind energy systems, RV/boat energy storage	Lithium Iron Phosphate (LFP)	2.984

Table 2: ITT/AV Weight Conversion Factors

Weight Conversion Category	Weight Conversion Factor (kgs)	These are examples of what is captured under each weight conversion category, it is not an exhaustive list.
Small IT Equipment/ Computer Peripherals	0.4	<p>Computer peripherals: keyboard, mouse, webcams, modems, routers, pc's docking station</p> <p>External drives and memory: external DVD/optical drives, CD writers, external disk drives, USB sticks, memory cards</p> <p>POS peripherals: card reading appliance, money authenticator</p> <p>Small IT equipment: calculators (including those that have printing capabilities), translating devices, except portable translating devices (see Portable</p>

		<p>Audio and Video), laser pointers</p> <p>Other: power supply, adaptors</p> <p>Not included: <u>battery chargers (see Small Personal Electronics), headphone/microphones (see Small Personal Electronics)</u></p>
Desktop PCs	8.77	<p>Desktop PCs: Desktop personal computers, all-in-on computers, data processing machines, central processing unit, thin and zero clients, microcomputer, minicomputers</p> <p>Not included: <u>standalone monitors (see Flat Display Panel Monitors)</u></p> <p><u>For any accessories/peripherals sold bundled with a desktop computer, each relevant weight conversion factor should be used</u></p>
Portable Computers (laptops and tablets)	0.85	<p>Portable Computers: Laptops, notebooks, netbooks</p> <p>Tablets: slates, mini tablets, phablets</p> <p>Not included: <u>e-readers (see Portable Audio and Video)</u></p>
Desktop/Countertop Printers (includes printer cartridges sold with)	10.32	<p>Desktop Printers/Copiers/Scanner/Fax: combination printer/copier/scanner/fax, desktop copiers, answering machines/fax combinations, inkjet printers, photo printers, laser printers, matrix printers, 3D-printers, picture scanners, fax machines</p> <p>Other printers: thermal printers, pricing devices, label printers</p> <p>Other: typewriters</p>
Desktop Printer Ink Cartridges	0.12	
Non-Cellular Telephone and Answering Machines	0.45	<p>Telephones: Cordless telephones, telephone sets, interphone, answering machines, videophones, telephone switchboard (small)</p> <p>Other: two-way radios, baby monitors without video (see Flat Display Panel Monitor for video baby monitors)</p>
Mobile Phones	0.09	<p>Mobile phone: Cellular phones, smartphones</p> <p>Other: pagers, personal assistant, PDA</p>
IT Equipment, including wide format printers	48.02	<p>IT equipment: servers, workstations, microfilm readers, electric multimedia table, professional electrical cabinet, ticket detector, barcode scanner, check filler, binding machine, accounting machines, postage-franking machines, ticket-issuing machines</p>

		Wide format printers: blueprint devices, plotters
Floor Standing Printers	122.86	Large multi-functionals, floor-standing copiers/printers
Toner Cartridges for floor standing multi-functional equipment	0.84	
Flat Display Panel Monitors	5.5	LCD, LED, OLED monitors Other: game screens, digital photo displays, parts of LCD monitors, indicator panels, video baby monitors Not included: TVs (see Flat Display Panel TVs – appropriate size)
Small Personal Electronics, including chargers	0.39	Small personal electronics: Headphones, earphones, microphones, headphone/microphone combinations, Bluetooth headsets Remote controls (except those for use with game consoles – see Video Game Devices) Chargers: Battery charger, charger for primary and secondary batteries Not included: power supply, adaptors, batteries, accumulators (see Small IT)
Portable Audio and Video	0.23	Audio Players: MP3 players, portable radios, portable CD/DVD/players, world receivers, clock radios, alarm cd-radios Portable Speakers (for other speakers see Speakers) Car displays and navigation: Portable navigation, navigation devices with monitors, GPS devices E-readers Other: portable translation device, tape recorder, voice recorders, karaoke machine
Non-Portable Audio Recording and Playing Devices	3.73	Non-portable audio players/recorders: radios, Hi-Fi, CD-players/recorders, car stereos, record players, MP3/CD players, tuners, minidisc players/recorders, tape decks
Musical Instruments	Use actual weight	Musical instruments: digital piano/keyboard/pianoforte, electric guitar, electrical organ, electrical accordions, synthesizers Musical peripherals: equalizer, audio delay, sound processor, sound mixer, effects pedal, music docking station Other: amplifiers

Video and Projectors (incl. antennas and receivers)	2.7	<p>Video players and recorders: DVD-player, DVD-recorder, laser disc player, blue-ray player, video-DVD player combination,</p> <p>Cameras: cinematographic and television cameras (for other cameras see Cameras)</p> <p>Projection equipment: cinematographic projectors, overhead projectors, video projectors, slide projector</p> <p>Antennas and receivers: satellite receiver, satellite dish, cable TV, set-top box antenna, signal amplifier, antenna, satellite power amplifier, broadband amplifier, TNT receiver, satellite demodulator</p>
Speakers	2.14	<p>Speakers: single and multiple loudspeakers, multimedia speaker, small loudspeaker MP3 player</p> <p>Other: megaphone</p> <p>Not included: <u>portable speakers (see Portable Audio & Video)</u></p> <p><u>For professional speakers use actual weights</u></p>
Cameras, including security cameras	0.29	<p>Cameras: Digital photo cameras, electrical still picture camera, camera lens, DSLR camera, camcorder/video recorder, video camera, security cameras</p> <p>Not included: <u>cinematographic and television cameras (see Video and Projectors)</u></p>
Flat Display Panel TVs less than or equal to 45 inches	10.2	<p>LED, LCD, Plasma, OLED televisions</p> <p>Other: TV-DVD combination, TV-tuner combination, TV-video combination, portable TV</p> <p>Not included: <u>monitors (see Flat Display Panel Monitors)</u></p> <p><u>For any accessories/peripherals sold bundled with a TV, each relevant weight conversion factor should be use</u></p>
Flat Display Panel TVs greater than or equal to 46 inches	Use actual weight	<p>LED, LCD, Plasma, OLED televisions</p> <p>Other: TV-DVD combination, TV-tuner combination, TV-video combination, portable TV</p> <p>Not included: <u>monitors (see Flat Display Panel Monitors)</u></p> <p><u>For any accessories/peripherals sold bundled with a TV, each relevant weight conversion factor should be use</u></p>

Video Game Devices, including portable and handheld devices	0.48	Game consoles for use with TV or monitor, portable video game devices, game console accessories, handheld video game devices
Drones	Use actual weight	Drones with audio-visual equipment

Table 3: Sampling Methodology

Variable sampling is a statistical sampling method that estimates the amount of misstatement in an account balance or class of transactions and compares it to an allowable level of tolerable misstatement. The samples should be randomly selected (unbiased) from the entire population.

The following table sets out the sample sizes required:

Population	Sample size required
500+	60
250	50
100	40
50	30
10	10

Note: these sample sizes are based on 95% confidence level and 5% tolerable deviation rate.

Date	Revisions
Issued January 24, 2020	N/A
March 2023	Added rechargeable batteries weight conversion tables. Includes detailed Batteries and ITT/AV Supply Data Verification Procedure