

Date	Version	Responsible	Change description
2026-06-03	1.3	Robin Askew	Gen 11 draft 2 rewrite: Adding clearer rules for implementation and verification of Scope 3 reduction activities, including factory-level applicability and safeguards against averaging and double-counting.

Scope 3 reductions

This document defines the Scope 3 reduction activities accepted by TCO Development for use in the Annualized PCF criterion under TCO Certified.

For each accepted reduction activity, this document defines:

- the reduction value assigned by TCO Development
- the conditions for implementation
- the evidence required to support the claim
- the verification methodology for assessing whether the reduction may be claimed for a certified product

This document supports the Annualized PCF criterion and the Annualized PCF - Verification guidelines.

This document does not determine compliance with the Annualized PCF mandate at the product level. Product-level compliance is assessed under the Annualized PCF criterion using supported product lifetime, applicable product category average values, and any approved Scope 3 reductions verified in accordance with this document.

This document does not modify the Annualized PCF criterion. If there is any inconsistency, the Annualized PCF criterion in the TCO Certified criteria document applies.

Purpose

The purpose of this document is to define accepted best-practice solutions for reducing the Scope 3 Product Carbon Footprint (PCF) of IT products under TCO Certified.

The purpose is also to provide a transparent and consistent method for claiming and verifying such reductions.

By making accepted reduction activities, reduction values, and verification methods public, this document supports consistent application by brand owners and verifiers and enables new reduction activities to be added over time.

Adding new Scope 3 reduction solutions to the list

New Scope 3 reduction activities may be added to this document as they are accepted by TCO Development.

If a brand owner believes that it has implemented a solution that reduces the Scope 3 product carbon footprint beyond the industry average for the relevant product category, the brand owner may submit the solution to TCO Development for evaluation.

An independent expert shall assess whether the solution:

- results in a significant reduction in Scope 3 emissions compared to the industry average for the product category
- can be quantified with sufficient credibility
- can be formulated so that it is not limited to one specific brand owner
- can be supported by a credible implementation and verification methodology that TCO Development can make public

If accepted by TCO Development, the reduction activity shall be added to this document together with its applicable reduction value, implementation conditions, and verification methodology.

General rules for claiming Scope 3 reductions

Only reduction activities listed in this document may be claimed under the Annualized PCF criterion. A reduction activity may be claimed only if the implementation conditions and verification requirements defined for that activity are met.

Only reduction activities verified for the certified product may be included in the Annualized PCF assessment. The verifier shall assess whether the conditions for claiming the listed reduction

value are met. The verifier shall not redefine the reduction value assigned by TCO Development. Where more than one approved Scope 3 reduction is claimed for the same product, the reductions shall be combined in accordance with TCO Development methodology, and the same implementation shall not be counted more than once.

Annualized PCF calculation examples

Example: effect of extended supported product life

A notebook with a supported product life of 7 years and no approved Scope 3 reductions would have an estimated Annualized PCF of 40,4kg CO₂e/year which is within the annualized PCF mandate.

$$PCF_{annualized} = \frac{237}{7} + 6,5 = 40,4 \text{ kg CO}_2\text{e/year}$$

Example: effect of high renewable electricity share in manufacturing:

A notebook with a supported product life of 6 years and approved Scope 3 reductions for 25% renewable electricity in final assembly and 50% renewable electricity in panel manufacturing would have an estimated Annualized PCF of 44.8 kg CO₂e/year, which is within the Annualized PCF mandate.

$$PCF_{annualized} = \frac{237 - 237 * (0,006 + 0,025)}{6} + 6,5 = 44,8 \text{ kg CO}_2\text{e/year}$$

Illustrative examples of how the Annualized PCF threshold may be met

The examples below are illustrative only. They are intended to help brand owners and verifiers understand how supported product lifetime and approved Scope 3 reductions can affect compliance with the Annualized PCF criterion. The examples do not modify the criterion and do not exclude other compliant combinations.

Supported product life	Scope 3 reductions requirement Notebooks	Annualized PCF	Example of scope 3 reductions
5 years	19%	$\frac{237 * 0,81}{5} + 6,5 = 44,9 \frac{\text{kg CO}_2\text{e}}{\text{year}}$	-

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6 years	3%	$\frac{237 \cdot 0,97}{6} + 6,5 = 44,8 \frac{kg CO_2e}{year}$	25% renewable electricity in final assembly and 50% renewable electricity in panel manufacturing OR <10% air freight
7 years	0%	$\frac{237}{7} + 6,5 = 40,4 \frac{kg CO_2e}{year}$	No scope 3 reductions required

Accepted Scope 3 reductions list

The reduction activities listed below may be implemented for certified products and, when verified in accordance with this document, may be claimed as approved Scope 3 reductions in the Annualized PCF assessment.

Scope 3 reduction activities are modular and optional. Brand owners may claim only those reductions for which compliant and verifiable data is available.

Notebooks				
Scope 3 Reduction activities	Impact on Scope 3			
	25% renewable electricity	50% renewable electricity	75% renewable electricity	100% renewable electricity
Renewable electricity in final assembly	0,6% reduction	1,3% reduction	1,9% reduction	2.6% reduction
Renewable electricity in panel manufacturing	1,2% reduction	2.5% reduction	3,7% reduction	5% reduction
Renewable electricity in Motherboard fabrication (PCB)	2% reduction	4% reduction	6% reduction	8,1% reduction
Renewable electricity in IC manufacturing	0,3% reduction	0,6% reduction	0,9% reduction	1,2% reduction
Renewable electricity in wafer production	1,9% reduction	3,8% reduction	5,7% reduction	7,5% reduction
Air freight share [Baseline 20%]	Air freight <5%	Air freight <10%	Air freight <15%	
Low share of Air freight	5,2%	3,5%	2%	
Gold in supply chain	under research			

Less virgin gold input in the supply chain	under research
Replacing gold with a secondary metal	under research
Recycled content in chassis	Requested for research

Displays				
Scope 3 Reduction activities	Impact on Scope 3			
	25% renewable electricity	50% renewable electricity	75% renewable electricity	100% renewable electricity
Renewable electricity in LCD production	3,3% reduction	6,5% reduction	9,8% reduction	13,1% reduction
Renewable electricity in Diodes production	0,3% reduction	0,7% reduction	1% reduction	1,3% reduction
Renewable electricity in Assembly LCD Module	2,6% reduction	5,2% reduction	7,7% reduction	10,3% reduction
Renewable electricity in Wafer production	0,8% reduction	1,6% reduction	2,4% reduction	3,2% reduction
Renewable electricity in IC production	0,1% reduction	0,3% reduction	0,4% reduction	0,5% reduction
Renewable electricity in PCB production	0,7% reduction	1,3% reduction	2% reduction	2,7% reduction
Air freight share [Baseline 15%] see Draft 2 comment	Air freight <5%	Air freight <10%		
Low share of Air freight	4,6% reduction	2,3% reduction		

Renewable electricity in manufacturing

Description

This reduction activity family covers the use of renewable electricity in defined production steps in the supply chain of the certified product. The reduction values assigned by TCO Development reflect reductions in the Scope 3 product category average associated with the claimed renewable electricity share in the relevant production step.

The reduction values published in this document are TCO Development's accepted claim values. They are based on the Carbotech modelling but are not intended to reproduce every model output directly. Values may be rounded, harmonized across thresholds, or adjusted conservatively before publication to support consistent application and verification across certified products.

Mischa Zschokke and Gavin Roberts, Carbotech AG, Zürich/Basel - *Environmental reduction potentials in notebooks manufacturing*

Applicability

This reduction activity family may be claimed only for the production steps listed in this document and only for product categories that are applicable to the Annualized PCF criterion.

Implementation conditions

The following rules apply to all renewable electricity-based Scope 3 reduction activities.

For final assembly and display panel assembly factories that are already covered by the Renewable Energy criterion in TCO Certified, the renewable electricity ratio reported in TCO Certified Portal may be used without additional proof.

If additional reductions are being applied for motherboard fabrication, IC manufacturing, and wafer production, the brand owner must provide proof of the renewable electricity ratio for each factory in the same manner as required under the Renewable Energy Criterion.

If multiple factories of the same type are included in the supply chain for the certified product and a reduction activity is claimed, each factory shall meet the claimed threshold individually. Averaging or weighting across factories is not accepted. The lowest renewable electricity share among the included factories determines the reduction that may be claimed.

Evidence required

For factories not already present on TCO Certified Portal, the following shall be submitted to an approved verifier:

- Names and addresses of factories making claims
- Proof of factory type for all factories where claims are made
- Documented proof of the total electricity use in each factory
- Documented proof of the renewable electricity ratio in each factory

Verification of renewable electricity-related Scope 3 reduction activities follows the factory-level applicability and verification methodology defined in the Renewable energy criterion and related supporting documentation under TCO Certified.

For each factory included under a specific production step, the brand owner shall provide documented proof that the factory corresponds to the claimed factory type. The verifier shall confirm that the documentation refers to the same site and that the activities are consistent with the claimed factory type.

Air freight share

Description

The Scope 3 reduction values listed in the reductions table may be claimed when the share of certified products transported by air freight during the reporting year is below the stated threshold.

Draft 2 comment: Is 15% air freight as a baseline for displays and 20% baseline for notebooks realistic? We have limited data on this, so if you could provide us with evidence of your current Air freight baseline for displays we can adjust this number to accurately reflect the industry as of today.

Applicability

This reduction activity family may be claimed for all product categories that are applicable to the Annualized PCF criterion.

Implementation conditions

The brand owner must demonstrate that the share of certified products transported by air freight during the reporting year is below the claimed threshold.

Draft 2 comment: TCO Development would like industry input on the best, fair and credible way to prove and verify Air-freight shares for certified products.

Evidence required

The brand owner must provide transport data covering certified products manufactured during the reporting year. The evidence must show the total number of certified products transported and the number or share transported by air freight.

Draft 2 comment: TCO Development would like industry input on the best, fair and credible way to prove and verify Air-freight shares for certified products.

Gold in supply chain

Description

Under research

Applicability

Under research

Implementation conditions

Under research

Evidence required

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Under research