

EPEAT® Implementation Plan: Criteria for the Assessment of Ultra-Low Carbon Solar Modules

Introduction

The Global Electronics Council® (GEC) is a non-profit that stimulates the market for sustainable electronic products and services. By deciding to prioritize the purchase of sustainable technology, institutional purchasers help “move the needle” toward a more sustainable world. GEC also enables manufacturers to demonstrate their efforts to address the sustainability impacts of their technology and act to evolve operational, supply chain, and procurement priorities.

GEC is the steward of the EPEAT® ecolabel, which is used by more purchasers of electronics than any other ecolabel worldwide. EPEAT establishes criteria that address priority sustainability impacts throughout the life cycle of electronics products, based on an evaluation of scientific evidence and international best practices.

While EPEAT Criteria are reviewed on a regular cadence to ensure they remain relevant, continue to be impactful and incentivize leadership performance, GEC may also add new impactful criteria that are time sensitive and address an emerging critical issue or tackle a complex topic.

In this regard, in March 2023, GEC published [Criteria for Assessment of Ultra-Low Carbon Solar Modules](#) to supplement the existing EPEAT Criteria for the solar modules and inverters category as specified in [Sustainability Leadership Standard for Photovoltaic Modules and Photovoltaic Inverters \(NSF/ANSI 457\)](#). These additional criteria were developed based on the principle that the manufacture and procurement of low-embodied carbon photovoltaic modules are critical for achieving net-zero emissions.

When criteria are revised or new impactful criteria added to an existing product category, EPEAT publishes a plan for implementation and the deadline for when Participating Manufacturers must come into conformance with the revisions or new criteria.

This document contains background information and the implementation plan for *Criteria for Assessment of Ultra-Low Carbon Solar Modules*, including the timeframe for when solar modules already appearing in the EPEAT Registry must meet these criteria and other supporting activities for an efficient and effective transition.

The information in this document applies to all Participating Manufacturers with solar modules currently appearing in the EPEAT Registry, potential applicant Participating Manufacturers, and all GEC-approved Conformity Assurance Bodies. It may also be of interest to purchasers, policy makers, investors and other stakeholders interested in the implementation of the *Criteria for Assessment of Ultra-Low Carbon Solar Modules*.

For questions about this implementation plan, please contact us at EPEAT@GEC.org.

Background

GEC Criteria Development and Revision Process

EPEAT Criteria address priority impacts throughout the life cycle of the product, based on an evaluation of scientific research and data and international best practices. GEC’s multi-step development process includes:

- Publication of State of Sustainability Research to identify science-based social and environmental impacts across the life cycle of technology products and services, and strategies to reduce the identified sustainability impacts. The data and analyses in State of Sustainability Research serves as the scientific basis for the development of criteria.
- Criteria development in a balanced, voluntary consensus process that aligns with and draws from the characteristics of voluntary consensus defined in ISO 14024 *Environmental labels and declarations – Type 1 environmental labelling – Principles and procedures*, and the U.S. Federal Government’s description of a voluntary consensus process¹.

EPEAT Criteria evolve as our understanding of sustainability issues and impacts evolve. GEC reviews criteria to ensure they remain relevant, continue to be impactful and incentivize leadership performance. The review cadence – approximately every three years from the last publication – is intended to adjust criteria in a timely manner and with the evolution of science and best practices, while providing the market sufficient time for adoption.

Within the regular review cadence, GEC may choose to initiate a limited revision to incorporate impactful new criteria that are time sensitive and address an emerging critical issue or tackle a complex topic that would benefit from a focused criteria development process. Limited revisions follow the same development process as described above.

Further details on GEC’s criteria development and revision process are [publicly available](#).

Limited Revision: New Embodied Carbon Criteria for Photovoltaic Modules

In March 2023, GEC published *Criteria for Assessment of Ultra-Low Carbon Solar Modules* to supplement the existing criteria for the solar modules and inverters category as specified in *Sustainability Leadership Standard for Photovoltaic Modules and Photovoltaic Inverters (NSF/ANSI 457)*.

Criteria for Assessment of Ultra-Low Carbon Solar Modules were developed based on the principle that the manufacture and procurement of low-embodied carbon solar modules are critical for achieving net-zero emissions. These criteria establish a framework, standardized methodology, and performance objectives to incentivize manufacturers and suppliers to design and manufacture low embodied carbon solar modules. For purchasers, these criteria provide a consensus-based definition of low-embodied carbon to aid in identifying and procuring low embodied carbon solar modules.

¹ U.S. Executive Office of the President, Office of Management and Budget, OMB Circular A-119: *Federal Participation in the Development and Use of Voluntary Consensus Standards and in Conformity Assessment Activities*

Criteria for Assessment of Ultra-Low Carbon Solar Modules includes three criteria for photovoltaic modules:

- Criterion 4.1 – Low Carbon Solar (required): Embodied carbon of the solar module shall be equal to or less than 630 kg CO₂e per kWp;
- Criterion 4.2 – Ultra-Low Carbon Solar (optional): Embodied carbon of the solar module shall be equal to or less than 400 kg CO₂e per kWp; and
- Criterion 4.3 – Publicly Available LCI Data (optional): Primary life cycle inventory data underlying alternative global warming potential coefficients shall be publicly available.

Upon implementation, these three criteria will be in addition to the existing EPEAT Criteria for the solar modules and inverters category specified in *NSF/ANSI 457*. The existing criteria address management of substances, preferable materials use, life cycle assessment, energy efficiency and water use, end-of-life management, packaging, and corporate responsibility.

Development of Implementation Plan

When existing criteria are revised or new impactful criteria added to an existing product category, EPEAT publishes a plan for implementation including the deadline for when Participating Manufacturers must come into conformance with the revisions or new criteria.

To develop the implementation plan for *Criteria for Assessment of Ultra-Low Carbon Solar Modules*, GEC undertook stakeholder consultation on options for the implementation schedule. This included outreach to Participating Manufacturers, GEC-approved Conformity Assurance Bodies (CABs), purchasers, policy makers, and other EPEAT stakeholders.

In addition to stakeholder feedback, GEC used overarching principles to guide development of the implementation plan for *Criteria for Assessment of Ultra-Low Carbon Solar Modules*. This ensured options were examined in a balanced manner that also aligned with the responsibilities and requirements of EPEAT as a Type 1 ecolabel in accordance with ISO 14024 *Environmental labels and declarations – Type 1 environmental labelling – Principles and procedures*.

To this end, GEC's decisions were guided by a commitment to being fair, objective, and transparent. The resulting implementation plan, as contained in this document, balances the competing needs of various stakeholders, and ensures consistency and objectivity in the associated conformity assurance activities.

Further information on the conformity assurance process for the solar modules and inverters category, including specific details for *Criteria for Assessment of Ultra-Low Carbon Solar Modules*, can be found on the [EPEAT Registry](#).

Overarching Principles based on ISO 14024:

Credibility
Consistency
Objectivity
Transparency
Leadership

Implementation Plan

Implementation Schedule

Key dates for implementation of the *Criteria for the Assessment of Ultra-Low Carbon Solar Modules* are identified below.

2024							2025
Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan
1 Public Launch ULCS Modules Criteria ⁽¹⁾ in EPEAT Registry June 4, 2024	Public EPEAT Registry will show solar modules ⁽²⁾ meeting NSF 457 Criteria and ULCS Modules Criteria. <u>New</u> solar modules must meet NSF 457 and, at minimum, the required low carbon solar criterion. Solar modules meeting optional ultra-low carbon solar criterion are designated as EPEAT Climate+.						
2 Period in which solar modules already in the EPEAT Registry must come into conformance with, at minimum, the required low carbon solar criterion. June 4 – December 31, 2024							
							3 All solar modules must meet NSF 457 and, at minimum, the required low carbon solar criterion to appear in EPEAT Registry. January 1, 2025 ⁽³⁾

- (1) The term “ULCS Modules Criteria” refers to *Criteria for the Assessment of Ultra-Low Carbon Solar Modules* and includes the three criteria related to embodied carbon for solar modules: required criterion for low carbon solar modules (threshold of 630 kg CO₂e / kWp), optional criterion for ultra-low carbon solar modules (400 kg CO₂e / kWp), and optional criterion for making LCI data publicly available.
- (2) This table only refers to solar modules because the ULCS Modules Criteria only apply to modules and not inverters. Inverters are still required to only meet the NSF 457 Criteria to appear in the EPEAT Registry.
- (3) On January 1, 2025, solar modules not meeting the required low carbon solar criterion will be archived from the EPEAT Registry.

- 1** On June 4, 2024, *Criteria for the Assessment of Ultra-Low Carbon Solar Modules* (referred to in the table above as ULCS Modules Criteria) will launch on the public facing EPEAT Registry. As of this date:
 - Solar modules meeting both the existing NSF 457 Criteria, and, at minimum, the required low carbon solar module criterion (with a threshold of 630 kg CO₂e per kWp) will appear on the public facing EPEAT Registry and be visible to stakeholders.
 - Solar modules meeting both the existing NSF 457 Criteria and the optional ultra-low carbon solar module criterion (with a threshold of 400 kg CO₂e per kWp) will be designated as EPEAT Climate+ and the companies identified as EPEAT Climate+ Champions on the EPEAT Registry.
 - New solar modules that will appear in the EPEAT Registry starting on June 4, 2024 must meet both the existing NSF 457 Criteria and, at minimum, the required low carbon solar criterion.

- 2 Between June 4, 2024 and December 31, 2024:
 - Solar modules that appeared in the EPEAT Registry prior to June 4, 2024 have approximately seven months to come into conformance with, at minimum, the required low carbon solar module criterion. The deadline for coming into conformance is January 1, 2025.
 - The public-facing Registry will identify which solar modules meet only the NSF 457 Criteria and which solar modules meet both the NSF 457 Criteria and, at minimum, the required low carbon solar module criterion.
- 3 On January 1, 2025:
 - Solar modules meeting only the NSF 457 Criteria and not, at minimum, the required low carbon solar module criterion will be removed from the EPEAT Registry and archived.
 - The EPEAT Registry maintains a list of archived products that can be accessed by purchasers.

Supporting Resources and Training

EPEAT prepares supporting resources and training for all EPEAT criteria to help Participating Manufacturers and GEC-approved CABs further understand EPEAT Criteria requirements. These materials provide supplementary information and further details regarding demonstration of conformance with EPEAT Criteria. The materials are accessible to Participating Manufacturers and GEC-approved CABs on the back end of the EPEAT Registry through their EPEAT Registry accounts.

In addition to the implementation schedule, the following are available to ensure consistency, transparency, objectivity, and efficiency for implementation of *Criteria for the Assessment of Ultra-Low Carbon Solar Modules*:

- Conformity Requirements and Guidance Materials: These documents provide an overview of the criteria requirements, further explain the evidence required, and illustrate examples of supporting evidence. A separate document is available for each of the each of the three criteria in *Criteria for the Assessment of Ultra-Low Carbon Solar Modules*.
- Training Slides and Recordings: CAB Auditors must take the required training for *Criteria for the Assessment of Ultra-Low Carbon Solar Modules* and pass the associated exam. The training presentation and recording is also available to Participating Manufacturers as an additional resource to understand the conformity requirements.
- Recently Answered Questions: This document summarizes the questions received and responses provided by EPEAT specifically for the *Criteria for the Assessment of Ultra-Low Carbon Solar Modules*. The document is intended to make it easier for Participating Manufacturers and GEC-approved CABs to learn about and easily access new information that may impact and/or facilitate ongoing conformity assurance activities. The document is updated weekly on Thursdays between 1 pm and 5 pm North American Pacific Time.

EPEAT Climate+™

EPEAT Climate+ is a designation that can be earned by EPEAT registered products. EPEAT Climate+ allows Participating Manufacturers to promote their commitment to addressing climate change and reach purchasers and other stakeholders looking to do the same through procurement, investment, or other means.

The EPEAT Climate+ designation is reserved for products that have been verified by a GEC-approved Conformity Assurance Body (CAB) against the requirements for EPEAT Climate+ identified below².

First, companies and their products must prove they meet existing EPEAT criteria on climate, circularity, reduction of chemicals of concern, and responsible supply chains for their respective product categories, and have this verified by a CAB. These criteria represent sustainability leadership and address environmental and social impacts across the entire product lifecycle, from the extraction of resources and manufacturing, through product assembly, use, and end-of-life.

In addition to this, companies and their products must prove, and have independently verified by a CAB, that they meet a unique set of climate criteria based on progressive product design and corporate practices:

**Computers and Displays,
Imaging Equipment, Mobile
Phones, Servers, Televisions**

- Product carbon footprint disclosure and assurance
- Product energy efficiency (ENERGY STAR product eligibility criteria)
- External power supply energy efficiency
- Battery charger system energy efficiency
- Corporate GHG inventory disclosure and assurance
- Corporate GHG reduction target aligned with climate science
- Energy efficient upstream manufacturing processes
- Manufacturer sourcing of electricity from renewable energy sources

Photovoltaic Modules

- Ultra-low embodied carbon (threshold of 400 kg CO_{2e} per kWp)

Participating Manufacturers are not required to have their products achieve EPEAT Climate+. However, those that do will be recognized on the EPEAT Registry as EPEAT Climate+ Champions.

EPEAT Climate+ does not affect a product's tier level of Bronze, Silver, or Gold. Tier levels are still based on the percentage of available optional EPEAT criteria that apply to the product type.

² Requirements to achieve the EPEAT Climate+ designation will evolve over time and may require additional conformity assurance activities. On November 1, 2025, the updated requirements for EPEAT Climate+ designation will become effective for the following product categories: Computers and Displays, Imaging Equipment, Mobile Phones, Servers, and Televisions. These new requirements will be announced in Spring 2024. (The requirements for the EPEAT Climate+ designation for Photovoltaic Modules will remain the same.)