

REVISED EPEAT® Implementation Plan: Criteria for the Assessment of Ultra-Low Carbon Solar Modules (EPEAT-ULCS-2023)

Introduction

The Global Electronics Council® (GEC) is a non-profit that accelerates the transformation of markets for sustainable electronic technology 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 manager 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 the product, 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 \(EPEAT-ULCS-2023\)](#) 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.

Since initial release of EPEAT-ULCS-2023, EPEAT received questions about specific elements of the criteria and how they should be implemented. Based on this, in December 2024 GEC released [EPEAT-ULCS-2023 Interim Corrections December 2024](#). These interim corrections provide additional clarity on conformity assurance requirements to ensure further consistency and objectivity.

EPEAT has revised the implementation plan for EPEAT-ULCS-2023, which includes an updated timeframe for when EPEAT registered products must meet the criteria. It also includes other critical activities needed 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 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 these criteria.

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* (EPEAT-ULCS-2023) 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).

EPEAT-ULCS-2023 criteria 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*

EPEAT-ULCS-2023 identifies 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.

These three criteria are in addition to the existing EPEAT Criteria for the Solar 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.

December 2024 Interim Corrections

Since the initial release of EPEAT-ULCS-2023, EPEAT received questions about specific elements of the criteria and how they should be implemented. These questions covered a variety of issues including, but not limited to, how breakages and losses should be accounted for in the Table 3 calculations, which Wp power class value to use in the Table 3 calculations, and the use of existing reports for testing recently performed against IEC 61215 and IEC 61730.

To address the questions raised, in December 2024 GEC released [EPEAT-ULCS-2023 Interim Corrections December 2024](#). These interim corrections provide additional clarity on conformity assurance requirements to ensure further consistency and objectivity.

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 EPEAT-ULCS-2023 and the December 2024 Interim Corrections, 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.

GEC used overarching principles to guide development of both the original implementation plan and the updated implementation timeline (to address the December 2024 Interim Corrections). 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.

Overarching Principles

Credibility
Consistency
Objectivity
Transparency
Leadership

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 EPEAT Solar Category, including specific details for EPEAT-ULCS-2023, can be found on the [EPEAT Registry](#).

Implementation Plan

Updated Implementation Timeline

Key dates for implementation of EPEAT-ULCS-2023 are identified below.

EPEAT-ULCS-2023 Implementation Timeline																									
2024							2025																		
Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	Mar	Jun	Jul	Aug	Sep	Oct	Nov	Dec							
1 Public Launch EPEAT-ULCS-2023 criteria in EPEAT Registry June 4, 2024							(2) Public EPEAT Registry shows solar modules meeting NSF 457 criteria and EPEAT-ULCS-2023 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, 2024 – August 1, 2025																									
														3 All solar modules must meet NSF 457 and, at minimum, the required low carbon solar criterion to appear in EPEAT Registry. (3) August 1, 2025											

(1) This table only refers to solar modules because EPEAT-ULCS-2023 only applies to modules and not inverters. Inverters are still required to only meet the NSF 457 criteria to appear in the EPEAT Registry.

(2) On August 1, 2025, solar modules not meeting the required low carbon solar criterion (4.1) will be archived from the EPEAT Registry.

- 1** On June 4, 2024, EPEAT-ULCS-2023 criteria launched 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 in EPEAT-ULCS-2023 (criterion 4.1 with a threshold of 630 kg CO₂e per kWp) 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 in EPEAT-ULCS-2023 (criterion 4.2 with a threshold of 400 kg CO₂e per kWp) are

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 (4.1) in EPEAT-ULCS-2023.

2 Between June 4, 2024 and August 1, 2025:

- Solar modules that appeared in the EPEAT Registry prior to June 4, 2024 have until August 1, 2025 to come into conformance with, at minimum, the required low carbon solar module criterion (4.1) in EPEAT-ULCS-2023.
- 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 (4.1) in EPEAT-ULCS-2023.

3 On August 1, 2025:

- Solar modules meeting only the NSF 457 criteria and not, at minimum, the required low carbon solar module criterion in EPEAT-ULCS-2023 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 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 EPEAT-ULCS-2023:

- 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 three criteria in EPEAT-ULCS-2023.
- Training Slides and Recordings: CAB Auditors must take the required training for EPEAT-ULCS-2023 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 EPEAT-ULCS-2023. 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+™ and Solar Modules

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+.

For solar modules:

- First, companies and their solar modules must prove they meet existing EPEAT criteria in NSF 457 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 solar modules must prove, and have independently verified by a CAB, that they meet criterion 4.2 (Optional – Ultra Low Carbon Solar) in EPEAT-ULCS-2023.

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.