



EPEAT Solar Category: Verification Overview



EPEAT Solar Category Criteria

To be identified in the [EPEAT Registry](#), manufacturers of solar modules and inverters must prove conformance with all required criteria for this product category.

If manufacturers wish to achieve the EPEAT Silver tier or EPEAT Gold tier for their products, they must also prove conformance with optional criteria for this product category.

Criteria for the solar category are contained in two documents:

- [NSF 457](#) (Sustainability Leadership Standard for the Assessment of PV Modules and Inverters): These criteria are for both solar modules and solar inverters and address management of substances, preferable materials use, LCA, energy efficiency and water use, end-of-life management, packaging, and corporate responsibility.
- [EPEAT-ULCS-2023](#) (EPEAT Criteria for the Assessment of Ultra-Low Carbon Solar Modules): These criteria are for solar modules only and address embodied carbon.

Summary NSF 457 Criteria

- List and assessment of substances
- Reduction of substances of concern
- Recycled Content
- PV module LCA
- Reduction in LCA impacts
- Energy efficiency and water use
- Product packaging
- End-of-life management and design for recycling
- Environmental, health and safety management
- Corporate reporting
- Corporate social performance
- Conflict minerals sourcing

Summary EPEAT-ULCS-2023 Criteria

- **Criterion 4.1 – Low Carbon Solar** (required): Embodied carbon of the PV module shall be equal to or less than 630 kg CO_{2e} / kWp
- **Criterion 4.2 – Ultra-Low Carbon Solar** (optional): Embodied carbon of the PV module shall be equal to or less than 400 kg CO_{2e} / kWp
- **Criterion 4.3 – Publicly Available LCI Data** (optional): Primary life cycle inventory data underlying alternative GWP coefficients shall be publicly available

EPEAT Verification for All Product Categories

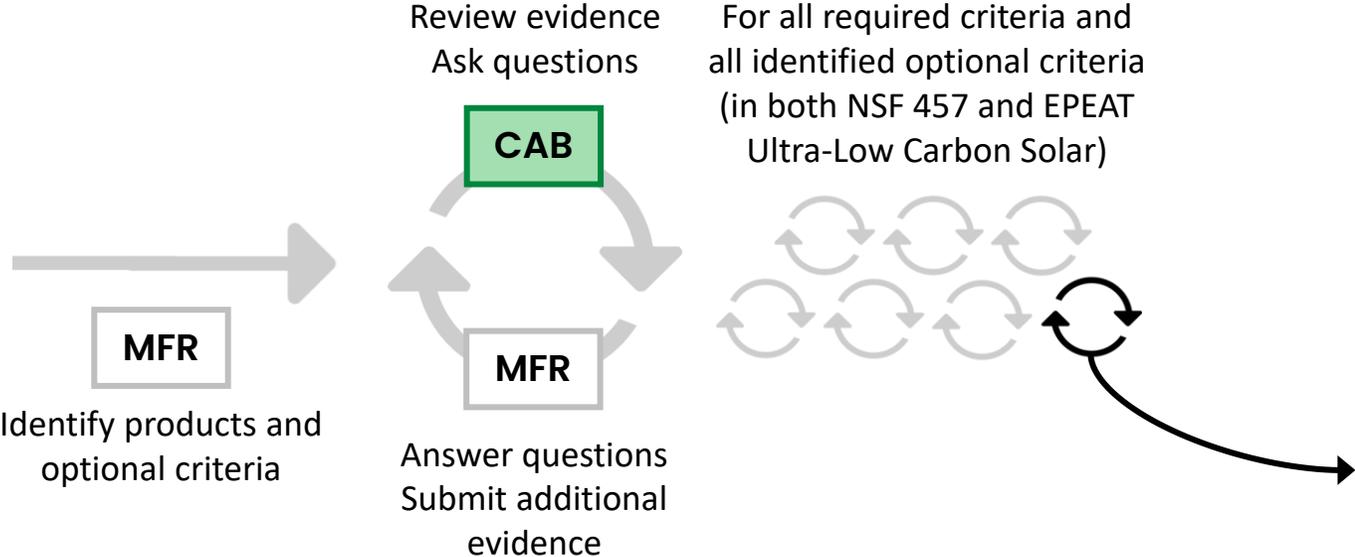


- To participate in EPEAT and have products appear in the EPEAT Registry, manufacturers of products in any EPEAT product category must contractually engage with a GEC-Approved Conformity Assurance Body (CAB).
- CABs are impartial and independent verification experts that assess initial and ongoing conformance with EPEAT Criteria. Prior to products appearing in the EPEAT Registry, Manufacturers must have conformance with all EPEAT Criteria verified by a CAB.
- To become approved by GEC, these organizations must have specific accreditations, successfully undergo an initial review and audit by GEC, and participate in annual audits against EPEAT programmatic requirements.
- A List of GEC-Approved CABs, and the product categories for which they are approved to provide EPEAT conformity assurance services, is available on the [About EPEAT Page](#) of the EPEAT Registry.

EPEAT Verification for Solar Category

- For the EPEAT Solar Category, GEC-Approved CABs assess conformance to both NSF 457 Criteria and EPEAT Ultra-Low Carbon Solar Criteria.
- For Low Carbon Solar (criterion 4.1) and Ultra-Low Carbon Solar (criterion 4.2), **additional layers of verification** must be performed by different Verification Entities (i.e., organizations that are not GEC-Approved CABs).

For All EPEAT Solar Category Criteria



MFR = Manufacturer (company wishing to have products in EPEAT)
 CAB = GEC-Approved Conformity Assurance Body

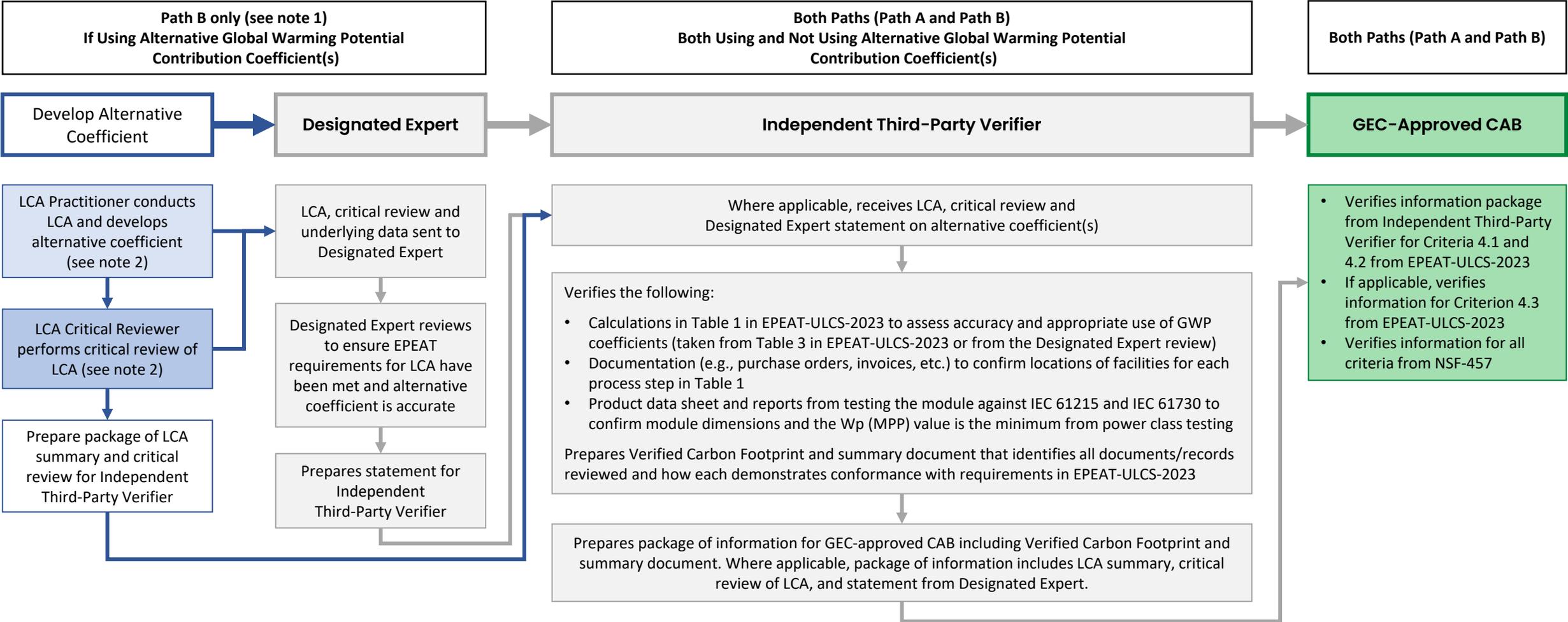
For Low Carbon Solar (4.1) and Ultra-Low Carbon Solar (4.2) Criteria

In addition to documentation for all other EPEAT Solar Category Criteria, the CAB reviews information from the following other Verification Entities:

- Independent Third-Party Verifier**
- Designated Expert**
 [only if alternative global warming potential contribution coefficient(s) is used to calculate carbon footprint, as per Path B described in the EPEAT Ultra-Low Carbon Solar Criteria document]



Basic Process Flow for Low Carbon Solar Criterion (4.1) and Ultra-Low Carbon Solar Criterion (4.2)



Note 1: The process described here must be completed for each alternative global warming potential contribution coefficient used in the Verified Carbon Footprint.

Note 2: The LCA Critical Reviewer must be independent from the LCA Practitioner, and must meet the requirements in ISO 14044, Section 7.3.2. The LCA Practitioner and LCA Critical Reviewer must be independent from all other Verification Entities (Designated Expert, Independent Third-Party Verifier, and GEC-Approved CAB). Participating Manufacturers are responsible for engaging with the LCA Practitioner and the LCA Critical Reviewer.



Verification Entities for Low Carbon Solar Criterion (4.1) and Ultra-Low Carbon Solar Criterion (4.2)

Verification Entity	Designated Expert	Independent Third-Party Verifier	GEC-Approved CAB
Experience and Accreditation Requirements	Must be on GEC’s List of Designated Experts. Must have at least 10 years of experience in conducting and/or reviewing technical LCAs. Must have experience in engineering processes related to PV module manufacturing.	Must be accredited to ISO/IEC 17020, 17021, 17025, and/or 17065. Accreditation body must be signatory to IAF MLA (or ILAC MRA, if 17025). Must have experience in the PV industry.	Must be on List of GEC-Approved CABs.
Independence	Must be independent from LCA Practitioner (organization that performed the LCA), Critical Reviewer of LCA, and GEC-Approved CAB. Can be the Independent Third-Party Verifier.	Must be independent from LCA Practitioner (organization that performed the LCA), Critical Reviewer of LCA, and GEC-Approved CAB. Can be the Designated Expert.	Must be independent from all other Verification Entities in this table.
Actions Performed	<p>Reviews LCA and underlying data and verifies:</p> <ul style="list-style-type: none"> LCA has addressed EPEAT requirements (as per Annex A2.3 of the EPEAT Ultra-Low Carbon Solar criteria document). LCA data related to alternative global warming potential contribution coefficient are accurate. Energy assignment methods meet EPEAT requirements (as per Annex A2.3 of the criteria document). If applicable, production of silicon ingot includes required elements/processes. If self-generated renewable electricity is included, there is no double counting of Energy Attribute Certificates (EACs). Resulting alternative global warming potential contribution coefficient is accurate. 	<p>Verifies the following:</p> <ul style="list-style-type: none"> Calculations in Table 1 in EPEAT-ULCS-2023 to assess accuracy and appropriate use of GWP coefficients (taken from Table 3 in EPEAT-ULCS-2023 or from Designated Expert review) Documentation (e.g., purchase orders, invoices, etc.) to confirm locations of facilities for each process step in Table 1 Product data sheet and reports from testing the module against IEC 61215 and IEC 61730 to confirm module dimensions and the Wp (MPP) value is the minimum from power class testing <p>Prepares Verified Carbon Footprint and summary document that identifies all documents and records reviewed and how each demonstrates conformance with requirements in EPEAT-ULCS-2023</p> <p>Prepares package of information for submission to GEC-Approved CAB.</p>	<p>Verifies:</p> <ul style="list-style-type: none"> Information for NSF 457 Criteria. Information for EPEAT-ULCS-2023 Criteria (including information package from Independent Third-Party Verifier for 4.1 and 4.2).

- Notes:**
- Only GEC can identify which organizations are Designated Experts and GEC-Approved CABs. Manufacturers are required to use one of the organizations on GEC’s approved lists.
 - For the Independent Third-Party Verifier, Manufacturers may select any organization, as long as they meet the requirements for experience, accreditation, and independence.
 - Manufacturers are responsible for engaging with all Verification Entities identified above.





**PLEASE CONTACT US IF YOU
HAVE ANY QUESTIONS**

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