Gold Standard for the Global Goals

ACTIVITY REQUIREMENTS

GS4GG PAA AR 202

SDG 13

ENERGY SYSTEMS AND EFFICIENCY (ESE)

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SUMMARY

This Activity Requirement establishes the sector-specific eligibility conditions, boundaries and safeguards for energy systems and efficiency activities under the Gold Standard for the Global Goals (GS4GG). It is structured as a core and modules: Part A applies to every activity in the sector, and Part B contains six activity-specific modules, applied singly or in combination according to the activity.

It applies to the generation, storage and utilisation of electricity, thermal energy (heating and cooling) and mechanical work, including cogeneration and trigeneration. The modules cover grid-connected and captive generation (M.1); energy storage and grid flexibility (M.2); just energy transition and accelerated fossil-fuel phase-out (M.3); distributed energy resources and access (M.4); end-use energy efficiency (M.5); and green hydrogen production and utilisation (M.6). An activity developer applies Part A in full together with each module relevant to the activity: a renewable facility paired with storage applies Modules 1 and 2, and a fossil-fuel phase-out applies Module 3 together with the module covering the replacement capacity.

Only stationary energy is within scope. Activities outside it are routed to other Activity Requirements: household and micro-scale energy access to AR 201 (CSA); industrial process energy to AR 203; mobility and transport to AR 204; municipal waste and centralised wastewater to AR 205 (CEWS); and removals via captured atmospheric or biogenic CO_2 to AR 208. This Activity Requirement is a sector-specific layer, read with the GS4GG Principles & Requirements, the Safeguarding Principles & Requirements and the applicable methodology, and does not restate them. It governs eligibility, boundary and safeguards; baselines, quantification and monitoring calculations are governed by the applied methodology.

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1| INTRODUCTION AND ROADMAP

1.1 | Overview

1.1.1 | This Activity Requirement establishes the eligibility conditions, activity-specific parameters, safeguards and verification expectations for activities in the Energy Systems and Efficiency (ESE) category seeking certification under the Gold Standard for the Global Goals (GS4GG). It covers renewable and near-zero-emission generation, energy storage and grid flexibility, transmission and distribution network efficiency, distributed energy access, end-use energy efficiency, green hydrogen and its derivatives, and the accelerated phase-out of fossil-fuel generation.

1.2 | Document Structure: Core and Modules

1.2.1 | This Activity Requirement uses a Core and Modules structure. Part A states requirements applicable to all ESE activities. Part B states requirements specific to each activity type. An activity shall comply with all applicable requirements in Part A and all requirements in the relevant module(s) in Part B.

1.3 | Relationship to other GS4GG documents

1.3.1 | This Activity Requirement is a sector-specific layer and does not restate rules established in any other document of the GS4GG framework. Except where this Activity Requirement states an activity-specific parameter, exemption or additional requirement, the following apply unchanged and take precedence:

a) **Principles & Requirements** — additionality, activity start date, prior consideration, crediting periods and renewal and retroactive submission;

b) **Requirements for Paris Agreement Alignment**, including methodology standards and tools

c) **Safeguarding Principles & Requirements**;

d) **Stakeholder Consultation and Engagement Requirements** and **Gender Equality Requirements**;

e) **SDG Impact Assessment** requirements and procedures;

f) Applicable **Product Requirements** (including co-issuance and labelling rules); and corresponding adjustments

g) Applicable **GS4GG-approved methodology** — baseline setting, quantification of emission reductions and removals, monitoring calculations, and data-vintage requirements.

1.3.2 | Where the Activity Requirement and a methodology both address a point, the methodology governs quantification and the Activity Requirement governs eligibility, boundary and safeguards. On a matter of quantification, the methodology prevails. Where a methodology would relax an eligibility

condition or a safeguard set in this Activity Requirement, the methodology requirement prevails – unless it is clearly stated deviation.

1.4 | The Module Finder

1.4.1 | Use the table below to identify the relevant Module(s) for your activity.

If your activity involves...	Apply Module(s)...
Constructing or expanding grid-connected renewable/near-zero generation, or captive generation displacing grid electricity.	**Module 1** — Grid-Connected and Captive Generation
Installing energy storage (e.g. BESS, pumped hydro, compressed-air energy storage, thermal) or grid-flexibility systems (e.g. demand response, VPPs).	**Module 2** — Energy Storage and Grid Flexibility
Accelerating the permanent decommissioning of a large-scale fossil-fuel power plant, with a Just Transition Plan.	**Module 3** — Just Energy Transition and Accelerated Fossil-Fuel Phase-Out (applied together with the module(s) for the replacement capacity, typically M.1 and/or M.2).
Deploying decentralised renewable systems off-grid, in mini-grids or unreliable-grid contexts, including captive generation displacing on-site fossil generation and the replacement of diesel/petrol gensets.	**Module 4** — Distributed Energy Resources and Access
Improving energy efficiency in buildings, facilities, public infrastructure, transmission and distribution networks or agricultural processes.	**Module 5** — End-Use and Supply Side Energy Efficiency
Producing green hydrogen or derivatives (e.g. green ammonia, e-fuels) via renewable-powered electrolysis.	**Module 6** — Green Hydrogen Production and Utilisation (often applied with M.1 where new generation is built).

1.5 | Hybrid and Integrated Activities

1.5.1 | For activities combining multiple components, the requirements of all applicable modules shall be met. Shared requirements may be documented jointly to avoid duplication.

a) EXAMPLE — A grid-connected solar plant with integrated battery storage applies Part A, Module 1 and Module 2.

b) EXAMPLE — A standalone grid-connected wind farm applies Part A and Module 1 only; no justification is required for the absence of storage, efficiency or hydrogen components.

1.6 | Transition and Applicability to Existing Activities

1.6.1 | **Entry into force and cut-off.**

1.6.1.1 This Activity Requirement applies to activities whose validation report for design certification is submitted to Gold Standard on or after its effective date. An activity whose validation report was submitted before that date completes design certification under the Renewable Energy Activity Requirement v1.4 and transitions to this Activity Requirement at its next crediting-period renewal, or voluntarily beforehand under the applicable GS4GG transition procedure.

1.6.1.2 Existing design certified projects that wish to add a module to their design through design change shall comply with the Part A of this activity requirement as well as the relevant module. For example, if a grid-connected wind farm project intends to add a battery energy storage system, shall conduct a design change and comply with the Part A of this AR as well as Module 1 and Module 2.

1.6.2 | **Nationally determined basis at transition.** For an activity certified before the effective date, the determination under Section 2.3.2 is made at the crediting-period renewal, against the NDC and LT-LEDS then in force; it is fixed for the remainder of that crediting period and repeated at each subsequent renewal.

1.6.3 | **Safeguards for existing activities.** Sector-specific safeguards in Section 4 and in the modules that formed no part of the framework under which an activity was certified apply from the activity's next verification, through an updated monitoring plan, or from its next renewal where a design change is required; safeguard frameworks approved at certification are not retroactively invalidated.

AR 202: Energy Systems and Efficiency

How Part A's core requirements combine with Part B modules to cover every energy activity.

Gold Standard for the Global Goals

Part A — Core requirements

Applies to every activity · no opt-out

Scope | Parameters | Safeguards | MRV and data | SDG

Conditions: net positive · equipment status · NDC eligibility · double counting · co-issuance

THEN APPLY ONE OR MORE PART B MODULES — MODULES COMBINE

M.1 Grid-connected and captive

Solar, wind, hydro, biomass, marine

- Eligibility by additionality
- Penetration: common practice
- Captive: physical delivery only
- Co-firing 2% cap, ignition only
- Hydro: 4 W/m², HSAP above 15 MW

M.2 Storage and flexibility

BESS, pumped hydro, CAES, DR, VPP

- 20% power and 2h, or 15% shift
- Derated, never nameplate
- No fossil charging, no UPS
- Sourcing audit above 5 MWh
- Funded end-of-life plan

M.3 Just transition, phase-out

Fossil generation retirement

- Equipment permanently inoperable
- No new unabated fossil, any type
- Funded just transition plan
- Monitoring outlives crediting
- Methods: coal, diesel gensets

M.4 Distributed and access

Mini-grids, gensets, weak grids

- Off-grid, mini-grid, weak grid
- No worse service, no higher cost
- Gensets scrapped, or sub-metered
- Suppressed demand: small only
- AR 201 Part A also applies

M.5 End-use energy efficiency

Buildings, lighting, irrigation

- Buildings, infrastructure, farms
- Retrofit, or above legal minimum
- Persistence measures required
- No behavioural-only measures
- Industrial process is AR 203

M.6 Green hydrogen

Electrolysis, ammonia, e-fuels

- Three pillars, all required
- Hourly matching, same zone
- 36-month greenfield window
- No fresh water where stressed
- Grey, blue, pink not allowed

ROUTED ELSEWHERE

AR 201 | AR 203 | AR 204 | AR 205 | AR 208

NOT SET HERE

Quantification — defined by the methodology, not this document.

HOW TO READ

Every activity applies **Part A** in full, then one or more **Part B modules**. Modules combine — solar plus battery applies A, M.1 and M.2.

PART A: CORE REQUIREMENTS

Applicable to all activities in the Energy Systems and Efficiency category.

2| SCOPE AND APPLICABILITY

2.1 | Overall Scope and Technology Coverage:

2.1.1 | This Activity Requirement governs activities that decarbonise energy systems through the deployment of renewable and near-zero-emission technologies, the improvement of energy efficiency, and the accelerated phase-out of fossil-fuel generation.

a) Eligible energy forms are the generation, storage and utilisation of electricity, thermal energy (heating and cooling), and mechanical work (including cogeneration and trigeneration).

b) Eligible technology are renewable and near-zero-emission generation; energy storage and grid flexibility; green hydrogen and its derivatives; captive (distributed) renewable generation displacing grid electricity; and end-use and supply-side energy efficiency in buildings, public infrastructure, transmission and distribution networks, and agricultural processes.

2.1.2 | An eligible activity shall consist of physical implementation on the ground.

2.2 | Standard boundaries and exclusions:

2.2.1 | To prevent overlap and double compliance, the activity developer shall apply the correct Activity Requirement according to the following boundaries:

a) Household and micro-scale energy access — apply CSA (AR 201). Decentralised, individual household-level energy access and community services (e.g. solar home systems, clean cooking, pico-solar).

b) Municipal waste and centralised wastewater — apply CEWS (AR 205). Municipal solid-waste-to-energy, mass-burn incineration, and centralised wastewater treatment. This Activity Requirement governs only the energy-generation component of eligible sustainable biomass/biogas, waste heat recovery (WHR), and landfill-gas utilisation (Module 1). [*to be published*]

c) Industrial process energy — apply Industrial Decarbonisation (AR 203). Energy efficiency and fuel switching in heavy industrial and manufacturing processes, including fossil-fired co-generation. This Activity Requirement governs building, facility, public-infrastructure , transmission and distribution network, and agricultural-process efficiency (Module 5). [*to be published*]

d) Mobility and transport — apply Transport Systems (AR 204). Only stationary energy is within ESE. [*to be published*]

e) Removal via captured atmospheric/biogenic CO_2 (e.g. BECCS) — apply Engineered Removals (AR 208). Where biomass generation is coupled with carbon capture and geological storage, Module 1 governs the energy-generation component and AR 208 governs the removal claim.

2.3 | General Applicability Conditions

2.3.1 | **Net Positive Climate Impact:** The activity developer shall demonstrate, through a validated *ex-ante* assessment, a net reduction of greenhouse-gas (GHG) emissions attributable to the intervention, in accordance with the boundary and quantification requirements of the applied methodology.

2.3.2 | **Nationally Determined Basis and Claim Status:** The nationally determined basis is not a condition of certification (see 2.3.2.6); it determines the claim status of the resulting Products. An activity meets the nationally determined basis where it contributes to:

a) a mitigation goal within the scope of its Nationally Determined Contribution (NDC) that host Party has identified as dependent on international support, or

b) a mitigation goal outside the scope of the host Party's Nationally Determined Contribution (NDC).

2.3.2.2 The activity developer shall determine and document, against the host Party's Nationally Determined Contribution (NDC), whether the mitigation to which the activity contributes is:

a) a mitigation goal that the host Party has identified as dependent on international support;

b) a mitigation goal that the host Party is committed to deliver from its own resources; or

c) a mitigation goal that sits outside the scope of the NDC.

2.3.2.3 The first case applies only where the NDC identifies a need for international support — finance, technology transfer or capacity-building — for the target, measure or sector concerned. A general statement about the international political, economic or trade environment, about international cooperation, or about the obligations of developed countries towards developing countries as a group, is not sufficient. Acceptable corroborating evidence includes the national electrification plan, the sector investment or resource plan and the NDC implementation plan, cited alongside the NDC or LT-LEDS.

2.3.3 | Where the NDC does not distinguish the first two cases (2.3.2.2.a and 2.3.2.2.b), the determination shall be made against the host Party's Long-Term Low Emission Development Strategy (LT-LEDS). Where no LT-LEDS has

been communicated, the determination shall be made against the most recent National Communication, Biennial Transparency Report or officially adopted national sector strategy that addresses the target, measure or sector concerned; where none of these distinguishes the cases, the activity is treated as not meeting the nationally determined basis and 2.3.2.6 governs.

2.3.4 | The determination shall identify the NDC or LT-LEDS, the date it was communicated to the UNFCCC secretariat, and the target, measure or sector to which the activity contributes. The activity does not need to be expressly named in the NDC or LT-LEDS, provided it contributes to the identified target, measure or sector. The determination shall be made against the NDC and LT-LEDS in force at the start of the crediting period, and repeated at each renewal. For a hybrid activity (Section 1.5) a single determination is made for the activity as a whole, irrespective of the number of modules applied. The determination made for a crediting period is fixed for that period; a change in the NDC or LT-LEDS during the period does not alter it, and the re-determination at renewal affects claim status (2.3.2.6), not eligibility.

2.3.4.1 Failing to meet the nationally determined basis does not bar certification. Such an activity may be submitted for certification; its eligibility is governed by the applicable module and by the demonstration of additionality. The nationally determined basis determines the claim status of the resulting Products under the Gold Standard Claims Guidelines, in particular their use towards offsetting or other claims.

2.3.5 | **Equipment Status (Greenfield vs. Relocated):** Unless a module or the applied methodology permits otherwise:

a) primary generation, storage or energy-conversion equipment installed as new capacity shall be new (first-use) equipment;

b) the retrofit or rehabilitation of equipment already installed and operating at the activity site is permitted; and.

c) the relocation of operational equipment from another site into the activity is permitted only where the activity developer provides verifiable evidence that:

i.| the equipment has a certified remaining technical lifetime meeting or exceeding the requested crediting period, and

ii.| the transfer was not undertaken principally to generate carbon credits. The transfer of operational equipment between existing sites solely to create a certifiable activity, where that equipment was otherwise available to its original site, is prohibited.

d) where a repowering or replacement activity displaces existing operational equipment, that equipment shall be decommissioned, recycled or disposed of to a documented best-effort standard verified by the VVB; where it is instead sold for continued operation, the

activity developer shall report its disposition and demonstrate that its continued operation is not claimed under any other carbon-crediting activity.

e) for material-intensive hardware installed as new capacity, the activity developer shall provision a demonstrably feasible End-of-Life (EoL) Decommissioning Plan, in accordance with the applicable module or methodology, to ensure safe recycling, disposal, and site remediation at the end of the equipment's technical lifetime.

2.3.6 | **Governance, tenure, and resource rights:** The activity developer shall demonstrate clear, uncontested and legally binding rights to the land, water and other resources used; ownership of the installed infrastructure; and undisputed ownership of the resulting emission reductions and removals (carbon rights). Where ownership of emission reductions is transferred from distributed activity participants/beneficiaries (e.g., in decentralized or captive configurations), it shall be demonstrated transparently and with full, prior and informed consent (FPIC).

2.3.7 | **Avoidance of double counting.** The activity developer shall comply with the GS4GG requirements on avoidance of double counting.

2.3.8 | **Co-issuance and stacking.** Co-issuance of multiple Certified Impact Statements or Products is governed by the applicable Product Requirements. GS-VERs or GS-CERs and Renewable Energy Certificate labels shall not both be claimed for the same MWh. Stacking is not permitted where a suppressed-demand baseline is applied.

3| SECTOR-WIDE ACTIVITY PARAMETERS

3.1.1 | The following parameters state the sector-specific values or deviations. The underlying mechanism is governed by the referenced core document. Any parameter not listed here follows the core or methodology default unchanged.

Parameter	Governing default	ESE treatment
Activity start date	Determined per Principles & Requirements.	No sector deviation. Module-specific start-date triggers, where they exist, are stated in the relevant module.
Submission window (maximum period from activity start date to submission for preliminary review)	Principles & Requirements: within 1 year of the start date.	1 year (no ESE deviation).
Crediting period	Principles & Requirements /	Up to 15 years (three 5-year certification cycles), with Design Certification renewal every 5 years, unless the applied

	Product Requirements.	methodology or the Product Requirements state otherwise (e.g., capped by the equipment's technical lifetime or the remaining useful life of a displaced baseline asset).

4| SECTOR-SPECIFIC SAFEGUARDS

4.1.1 | The GS4GG Safeguarding Principles and Requirements apply in full. The following infrastructure-specific safeguards apply additionally to all ESE activities. Technology-specific safeguards are stated in the relevant module.

4.1.2 | **Lifecycle waste management and site condition.** The activity developer shall implement a funded waste-management plan covering: the responsible disposal or recycling of materials, including hazardous materials such as lubricants, e-waste and refrigerants, during construction and routine operation; and a verifiable end-of-life decommissioning plan. On permanent decommissioning, the site shall be returned to a safe and stable condition consistent with the approved end-of-life plan, at minimum removing hazards and stabilising the site, or to an agreed beneficial reuse.

4.1.3 | **Consent of affected peoples and communities.** Where an activity affects the lands, territories or resources of Indigenous Peoples, the process shall adhere to Free, Prior and Informed Consent (FPIC) as set out in the GS4GG Safeguarding Principles and Requirements. Where an activity causes physical or economic displacement of, or significant adverse impact on, other local communities, the activity developer shall apply enhanced consultation and obtain documented consent proportionate to the impact.

4.1.4 | **Gender equality and benefit-sharing.** Gender assessment is governed by the GS4GG Gender Equality Requirements. Where benefit-sharing mechanisms are used, they shall be formalised and equitable and shall support the inclusion of women in employment and decision-making.

4.1.5 | **Just Transition for Fossil-Fuel Phase-Out.** Where an activity involves the accelerated decommissioning of operational fossil-fuel assets (e.g., under Module 3 or Module 4), the activity developer shall develop, fund, and implement a formalized Just Transition Plan in accordance with the GS4GG Just Transition Requirements to protect affected workers and economically dependent communities.

5| SECTOR SPECIFIC MRV AND DATA CONDITIONS

Baseline setting, quantification and monitoring calculations, including any data-vintage requirements, are governed by the applied methodology and are not restated here. The following additions apply. The determination of the grid emission factor, including its conservative bounds and data vintage, is governed by A6.4-AMT-007 as applied through the GS4GG Grid-Emission-Factor Addendum and the applied methodology.

5.1 | Instrumentation and Hierarchy of Standards

5.1.1 | Monitoring equipment (e.g. electricity, flow and thermal meters) shall conform to the enforced national standards of the host country. International standards (e.g. ISO, IEC) apply only where relevant national standards are absent. Calibration shall follow manufacturer specifications or national regulations, whichever is more stringent. An applied methodology may specify a stricter accuracy tier as a stated deviation from this hierarchy; where it does, the methodology's tier governs (Section 1.3.1).

NOTE — This national-first hierarchy does not lower safety. Safety-critical safeguards specified in the modules (e.g. hydrogen handling under M.6.3.2, battery fire safety under M.2.3.3) retain their stated international best-practice floor.

5.2 | Data Privacy and Security

5.2.1 | Where an activity relies on smart-grid infrastructure, automated metering, virtual power plants (VPPs) or aggregated demand-response data involving end-users, the activity developer shall implement secure, consent-based data management complying with host-country data-protection law (e.g. India’s DPDP Rules, EU GDPR). To comply with data privacy regulations, geographic tracking of distributed assets may be logged at the lowest permissible administrative unit (e.g., village/ward level) rather than precise household GPS, provided unique product IDs prevent double counting.

5.2.2 | **Data Retention and Archiving:** All data collected as part of the monitoring process, including raw telemetry, calibration records, and safeguard compliance evidence, shall be archived electronically and retained for the duration of the crediting period and for at least five years after the end of the last crediting period or the last issuance of credits, whichever is later.

6| INDICATIVE SDG CONTRIBUTION OPPORTUNITIES

6.1.1 | The mandatory SDG floor and the assessment method are governed by the GS4GG Principles & Requirements and the SDG Impact Tool and are not set by this Activity Requirement. The following indicate where ESE activities commonly contribute:

a) SDG 13 — Climate Action: quantified emission reductions and removals (the primary claim for all ESE activities);

b) SDG 7 — Affordable and Clean Energy: installed capacity, energy generated or energy saved;

c) commonly also SDG 8, SDG 9, SDG 3, SDG 5, SDG 6, SDG 11 and SDG 12.

PART B: ACTIVITY-SPECIFIC MODULES

An activity applies Part A and the relevant module(s). Baseline setting, additionality demonstration and standard MRV calculations are executed as prescribed in the applied methodology. Additionality may be demonstrated through an approved positive list where available; deemed or automatic additionality does not exempt an activity from the eligibility criteria of this Activity Requirement. Each module's VVB checklist verifies only the AR-specific eligibility, parameters and safeguards.

M.1|GRID CONNECTED AND CAPTIVE GENERATION

M.1.1 | Scope and Boundary

M.1.1.1 | **Eligible Technologies:** Solar (PV and CSP), Wind (onshore and offshore), Geothermal, Hydropower, Marine technologies (tidal/wave), Sustainable Biomass/Biogas, Landfill Gas (LFG), and Waste Heat Recovery (WHR).

M.1.1.2 | **Eligible Energy** outputs are electricity, thermal energy, and mechanical work (including cogeneration and trigeneration).

M.1.1.3 | **Eligible Configurations** are generation connected to a national or regional grid; or captive generation where renewable or thermal output directly displaces electricity that would otherwise be drawn from the grid.

M.1.2 | Applicability and eligibility conditions

M.1.2.1 | **Eligibility basis:** This module imposes no eligibility restriction based on the host country's income classification. Eligibility is governed by the demonstration of additionality in accordance with the applied methodology and the GS4GG Requirements for Additionality Demonstration (regulatory surplus, lock-in analysis, investment analysis and common-practice analysis). Standalone Module 1 activities are evaluated on the same footing as multi-module activities; the modular structure creates no preference for combined configurations.

M.1.2.2 | **Captive generation:** Captive renewable generation consumed behind the meter and displacing grid electricity is eligible in all countries but is not exempted from additionality. Metering shall isolate displaced grid electricity from any non-eligible on-site fossil generation. Delivery to the captive or contracted consumer shall be physical (behind the meter, via wheeling or open access under a power purchase agreement, or via a dedicated line); a purely financial or virtual power purchase agreement with no physical delivery of the activity's electricity does not qualify under this module. Utility-mediated bilateral arrangements are eligible where the activity developer demonstrates, from settlement or metering records, physical delivery of the activity's electricity to the identified consumer through the utility's system with no material time lapse; the captive rules of the applied methodology then apply.

M.1.3 | Activity-Specific Safeguards

M.1.3.1 | **Land Use Change (LUC) & Food Security:** A utility-scale solar, wind or biomass-cultivation activity shall not displace productive agricultural land. The activity developer shall submit a land-use assessment demonstrating no adverse impact on local food security and no forced agricultural relocation.

M.1.3.2 | **Hydropower Activities:**

M.1.3.2.1 | For a hydropower activity, the activity developer shall:

1) maintain scientifically established environmental flows (E-flows);
2) demonstrate, for a new reservoir activity, a power density greater than 4 W/m² (> 4 W/m²) or an emission intensity below 100 gCO_2e/kWh (< 100 gCO_2e/kWh);
3) submit, for a reservoir activity, or any activity greater than 15 MW (> 15 MW), an independent audit against the Hydropower Sustainability Assessment Protocol (HSAP) or equivalent; and
4) implement measures for migratory-fish passage and sediment management where applicable.

M.1.3.2.2 | The expansion of an existing reservoir area is prohibited. A hydropower activity located in a High Conservation Value (HCV) area is not eligible; the activity developer shall assess the site against recognised sources (e.g. the World Database on Protected Areas, IUCN, the Ramsar list) and, for an activity involving an existing dam, the stakeholder consultation shall include a site visit by participating local stakeholders.

M.1.3.3 | **Sustainable Biomass and Palm oil:** Feedstock from high-carbon-stock land (e.g. primary forest or peatland) is prohibited. Raw or crude palm oil is prohibited; palm-oil mill effluent (POME) and empty fruit bunches (EFB) are permitted only where the source mill demonstrates compliance with the latest valid RSPO Principles and Criteria (or an equivalent national framework). Fossil-fuel co-firing in the generation unit is prohibited, except for metered quantities used solely for ignition or start-up. The total annual energy derived from fossil-fuel combustion for ignition or start-up shall not exceed 5% (≤ 5%) of the activity's total annual electricity generation. Feedstock that consists of genetically modified organisms shall comply with the GS4GG Safeguarding Principles on genetic resources. Where the applied methodology specifies this cap with its own measurement basis and consequence, the methodology's formulation governs and is not restated here (Section 1.3.1).

M.1.3.4 | **Wind.** A wind activity in a recognised eco-sensitive or migratory area shall implement active mitigation (e.g. shutdown-on-demand during peak bird or bat migration).

M.1.3.5 | **Solar.** A solar activity shall assess and mitigate glare affecting nearby communities and aviation. In a water-scarce area, the activity developer

shall assess water use for cooling (CSP) and panel cleaning (PV) and shall implement measures to minimise consumption.

M.1.3.6 | **Geothermal.** A geothermal activity shall assess and control emissions of non-condensable gases (e.g. hydrogen sulphide, CO_2) and working fluids, and shall monitor and mitigate induced seismicity and land subsidence, including through adequate fluid reinjection.

M.1.3.7 | **Marine (wave and tidal).** A marine (wave or tidal) activity shall provide an independent environmental impact assessment demonstrating no significant disruption to critical benthic habitats (e.g. coral reefs, seagrass beds) or marine migratory corridors, and shall establish an end-of-life plan providing for the removal and recycling of submerged infrastructure.

M.1.3.8 | **Waste-heat recovery and waste-to-energy boundary.** For WHR, emission reductions from on-site energy-consumption reductions are eligible; emission reductions from exported heat or electricity are eligible only where the host process's primary energy source is renewable. LFG, WHR and any restricted energy recovery from waste shall comply with the relevant Activity Requirement [*to be published*]; this module governs only the energy-generation component.

M.1.4 | VVB Evidentiary Guidance

M.1.4.1 | The VVB shall verify the nationally determined eligibility determination, confirming that the NDC or LT-LEDS cited is that in force at the start of the crediting period or at renewal as applicable, that the target, measure or sector relied upon appears in it, and that the stated case follows from it, applying the checklist of Section 2.3.2.5: (a) the instrument and its date of communication are cited; (b) the target, measure or sector relied upon is identified in that instrument; (c) the documented link between the activity and that target, measure or sector is stated; (d) the case selected under 2.3.2.2 follows from (a) to (c).

M.1.4.2 | The VVB shall verify land-registry data and historical satellite imagery confirming the site was not in critical food production before the activity start date.

M.1.4.3 | The VVB shall audit weighbridge receipts and supplier contracts confirming feedstock origin and confirming POME/EFB use rather than whole palm oil.

M.1.4.4 | The VVB shall verify the E-flow determination, the power-density or emission-intensity evidence, the HSAP audit where applicable, and the HCV assessment.

M.1.4.5 | The VVB shall verify, for a captive activity, that metering isolates displaced grid electricity from on-site fossil generation.

M.2|ENERGY STORAGE AND GRID FLEXIBILITY

M.2.1 | Scope and Boundary

M.2.1.1 | Eligible technologies are battery energy storage systems (BESS), pumped hydropower storage (PHS), compressed-air energy storage (CAES), thermal energy storage, demand response (DR) and virtual power plants (VPPs).

M.2.2 | Applicability and eligibility conditions

M.2.2.1 | **Net emission reduction.** The activity developer shall demonstrate that the system results in a net reduction of GHG emissions, accounting for round-trip efficiency losses and for the carbon intensity of the electricity used for charging compared with the electricity displaced during discharge.

M.2.2.2 | **Storage sizing and eligibility.**

M.2.2.2.1 | Where a storage system is integrated with a variable renewable-energy facility- a Battery Energy Storage System (BESS) integrated with a variable renewable facility qualifies under this module —only where the activity developer demonstrates, ex-ante in the PDD, that the storage meets Option A or Option B. The benchmarks apply only where crediting is sought for the storage under this module. A storage system installed to meet a grid-code or regulatory requirement for grid support is not creditable under this module (regulatory surplus) and neither disqualifies nor burdens the Module 1 activity to which it is attached:

1) **Option A — physical-asset benchmark** (standard battery technologies, e.g. lithium-ion). The BESS shall meet both of the following:

   i.| a rated power of at least 20% (≥ 20%) of the renewable facility's total AC nameplate capacity; and

   ii.| a rated discharge duration of at least 2 hours (energy capacity (MWh) ≥ 2 × power capacity (MW)).

2) **Option B — performance benchmark** (non-standard storage, e.g. flow batteries, thermal storage). The storage shall be capable of shifting at least 15% (≥ 15%) of the activity's average daily renewable generation to non-generation hours, demonstrated through technical design documents (BESS usable energy (MWh) ÷ average daily renewable generation (MWh) ≥ 15%).

M.2.2.2.2 | **Derating.** When determining the energy capacity (Option A) or usable energy (Option B) against these thresholds, the activity developer shall deduct auxiliary parasitic consumption and round-trip-efficiency losses, assessed at beginning of life; projected degradation over the crediting period is not deducted ex ante and is governed by the monitoring of the qualifying capability under M.2.2.2.3 and by the applied methodology.

M.2.2.2.3 | **Maintenance of eligibility and monitoring of the qualifying capability.** The qualifying capability shall be demonstrated ex-ante at validation and shall be maintained and monitored throughout the crediting period. Any degradation or equipment failure that reduces deliverable usable energy below the qualifying threshold shall be reported at verification. The consequence for quantification, and the conditions on which the qualifying capability may be restored, are determined by the applied methodology. The sizing benchmarks of M.2.2.2.1 apply to storage paired with a variable renewable facility, where they prevent token pairing; standalone storage is governed by the performance and additionality requirements of the applied methodology, which also govern restoration of the qualifying capability.

M.2.2.3 | **Charging source and configuration**. Standalone storage whose primary charging source is dedicated fossil-fuel generation is prohibited. A system whose primary purpose is uninterruptible power supply (UPS) rather than active grid management or load-shifting is not eligible. Auxiliary loads shall be powered by renewable sources and shall not draw grid or fossil-based captive power, unless the methodology permits otherwise.

M.2.3 | Activity-Specific Safeguards

M.2.3.1 | **Responsible sourcing (scale-tiered)**

1) For a utility-scale BESS greater than 5 MWh (> 5 MWh), the activity developer shall submit an independent supply-chain audit (e.g. IRMA, OECD Due Diligence) for critical minerals (lithium, cobalt, nickel).

2) For a small-scale or commercial BESS of 5 MWh or less (≤ 5 MWh), an upstream audit is not required; the activity developer shall procure from Tier-1 manufacturers and shall provide evidence of a take-back or recycling arrangement. A transitional grace period consistent with the CSA Activity Requirement may apply for formalising upstream audits where the threshold is later crossed.

M.2.3.2 | **End-of-Life Management and Circularity** The activity developer shall submit a funded end-of-life decommissioning plan before Design Certification, with legally binding mechanisms (e.g. escrow, insurance bond, supplier take-back) to prevent abandonment. Cooling and fire-suppression systems shall not use high-GWP refrigerants unless the methodology permits.

M.2.3.3 | **Safety**. A BESS shall adhere to international best-practice fire-safety standards (e.g. NFPA 855 or equivalent), retained as a floor under Section 5.1.1.

M.2.4 | VVB Evidentiary Guidance

M.2.4.1 | The VVB shall verify the nationally determined eligibility determination, confirming that the NDC or LT-LEDS cited is that in force at the start of the

crediting period or at renewal as applicable, that the target, measure or sector relied upon appears in it, and that the stated case follows from it, , applying the checklist of Section 2.3.2.5: (a) the instrument and its date of communication are cited; (b) the target, measure or sector relied upon is identified in that instrument; (c) the documented link between the activity and that target, measure or sector is stated; (d) the case selected under 2.3.2.2 follows from (a) to (c).

M.2.4.2 | The VVB shall audit high-frequency (hourly or sub-hourly) metering against the committed dispatch logic to confirm the system optimised for grid emission reductions (time-shifting or marginal-emissions tracking) rather than acting as a UPS.

M.2.4.3 | The VVB shall verify the supply-chain audit (> 5 MWh) or the Tier-1 procurement and take-back evidence (≤ 5 MWh).

M.2.4.4 | The VVB shall review the financial instruments confirming the end-of-life decommissioning fund is capitalised and ring-fenced.

M.3|JUST ENERGY TRANSITION AND ACCELERATED FOSSIL FUEL PHASE-OUT

M.3.1 | Scope and Boundary

M.3.1.1 | This module governs the accelerated, permanent decommissioning of existing large-scale, grid-connected fossil-fuel generation (coal, gas, oil), paired with near-zero-carbon replacement capacity and a funded Just Transition Plan. It is applied together with the module(s) for the replacement capacity (M.1 and/or M.2).

NOTE — An approved phase-out methodology currently exists for coal only; gas and oil are pending methodology development. The applied methodology may also restrict the eligible replacement technologies (for example, to wind, solar, wave and tidal, excluding hydropower, biomass and waste-to-energy).

M.3.2 | Applicability and eligibility conditions

M.3.2.1 | **Asset Permanence & Equipment Transfer:** Primary power-generating equipment (combustion turbines, boilers) shall be dismantled or rendered permanently inoperable, with no scope for fossil-fuel revival. Non-power-generating ancillary equipment (e.g. water pumps, air compressors, backup generator sets) may be transferred for non-fossil applications.

M.3.2.2 | **Investment transition:** The phase-out shall be directly linked to the investment decision for the replacement capacity. Grid stability and capacity adequacy shall be demonstrated either by a reliability analysis showing that the replacement configuration meets the demand profile previously served, or by confirmation from the grid operator or the relevant regulatory authority.

M.3.2.3 | **Investment restriction:** The asset owner and all activity participants shall demonstrate no commitment to new or expanded unabated fossil-fuel generation capacity, of any type, within the host Party's electricity system for the duration of the crediting period, and shall disclose any such commitment by the corporate group to which they belong anywhere in the world. A commitment arises at the earlier of a final investment decision, a binding procurement award or a construction permit for such capacity; its absence is evidenced by signed declarations of the asset owner and each activity participant at validation and at each verification, cross-checked by the VVB against regulatory and licensing filings, capacity procurement records, corporate disclosures and independent capacity trackers. An identified commitment is an eligibility breach: issuance is suspended and no further Products are issued for the activity. Where a system operator or regulatory authority requires new unabated fossil capacity for reliability following the phase-out, the case shall be submitted to Gold Standard as a documented deviation, with the crediting consequence determined from the date the fossil unit enters operation. Investments finalised before an internationally recognised cut-off date as recognised in the applied methodology (e.g. 31 December 2021 for coal) are not affected.

M.3.3 | Activity-specific safeguards —Just Transition Plan

M.3.3.1 | The activity developer shall define the activity's Area of Influence (AoI) and develop and fully fund a Just Transition Plan (JTP) with mandatory KPIs, informed by a pre-activity Impact and Opportunity Assessment, in accordance with the GS4GG Just Transition Requirements, addressing at minimum:

1) **Worker Protection:** prioritization of retention/retraining. Where not possible, provision of Severance Packages meeting the higher of national legal requirements, applicable collective agreements, or or international best practices (ILO conventions).

2) **Environmental Remediation:** the recycling, repurposing or safe disposal of decommissioned equipment, the repurposing of affected land and water bodies, and site remediation restoring soil, water and air contaminant levels to host-country national standards or WHO safe limits (including the WHO Air Quality Guidelines and WHO Guidelines for Drinking Water Quality), whichever is stricter, leaving the site suitable for its intended future use; and

3) **Financial assurance — mechanisms** (e.g. bonds, escrow) for long-term JTP commitments.

M.3.3.2 | JTP monitoring shall continue until the objectives are verified as achieved, including where this extends beyond the crediting period.

M.3.4 | VVB Evidentiary Guidance

M.3.4.1 | The VVB shall verify the nationally determined eligibility determination, confirming that the NDC or LT-LEDS cited is that in force at the start of the crediting period or at renewal as applicable, that the target, measure or sector relied upon appears in it, and that the stated case follows from it, applying the checklist of Section 2.3.2.5: (a) the instrument and its date of communication are cited; (b) the target, measure or sector relied upon is identified in that instrument; (c) the documented link between the activity and that target, measure or sector is stated; (d) the case selected under 2.3.2.2 follows from (a) to (c).

M.3.4.2 | The VVB shall verify the physical dismantling of the primary fossil-fuel asset through on-site inspection and grid-disconnection and scrapping certificates.

M.3.4.3 | The VVB shall conduct confidential, randomised interviews with affected workers and union representatives to audit the severance and retraining KPIs. These interviews shall be conducted by a VVB with demonstrated competency in social auditing and labour rights, and shall be complemented by community focus groups.

M.3.4.4 | The VVB shall verify the governance and grievance mechanisms and the pre-activity Impact and Opportunity Assessment required by the GS4GG Just Transition Requirements

M.3.4.5 | The VVB shall verify the existence and adequacy of the long-term JTP financial-assurance instruments.

M.4|DISTRIBUTED ENERGY RESOURCES AND ACCESS

M.4.1 | Scope and Boundary

M.4.1.1 | This module governs near-zero-emission distributed renewable energy (DRE) systems that enhance energy access and displace decentralised fossil generation (e.g. diesel or petrol gensets) or displace grid electricity through captive generation.

1) **Eligible technologies** are solar PV, wind, small-scale run-of-river hydro, and sustainable biomass and biogas systems.
2) **Eligible energy outputs** are electricity, thermal energy and mechanical power.
3) **Eligible contexts** are off-grid or isolated mini-grids; unreliable-grid connections with documented poor reliability historically requiring fossil backup; and captive behind-the-meter displacement of grid electricity by commercial, industrial or institutional facilities.

M.4.1.2 | A decentralised activity serving households or communities shall also comply with the context-specific principles of the CSA Activity Requirement

(AR 201) Part A. Where a suppressed-demand baseline is applied per the methodology, its use is limited to small-scale and microscale activities.

M.4.2 | Applicability and eligibility conditions

M.4.2.1 | **Baseline equipment:** For an activity displacing existing fossil gensets, the activity developer shall demonstrate that the baseline gensets were functioning and commercially viable before the activity start date.

M.4.2.2 | **Service level and affordability**: The DRE system shall provide a service level (availability, capacity, power quality and dispatchability) equal to or better than the baseline, at a cost to the end-user equal to or lower than the baseline.

M.4.3 | Activity Specific Safeguards

M.4.3.1 | Genset decommissioning and backup retention (leakage prevention).

1) **Full displacement:** Where the activity claims full replacement, the baseline gensets shall be verifiably decommissioned (rendered permanently inoperative) and shall not be sold or reused for any fossil combustion.

2) **Backup-retention exception:** The activity developer may retain baseline gensets solely for emergency backup, provided the retained units are sub-metered (continuous fuel-flow or runtime logging) and their fuel consumption is monitored and deducted as activity emissions.

M.4.3.2 | **E-Waste and Battery Supply Chain:**

1) A large or commercial DRE with storage greater than 5 MWh (> 5 MWh) shall meet the upstream-diligence and funded end-of-life requirements of M.2.3. A micro or small-scale DRE with storage of 5 MWh or less (≤ 5 MWh) shall procure from Tier-1 manufacturers and shall submit a localised end-of-life collection and safe-disposal plan appropriate to host-country waste infrastructure.

M.4.4 | VVB Evidentiary Guidance

M.4.4.1 | The VVB shall verify the nationally determined eligibility determination, confirming that the NDC or LT-LEDS cited is that in force at the start of the crediting period or at renewal as applicable, that the target, measure or sector relied upon appears in it, and that the stated case follows from it, applying the checklist of Section 2.3.2.5: (a) the instrument and its date of communication are cited; (b) the target, measure or sector relied upon is identified in that instrument; (c) the documented link between the activity and that target, measure or sector is stated; (d) the case selected under 2.3.2.2 follows from (a) to (c)

M.4.4.2 | The VVB shall verify, for a full-replacement activity, permanent decommissioning through physical inspection, geotagged evidence of destruction, and scrapping or disposal certificates.

M.4.4.3 | The VVB shall audit, for retained gensets, the sub-metering logs and fuel receipts confirming fossil use is deducted.

M.4.4.4 | The VVB shall validate grid-outage logs or utility reliability reports supporting an "unreliable grid" baseline claim.

M.5|END-USE ENERGY EFFICIENCY

M.5.1 | Scope and Boundary

M.5.1.1 | This module governs technology interventions that demonstrably reduce energy consumption and associated emissions in end-use sectors.

1) **Eligible sectors** are residential, commercial and public buildings; public infrastructure; and agricultural facilities and processes. Eligible interventions are building-envelope improvements (insulation, glazing); high-efficiency HVAC, lighting and appliances; public street lighting (e.g. LED retrofits); high-efficiency municipal utilities; and agricultural efficiency (high-efficiency irrigation pumps, mechanised processing motors, and agricultural thermal systems such as drying, heating and cold storage).

2) **Eligible intervention types** are the retrofit of existing assets or new construction significantly exceeding regulatory minimums.

NOTE — The new/first-use equipment rule (Section 2.3.3.a) applies to generation capacity additions; efficiency retrofits of existing technical systems are expressly permitted.

M.5.1.2 | Excluded are heavy industrial and manufacturing process efficiency (governed by AR 203) and interventions based solely on behavioural change without technological intervention.

M.5.2 | Applicability Conditions

M.5.2.1 | **Persistence of savings.** The activity design shall include formalised measures ensuring the long-term persistence of savings (e.g. multi-year maintenance contracts, automated fault detection, formalised occupant training).

M.5.2.2 | **Rebound effects.** The activity developer shall assess and account for potential rebound effects (e.g., an increase in the use of outputs or level of service resulting from the implementation of energy-efficient appliances), in accordance with the applied methodology.

M.5.3 | Activity-Specific Safeguards

M.5.3.1 | **Occupant health and indoor environmental quality**. An intervention shall not degrade indoor environmental quality. An activity significantly improving air-sealing shall demonstrate that host-country ventilation-rate standards are maintained. Thermal comfort shall remain adequate for the building's use.

M.5.3.2 | **Refrigerants and hazardous materials.** HVAC disposal, replacement and installation shall use refrigerants with zero ODP and a low-GWP; the venting of high-GWP refrigerants during decommissioning is prohibited. The disturbance of asbestos, lead or other hazardous materials shall follow rigorous safe-removal and disposal protocols.

M.5.3.3 | **Affordability.** An activity targeting multi-family residential sectors shall implement measures to prevent the displacement of low-income tenants resulting from the improvements.

M.5.4 | VVB Evidentiary Guidance

M.5.4.1 | The VVB shall verify the nationally determined eligibility determination, confirming that the NDC or LT-LEDS cited is that in force at the start of the crediting period or at renewal as applicable, that the target, measure or sector relied upon appears in it, and that the stated case follows from it, applying the checklist of Section 2.3.2.5: (a) the instrument and its date of communication are cited; (b) the target, measure or sector relied upon is identified in that instrument; (c) the documented link between the activity and that target, measure or sector is stated; (d) the case selected under 2.3.2.2 follows from (a) to (c)

M.5.4.2 | The VVB shall verify, for a street-lighting or lighting-retrofit activity, that post-intervention illuminance (lux) meets the applicable national or municipal standard, confirming savings do not arise from reduced service.

M.5.4.3 | The VVB shall audit host-country building codes, municipal lighting standards or agricultural-equipment efficiency mandates in force at the activity start date to confirm the intervention exceeds the legal baseline.

M.5.4.4 | The VVB shall verify that the measurement and verification approach follows a recognised framework (e.g. IPMVP); for a deemed-savings approach, the VVB shall audit the sampling plan and baseline-wattage assumptions.

M.5.4.5 | The VVB shall verify safe-disposal certificates from licensed contractors confirming that high-GWP refrigerants and hazardous materials were captured and destroyed rather than vented.

M.6|GREEN HYDROGEN PRODUCTION AND UTILIZATION

M.6.1 | Scope and Boundary

M.6.1.1 | This module governs activity producing green hydrogen and its derivatives (e.g. green ammonia, e-methanol, e-fuels) through water electrolysis powered exclusively by renewable electricity.

1) **Eligible utilisation** is the displacement of fossil fuels in hard-to-abate sectors (heavy transport, high-heat industry, maritime) or the displacement of existing grey or blue hydrogen used as an industrial feedstock.

2) Hydrogen produced from fossil fuels (grey, brown, blue) or from nuclear energy (pink) is not allowed.

M.6.2 | Applicability and eligibility conditions

M.6.2.1 | The activity developer shall meet all three of the following.

M.6.2.1.1 | **Pillar 1 — Additionality of electricity.** The renewable capacity used shall be demonstrably additional, through one of:

1) **Greenfield renewable capacity** — the renewable asset commenced operation no earlier than 36 months before electrolyser start-up (greenfield renewable capacity qualifies automatically);

2) **Financial linkage** — revenue from hydrogen production is decisive to the renewable asset's investment decision (demonstrated by PPA or financial modelling); or

3) **Curtailed energy** — the electricity is demonstrably curtailed grid energy; this pathway applies only where an existing renewable asset is used.

M.6.2.1.2 | **Pillar 2 — Temporal correlation.** Hydrogen production shall be matched with eligible renewable generation on an hourly or sub-hourly basis. Dedicated storage may facilitate matching where it is charged exclusively by the correlated renewable asset.

M.6.2.1.3 | **Pillar 3 — Geographic correlation.** The renewable asset and the electrolyser shall be located within the same electricity-market bidding zone or balancing area. Where they are located in adjacent zones, the activity developer shall provide evidence that no significant transmission constraint exists between them.

M.6.3 | Activity-Specific Safeguards

M.6.3.1 | **Water resource management**: The activity developer shall conduct a quantified water-risk assessment. In a region officially classified as high or extremely high water stress (e.g. via WRI Aqueduct), the extraction and use of fresh surface water or groundwater is prohibited; the activity

developer shall use sustainable alternatives (e.g. treated municipal wastewater, or desalinated seawater powered by additional renewable energy). Brine discharge shall comply with host-country environmental limits.

M.6.3.2 | **Safety:** The activity developer shall implement rigorous safety protocols and automated leak-detection systems for the production, storage and transport of hydrogen and its derivatives (e.g. ammonia), adhering to international standards (e.g. ISO 22734, NFPA 2), retained as a floor under Section 5.5.1.

M.6.3.3 | **System efficiency and fugitive emissions:** The activity developer shall prioritise high-efficiency electrolysis and shall monitor and minimise fugitive hydrogen emissions.

M.6.4 | VVB Evidentiary Guidance

M.6.4.1 | The VVB shall verify the nationally determined eligibility determination, confirming that the NDC or LT-LEDS cited is that in force at the start of the crediting period or at renewal as applicable, that the target, measure or sector relied upon appears in it, and that the stated case follows from it, applying the checklist of Section 2.3.2.5: (a) the instrument and its date of communication are cited; (b) the target, measure or sector relied upon is identified in that instrument; (c) the documented link between the activity and that target, measure or sector is stated; (d) the case selected under 2.3.2.2 follows from (a) to (c).

M.6.4.2 | Pillar 1 (Additionality/Curtailment): VVB audits Power Purchase Agreements (PPAs), commissioning certificates of the RE asset, or official grid operator curtailment logs to verify the electricity source meets the strict additionality or curtailment definitions.

M.6.4.3 | Pillar 2 (Temporal Matching): VVB audits high-resolution (hourly or sub-hourly) automated metering infrastructure (AMI) logs comparing the electrolyzer load profile directly against the generation profile of the correlated RE asset.

M.6.4.4 | Pillar 3 (Geographic Correlation): VVB reviews grid topology maps and balancing authority records to verify both assets reside in an unconstrained bidding zone.

M.6.4.5 | Water Sourcing & Brine Discharge: VVB verifies municipal water sourcing contracts, desalination plant permits, and brine discharge compliance reports to confirm no freshwater depletion occurred in water-stressed regions.

M.6.4.6 | Displacement Tracking: VVB audits off-taker contracts and consumption logs to verify the produced Green Hydrogen/Ammonia directly displaced fossil fuels or grey/blue hydrogen.

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