Draft VCS Methodology

M0333

REVISION TO ACM0002 GRID-CONNECTED ELECTRICITY GENERATION FROM RENEWABLE SOURCES

Draft Version

26 June 2025

Sectoral Scope 1: Energy (renewable/non-renewable)

This draft methodology was developed by Verra.

CONTENTS

1 SUMMARY DESCRIPTION

Additionality, Crediting Method, and Mitigation Outcome	
Additionality	Project Method
Crediting Baseline	Project Method
Mitigation Outcome	Reductions

The Clean Development Mechanism (CDM) methodology *ACM0002 Grid-connected Electricity Generation from Renewable Sources* applies to grid-connected renewable energy generation project activities.

This methodology revision expands the geographic eligibility of project activities and replaces key CDM tools with Verified Carbon Standard (VCS) tools.

This methodology revision must be used with the most recent version of *ACM0002*. The procedures and requirements of *ACM0002* must be applied unless indicated otherwise in this document.

2 SOURCES

This methodology revision applies to CDM methodology *ACM0002 Grid-connected Electricity Generation from Renewable Sources*. Project proponents must use this methodology revision in conjunction with the most recent version of *ACM0002*.

Project proponents using this methodology revision must make the following tool replacements throughout *ACM0002*:

- *TOOL01 Tool for the Demonstration and Assessment of Additionality* is replaced with VCS tool *VT0008 Additionality Assessment*
- *TOOL02 Combined Tool to Identify the Baseline Scenario and Demonstrate Additionality* is replaced with *VT0009 Combined Baseline and Additionality Assessment*
- *TOOL05 Baseline, Project and/or Leakage Emissions from Electricity Consumption and Monitoring of Electricity Generation* is replaced with *VT0010 Emissions from Electricity Consumption and Generation*
- *TOOL07 Tool to Calculate the Emission Factor for an Electricity System* is replaced with *VT0011 Electricity System Emission Factors*

3 DEFINITIONS

No changes or additions to *ACM0002*.

4 APPLICABILITY CONDITIONS

The following paragraphs replace the corresponding paragraphs in *ACM0002*:

2.1 Scope

...

4. Furthermore, the methodology applies to a grid-connected Greenfield pumped storage project (PSP) which is connected to a Greenfield renewable energy plant through a dedicated line ~~and/or through the grid~~.

5. ...

   (f) Install a Greenfield power plant together with a grid-connected Greenfield pumped storage power plant. The greenfield power plant ~~may~~ must be directly connected to the PSP through a dedicated line ~~or connected to the PSP through the grid~~.

In addition to the applicability conditions in Section 2.2 of *ACM0002*, the following applicability conditions must be met:

- For activities involving a wind power plant/unit, a geothermal power plant/unit, or a solar power plant/unit, the activity is located in a country classified as a low-income, lower-middle income, or upper-middle income economy by the World Bank[1] at the time of registration or crediting period renewal request, notwithstanding row 2 of Table 1[2] of the *VCS Standard*.

- For activities involving the integration of a renewable energy power plant with a battery energy storage system (BESS), the BESS and the power plant are located on the same site, directly connected to each other, and share a common connection to the grid. Both facilities are owned and operated by the same entity and are part of the same investment (financial) decisions.

[1] World Bank Country and Lending Groups, available at: https://datahelpdesk.worldbank.org/knowledgebase/articles/906519-world-bank-country-and-lending-groups

[2] The draft version of Row 2 of Table 1 is undergoing public consultation concurrently with this draft methodology consultation

- The VCS project documents indicate whether the following optional elements are applied or not:
  - Additionality demonstration in accordance with sections 5.4.2 (b) and (c) of the latest version of *VT0008*.
  - An ex-post emission factor in accordance with para 72 (b) of *VT0011* and para 42(b) of TOOL07. Please refer to Section 9.3 for further details.

5 PROJECT BOUNDARY

No changes or additions to *ACM0002*.

6 BASELINE SCENARIO

The following paragraph replaces the corresponding paragraph in *ACM0002*:

5.2.3 Baseline scenario for retrofit or rehabilitation or replacement of an existing power plant

...

5.2.3.1 Step 1: Identify realistic and credible alternative baseline scenarios for power generation

30. Apply Step 1 of ~~TOOL02~~ *VT0009*. The options considered should include:

(a) P1: The project activity not implemented as a ~~CDM~~ VCS project;

(b) P2: The continuation of the current situation, that is to use all power generation equipment that was already in use prior to the implementation of the project activity and undertaking business as usual maintenance. The additional power generated under the project would be generated in existing and new grid-connected power plants in the electricity system; and

(c) P3: All other plausible and credible alternatives to the project activity that provide an increase in the power generated at the site, which are technically feasible to implement. This includes, inter alia, different levels of replacement, retrofit and/or rehabilitation at the power plants/units. Only alternatives available to project participants should be taken into account.

7 ADDITIONALITY

The following paragraphs replace the corresponding paragraphs from *ACM0002*:

5.2.3.3. Step 3: Investment analysis

32. If this option is used, apply the following:

    (a) Apply an investment comparison analysis, as per Step 3 of ~~TOOL02~~ *VT0009*, if more than one alternative is remaining after Step 2 and if the remaining alternatives include scenarios P1 and P3;

    (b) Apply a benchmark analysis, as per ~~Step 2b of TOOL01~~ Step 3 (Option 2) of *VT0008*, if more than one alternative is remaining after Step 2 and if the remaining alternatives include scenarios P1 and P2.

5.3.2. Procedure to demonstrate additionality based on ~~the TOOL01~~ *VT0008*

36. The additionality of the project activity shall be demonstrated and assessed using ~~TOOL01~~ *VT0008* and applying the following three steps:

    (a) Step 1: Identify alternatives to the project activity

    (b) Step 3: Investment analysis

    (c) Step 4: Common practice analysis

In addition to the requirements of Section 5.3 in *ACM0002*, the following paragraphs apply:

- In addition to application of *VT0008*, regulatory surplus must be demonstrated in accordance with the VCS Program rules and requirements when assessing and demonstrating additionality.

8 QUANTIFICATION OF REDUCTIONS

8.1 Baseline Emissions

No changes or additions to *ACM0002*.

8.2 9.2Project Emissions

The following paragraphs replace the corresponding paragraphs in *ACM0002*:

5.4.4. Emissions from charging of a BESS using electricity from the grid or from fossil fuel electricity generators ($PE_{BESS,y}$)

…

49. In cases where BESS is charged using grid electricity, the corresponding project emissions ($PE_{BESS,y}$) shall be calculated according to the procedure described in ~~TOOL05 under option A2 (a) of Paragraph 20 (i.e. using a conservative emission factor of 1.3 t CO_2/MWh)~~ Scenario A: Grid Electrical System (Section 5.1) of *VT0010*.

50….

5.4.5. Emissions from utilizing grid electricity by pumped hydro plants ($PE_{PSP,y}$)

…

53. In cases where PSP utilizes grid electricity in excess to the production of the renewable power plant, the corresponding project emissions ($PE_{PSP,y}$) shall be calculated according to the procedure described in ~~TOOL05, using a conservative emission factor of 1.3 t CO_2/MWh as indicated under option A2(a) under paragraph 20 of TOOL05~~ Scenario A: Grid Electrical System (Section 5.1) of *VT0010*.

8.3 Leakage Emissions

No changes or additions to *ACM0002*.

8.4 Net Reductions and Removals

No changes or additions to *ACM0002*.

9 MONITORING

9.1 Data and Parameters Available at Validation

Data/Parameter	EF_{RES}
Data unit	$kgCO_2e/MWh$
Description	Default emission factor for emissions from reservoirs
Equations	(9)
Source of data	EB23
Value applied	100 $kgCO_2e/MWh$

Justification of choice of data or description of measurement methods and procedures applied	-
Purpose of data	Calculation of project *emissions*
Comments	N/A

9.2 Data and Parameters Monitored

Data/Parameter	$EG_{facility,y}$ $EG_{PJ\_Add,y}$
Data unit	MWh/yr
Description	Quantity of net electricity generation supplied by the project plant/unit to the grid in year *y* Quantity of net electricity generation supplied to the grid in year *y* by the project plant/unit that has been added under the project activity
Equations	(12), (14) (13)
Source of data	Direct measurement
Description of measurement methods and procedures to be applied	Direct measurement is required, which involves the use of electricity meters installed at the grid interface for electricity export to grid.
Frequency of **monitoring/ recording**	Monitor continuously, aggregate data at least monthly.
QA/QC procedures to be applied	Regularly test and calibrate the meters as per utility or national requirements and manufacturer specifications. Cross-check with receipts/invoices from utilities or suppliers where applicable. Propagate uncertainty according to instructions specific to the VCS methodology applied. For uncertainty of direct measurement, use the actual metering uncertainty specified by the error from the last calibration event or by the meter manufacturer where information from a previous calibration event is not available. For uncertainty of estimates, use zero for conservative estimates and a project-specific uncertainty for statistically significant estimates.

Purpose of data	Calculation of baseline emissions
Calculation method	For cumulative electricity meters, use the difference between initial and final readings and record the dates of each reading. Use linear interpolation where meter reading dates do not align with the monitoring period. Where historical data are used in the baseline, do one of the following: 1) Follow methodology-specific guidance. 2) Use at least three years of the most recent records. 3) Justify why older data are more appropriate. 4) Justify why a shorter data period is appropriate.
Comments	Where direct measurement is required but is temporarily not feasible due to technical or logistical constraints (e.g., lack of access to monitoring equipment, maintenance, remote or hazardous project locations), the project proponent may use estimation methods in line with *VT0010*. This must be accompanied by justification and a demonstration that the constraint is temporary and the chosen estimation method is conservative.

9.3 Description of the Monitoring Plan

The following paragraph replaces the corresponding paragraph in *ACM0002*:

83. In addition, the monitoring provisions in the tools referred to in this methodology apply. Accordingly, $EG_{facility,y}$~~,~~ and $EG_{PJ\_Add,y}$~~,~~ ~~should~~ must be determined as per the monitored parameter table in Section 9.2 in this document and $EC_{BESS,y}$ and $EC_{PSP,y}$ ~~should~~ must be determined as per paragraphs 49 and 53 respectively in Section 8.2 of this document.~~TOOL05, and~~ $EF_{grid,CM,y}$ and $PE_{FF,y}$ ~~should~~ must be determined as per ~~TOOL07~~ *VT0011* and *TOOL03* respectively.

In addition to the requirements of Section 6 in *ACM0002*, the following paragraphs apply:

- Project developers may select the ex-ante or ex-post option in the project description document as per *VT0011* when calculating $EF_{grid,CM,y}$. Project developers seeking eligibility for CCP labels[3] must choose the ex-post option for calculating both the Operating Margin (OM) and Build Margin (BM) emission factors (i.e., annual update for BM), which means that both the OM and the BM emission factors and the resulting Combined Margin (CM) emission factor must be calculated on an annual basis (at a minimum) and indicated in monitoring reports.

[3] CCP label eligibility is contingent on assessment and approval of a final version of this methodology revision by the ICVCM. The option contemplated in this paragraph has been provided for indicative purposes but does not mean this approach is endorsed by the ICVCM.

10 REFERENCES

Not applicable.

DOCUMENT HISTORY

Version	Date	Comment
draft	26 05 2025	Public Consultation Version