JCM Proposed Methodology Form

Cover sheet of the Proposed Methodology Form	

Form for submitting the proposed methodology

Host Country	Costa Rica
Name of the methodology proponents submitting this form	Institute for Global Environmental Strategies
Sectoral scope(s) to which the Proposed Methodology applies	1. Energy industries (renewable-/non-renewable sources)
Title of the proposed methodology, and version number	Installation of Solar PV System, Ver. 01.0
List of documents to be attached to this form (please check):	☐The attached draft JCM-PDD: ☒Additional information
Date of completion	12/06/2017

History of the proposed methodology

Version	Date	Contents revised
01.0	12/06/2017	First edition

A. Title of the methodology

Installation of Solar PV System, Ver. 01.0

B. Terms and definitions

Terms	Definitions
Solar photovoltaic (PV) system	An electricity generation system which converts sunlight into electricity by the use of photovoltaic (PV) modules. The system also includes ancillary equipment such as inverters required to change the electrical current from direct current (DC) to alternating current (AC).

C. Summary of the methodology

Items	Summary
GHG emissions reduction measures	Displacement of national grid electricity and/or captive electricity by installation and operation of solar PV system(s).
Calculation of reference emissions	Reference emissions are calculated on the basis of the AC output of the solar PV system(s) multiplied by either: 1) conservative emission factor of the national grid; or 2) conservative emission factor of the captive diesel power generator.
Calculation of project emissions	Project emissions are the emissions from the solar PV system(s), which are assumed to be zero.
Monitoring parameters	The quantity of the electricity generated by the project solar PV system(s).

D. Eligibility criteria

This methodology is applicable to projects that satisfy all of the following criteria.

Criterion 1	The project installs solar PV system(s).
Criterion 2	The PV modules obtained a certification of design qualifications (IEC 61215, IEC 61646 or IEC 62108) and safety qualification (IEC 61730-1 and IEC

	61730-2).
Criterion 3	The equipment used to monitor output power of the solar PV system(s) and irradiance is installed at the project site.

E. Emission Sources and GHG types

Reference emissions	
Emission sources	GHG types
Consumption of national grid electricity and/or captive electricity	CO_2
Project emissions	
Emission sources	GHG types
Generation of electricity from the solar PV system(s)	N/A

F. Establishment and calculation of reference emissions

F.1. Establishment of reference emissions

The default emission factors are set in a conservative manner based on the Costa Rican national grid and the most efficient heat efficiency of a diesel power generator to ensure net emission reductions.

In order to identify the emission factor based on the national grid simplistically and secure net emission reductions, this methodology applies the conservatively calculated emission factor of a diesel-fired power plant based on a default heat efficiency of 49%, an efficiency level which is above the value of the world's leading diesel power generators, to the actual electricity dispatched from diesel power plants to the national grid in the year 2013-2015.

In case the PV system(s) in a proposed project is connected to the national grid including through internal grid which is not connected to a captive power generator, or the PV system(s) in a proposed project is connected to internal grid which is connected to both the national grid and a captive power generator, the value is set to be 0.255 tCO_2/MWh, which is lower than the latest official emission factor calculated for a CDM project in Costa Rica, which is 0.273 tCO_2/MWh (combined margin, 2010-2012).

In case the PV system(s) in a proposed project is connected to an internal grid which is not

connected to the national grid, the emission factor of a diesel generator calculated by applying the most efficient heat efficiency of 49%, an efficiency level which has not been achieved yet by the world's leading diesel generator is applied, which is set to 0.533 tCO_2/MWh.

F.2. Calculation of reference emissions

$$RE_p = \sum_i (EG_{i,p} \times EF_{RE,i})$$

RE_p : Reference emissions during the period *p* [tCO_2/p]
$EG_{i,p}$: Quantity of the electricity generated by the project solar PV system *i* during the period *p* [MWh/p]
$EF_{RE,i}$: Reference emission factor for the project solar PV system *i* [tCO_2/MWh]

G. Calculation of project emissions

$$PE_p = 0$$

PE_p : Project emissions during the period *p* [tCO_2/p]

H. Calculation of emissions reductions

$$ER_p = RE_p - PE_p$$
$$= RE_p$$

ER_p : Emission reductions during the period *p* [tCO_2/p]
RE_p : Reference emissions during the period *p* [tCO_2/p]
PE_p : Project emissions during the period *p* [tCO_2/p]

I. Data and parameters fixed *ex ante*

The source of each data and parameter fixed *ex ante* is listed as below.

Parameter	Description of data	Source

$EF_{RE,i}$	Reference emission factor for the project solar PV system *i*. The value for $EF_{RE,i}$ is selected from the emission factor based on the national grid ($EF_{RE,grid}$) or based on captive diesel power generator ($EF_{RE,cap}$) in the following manner: In case the PV system(s) in a proposed project is connected to the national grid including through internal grid which is not connected to a captive power generator, $EF_{RE,grid}$: 0.255 tCO_2/MWh is applied. In case the PV system(s) in a proposed project is connected to internal grid which is connected to both the national grid and a captive power generator, $EF_{RE,grid}$: 0.255 tCO_2/MWh is applied. In case the PV system(s) in a proposed project is connected to an internal grid which is not connected to the national grid, $EF_{RE,cap}$: 0.533 tCO_2/MWh is applied.	Additional information. The default value is revised if deemed necessary by the JC.