JCM Project Design Document Form

A. Project description

A.1. Title of the JCM project

Small Scale Solar Power Plants for Schools in Island States

A.2. General description of project and applied technologies and/or measures

The proposed JCM project aims to reduce CO_2 emissions by introducing a total of 155.025kW grid-connected solar photovoltaic (PV) systems at two sites: 51.675kW on top of the gymnasium of Palau Seventh-Day Adventist Elementary School in Koror State (hereinafter "Site A"), and 103.350kW on top of the gymnasium of Palau Mission Academy in Airai State (hereinafter "Site B"). The solar PV systems replace the grid electricity derived from diesel. The power generated by the solar PV system is basically self-consumed. When there is surplus power, it is exported to the gird utilizing the net-metering scheme*. A remote monitoring system to monitor the performance of the system is also installed. * This scheme allows end users to send surplus electricity generated by renewable energy to the grid. The electricity sent to the grid offsets the electricity consumed from the grid.

A.3. Location of project, including coordinates

Country	Republic of Palau
Region/State/Province etc.:	Site A: Koror State Site B: Airai State
City/Town/Community etc:	Site A: Madalaii Hamlet Site B: Ngerikiil Hamlet
Latitude, longitude	Site A: N 7°20'29" and E 134°28'36" Site B: N 7°22'31" and E 134°33'28"

A.4. Name of project participants

The Republic of Palau	Palau Adventist Schools
Japan	Pacific Consultants Co., Ltd. (PCKK)

A.5. Duration

Starting date of project operation	Site A: 08/02/2016 Site B: 12/02/2016
Expected operational lifetime of project	Site A: 20 years Site B: 20 years

A.6. Contribution from developed countries

The proposed project was partially supported by the Ministry of the Environment, Japan through the financing programme for JCM model projects which provided financial supports up to 50% of initial investment for the projects in order to acquire JCM credits.
As for technology transfer, capacity building on operation and monitoring has been provided by PCKK in conjunction with a local engineering company.

B. Application of an approved methodology(ies)

B.1. Selection of methodology(ies)

Selected approved methodology No.	PW-AM001
Version number	Ver. 1.0

B.2. Explanation of how the project meets eligibility criteria of the approved methodology

Eligibility criteria	Descriptions specified in the methodology	Project information
Criterion 1	The project installs solar PV system(s).	A solar PV system is installed at each site. The solar PV module employed is Kyocera KU265-6MCA. The inverter employed is SMA Sunny Boy 10000TL-US.
Criterion 2	The solar PV system is connected to the internal power grid of the project site and/or to the grid for displacing grid electricity and/or captive electricity at the project site.	The solar PV system of each site is connected to the internal power grid of the project site and to the grid. The system displaces grid electricity.
Criterion 3	The PV modules have obtained a certification of design qualifications (IEC 61215, IEC 61646 or IEC 62108) and safety qualification (IEC 61730-1 and IEC 61730-2).	The installed PV module (Kyocera KU265-6MCA) has obtained a certification of design qualifications (IEC 61215) and safety qualification (IEC 61730-1 and IEC 61730-2).
Criterion 4	The equipment to monitor output power of the solar PV system and irradiance is installed at the project site.	The Sunny SensorBoxes are installed at the project sites to measure irradiance. An electricity meter is installed at each site to measure output power of the solar PV system.

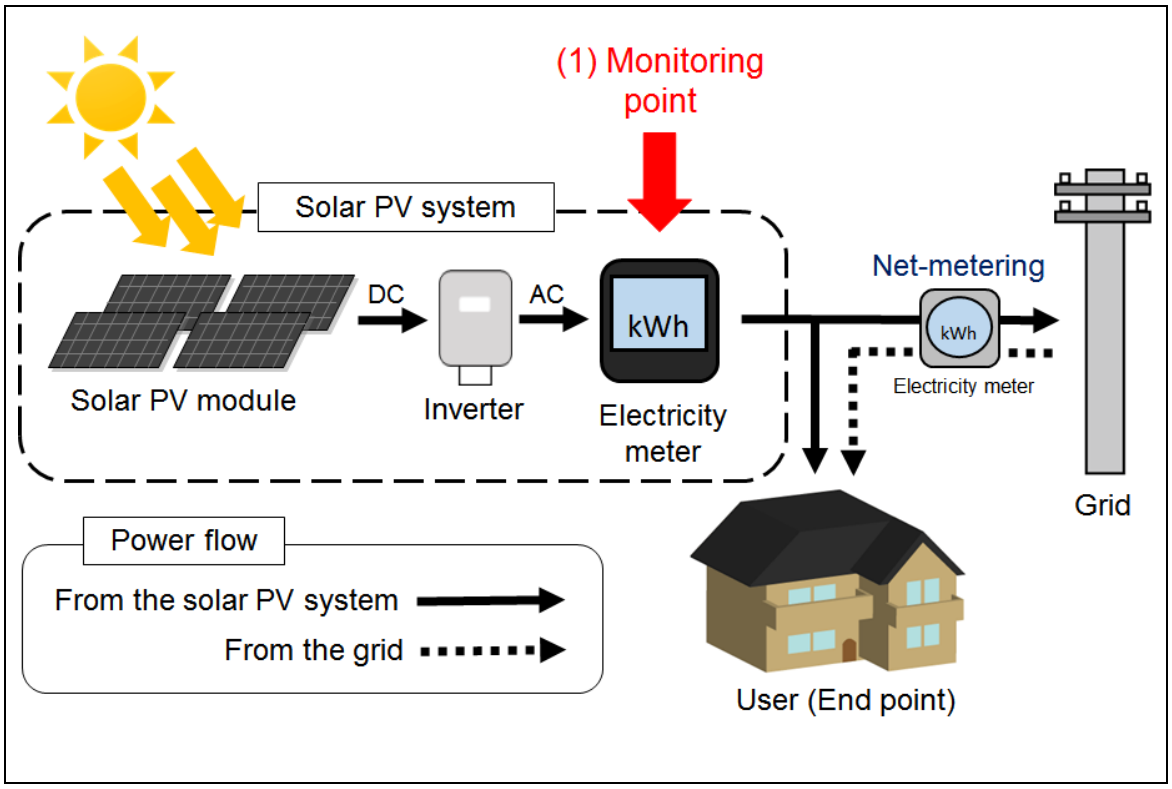
C. Calculation of emission reductions

C.1. All emission sources and their associated greenhouse gases relevant to the JCM project

Reference emissions	
Emission sources	GHG type

Consumption of grid electricity	CO_2
Project emissions	
Emission sources	GHG type
Generation of electricity from solar PV system(s)	N/A

C.2. Figure of all emission sources and monitoring points relevant to the JCM project



C.3. Estimated emissions reductions in each year

Year	Estimated Reference Emissions (tCO_{2e})	Estimated Project Emissions (tCO_{2e})	Estimated Emission Reductions (tCO_{2e})
2016	99.15	0	99.15
2017	111.59	0	111.59
2018	111.59	0	111.59
2019	111.59	0	111.59
2020	111.59	0	111.59
Total (tCO_{2e})	545.51	0	545.51

D. Environmental impact assessment	
Legal requirement of environmental impact assessment for the proposed project	NO

E. Local stakeholder consultation

E.1. Solicitation of comments from local stakeholders

The main stakeholders of the project are employees of the schools. In order to collect comments from these stakeholders, the project participants requested face-to-face interviews.

Date and time	Venue	Participants
14 September 2015 13:30-15:00	Meeting room of Palau Mission Academy	Project manager, mechanic and other employees

E.2. Summary of comments received and their consideration

Stakeholders	Comments received	Consideration of comments received
Employees of Palau Adventist Schools	What will happen if the electricity demand at end point increases in the future?	PCKK explained that the solar power system will be connected to the grid, therefore the school can buy electricity from the grid when the produced electricity is not enough to cover their demand. The questioner was eventually convinced.
Employees of Palau Adventist Schools	How will the PV system be affected by weather?	PCKK explained that the electricity productivity will decrease to 30-40 % in a cloudy day, but also system output will drop with high temperature. The questioner was eventually convinced.

F. References

N/A

Reference lists to support descriptions in the PDD, if any.

Annex
N/A

Revision history of PDD		
Version	Date	Contents revised
01.0	08/02/2016	First edition
02.0	07/03/2016	Second edition
03.0	22/03/2016	Third edition