JCM Project Design Document Form

A. Project description

A.1. Title of the JCM project

Small scale solar power plants for commercial facilities 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 370.5kW grid-connected solar photovoltaic (PV) systems at two sites; 220.5kW on top of the ACE warehouse buildings of Western Caroline Trading Company (hereinafter "Subproject 1"), and 150kW on top of the Surangel Supercenter building of Surangel and Sons Company (hereinafter "Subproject 2"). 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.:	Koror State
City/Town/Community etc:	N/A
Latitude, longitude	Subproject 1: N 7° 21’ 01.9” and E 134° 28’ 48.4” Subproject 2: N 7° 20’ 30.6” and E 134° 28’ 41.9”

A.4. Name of project participants

The Republic of Palau	Subproject 1: Western Caroline Trading Company Subproject 2: Surangel and Sons Company
Japan	Pacific Consultants Co., Ltd. (PCKK) InterAct Inc.

A.5. Duration

Starting date of project operation	Subproject 1: 23/10/2014 Subproject 2: 04/12/2014
Expected operational lifetime of project	Subproject 1: 20 years Subproject 2: 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	1.0

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

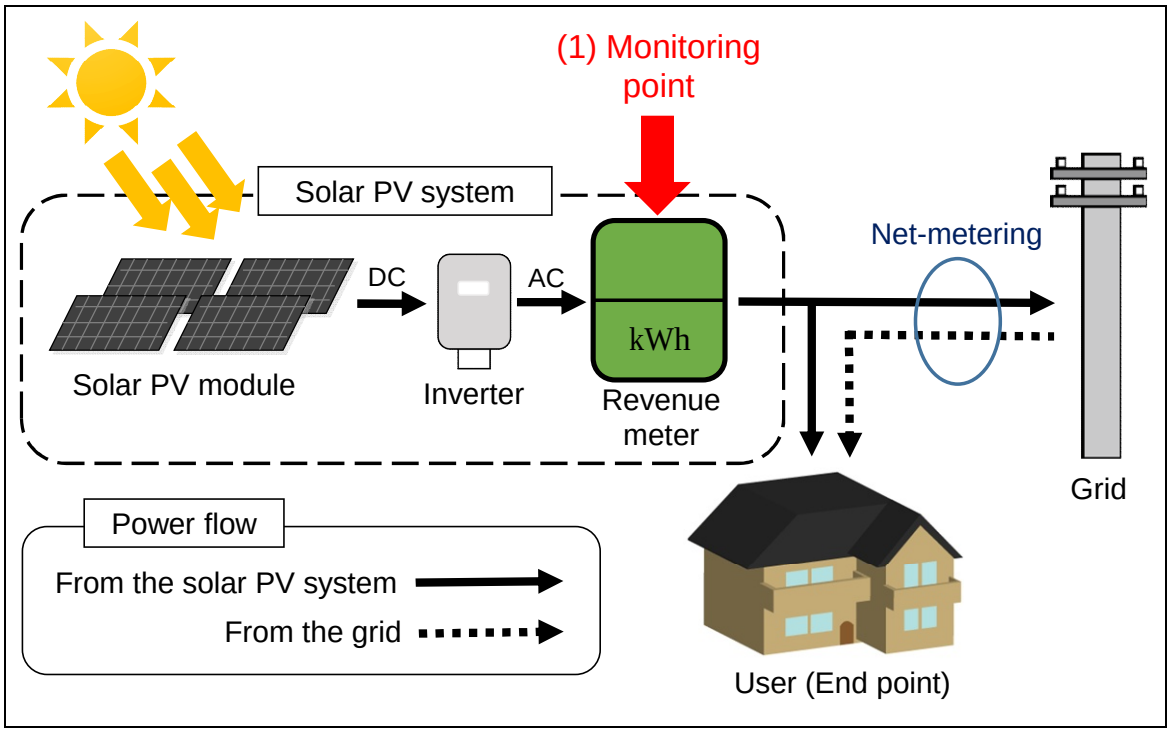
Eligibility criteria	Descriptions specified in the methodology	Project information
Criterion 1	The project installs solar PV system(s).	Both subprojects install a solar PV system. The solar PV module employed is Kyocera KD250GX-LFB2.
Criterion 2	The solar PV system is connected to the internal power 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 both subprojects is connected to the internal power grid of the project site. The system of Subproject 1 displaces grid electricity. The system of Subproject 2 displaces grid electricity and captive electricity at the project site.
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 KD250GX-LFB2) 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 installed inverters measure the output power of the solar PV system. The Sunny SensorBoxes are installed at the project sites to measure irradiance. The Sunny WebBoxes are installed at the project sites to gather and monitor data measured by the inverters and Sunny SensorBoxes. A Green Class Meter is installed for each subproject at the point where the solar PV power feeds into the internal grid of the project site to measure the quantity of the power.

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 and/or captive 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})
2014	36.82	0	36.82
2015	259.48	0	259.48
2016	259.48	0	259.48
2017	259.48	0	259.48
2018	259.48	0	259.48
2019	259.48	0	259.48

2020	259.48	0	259.48
Total (tCO_{2e})	1,593.70	0	1,593.70

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 the power utility (PPUC) and regulatory organization for the power sector (Energy Office). In order to collect comments from the stakeholders, the project participants requested face-to-face interviews.

#	Date	Venue	Method
1	28 October 2014	Meeting room in the building of the Surangel Supermarket	Face-to-face interview
2	29 October 2014	Meeting room of Bureau of Land and Survey	Face-to-face interview

E.2. Summary of comments received and their consideration

Stakeholders	Comments received	Consideration of comments received
Renewable energy manager of PPUC	We have no issues with the project. If you require any data from PPUC regarding the project, we will do our best to accommodate.	No actions are required.
Official of Palau Energy Office	Does the government of Palau need to make some kind of contribution to implement the project?	PCKK explained that the project is partially financed through a scheme of the Japanese Government and all remaining costs were covered by project participants.

F. References

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

Annex
Annex 1: Estimated emissions reductions in each year for each subproject

Revision history of PDD		
Version	Date	Contents revised
01.0	03/03/2015	First edition
02.0	17/03/2015	Second edition
03.0	26/03/2015	Third edition: Monitoring Spreadsheet was revised.

JCM Project Design Document

Small scale solar power plants for commercial facilities in island states

Annex 1: Estimated emissions reductions in each year for each subproject

1. Estimated emissions reductions in each year for each subproject

Estimated emissions reductions in each year for subproject 1 and 2 are shown below. Subproject 1 has been in operation since 23 October 2014. Subproject 2 has been in operation since 4 December 2014. The values of 2014 are derived from the actual monitoring results.

Table 1. Estimated emissions reductions in each year (subproject 1)

Year	Estimated Reference emissions (tCO_{2e})	Estimated Project Emissions (tCO_{2e})	Estimated Emission Reductions (tCO_{2e})
2014	28.05	0	28.05
2015	154.43	0	154.43
2016	154.43	0	154.43
2017	154.43	0	154.43
2018	154.43	0	154.43
2019	154.43	0	154.43
2020	154.43	0	154.43
Total (tCO_{2e})	954.63	0	954.63

Table 2. Estimated emissions reductions in each year (subproject 2)

Year	Estimated Reference emissions (tCO_{2e})	Estimated Project Emissions (tCO_{2e})	Estimated Emission Reductions (tCO_{2e})
2014	8.77	0	8.77
2015	105.05	0	105.05
2016	105.05	0	105.05
2017	105.05	0	105.05
2018	105.05	0	105.05
2019	105.05	0	105.05
2020	105.05	0	105.05
Total (tCO_{2e})	639.07	0	639.07