JCM Validation Report Form

A. Summary of validation

A.1. General Information

Title of the project	Introduction of 0.4MW Rooftop Solar Power System in Supermarket and Hotel
Reference number	PW004
Third-party entity (TPE)	Japan Management Association (JMA)
Project participant contracting the TPE	Sharp Energy Solutions Corporation
Date of completion of this report	19/03/2020

A.2 Conclusion of validation

Overall validation opinion	☒ Positive ☐ Negative

A.3. Overview of final validation conclusion

Only when all of the checkboxes are checked, overall validation opinion is positive.

Item	Validation requirements	No CAR or CL remaining
Project design document form	The TPE determines whether the PDD was completed using the latest version of the PDD forms appropriate to the type of project and drafted in line with the Guidelines for Developing the Joint Crediting Mechanism (JCM) Project Design Document, Monitoring Plan and Monitoring Report.	☒
Project description	The description of the proposed JCM project in the PDD is accurate, complete, and provides comprehension of the proposed JCM project.	☒
Application of approved JCM methodology (ies)	The project is eligible for applying applied methodology and that the applied version is valid at the time of submission of the proposed JCM project for validation.	☒
Emission sources and calculation of emission reductions	All relevant GHG emission sources covered in the methodology are addressed for the purpose of calculating project emissions and reference emissions for the proposed JCM project.	☒
	The values for project specific parameters to be fixed *ex ante* listed in the Monitoring Plan Sheet are appropriate, if applicable.	☒
Environmental impact assessment	The project participants conducted an environmental impact assessment, if required by the Republic of Palau in line with Palauan procedures.	☒
Local stakeholder consultation	The project participants have completed a local stakeholder consultation process and that due steps were taken to engage stakeholders and solicit comments for the proposed	☒

Item	Validation requirements	No CAR or CL remaining
	project.	
Monitoring	The description of the Monitoring Plan (Monitoring Plan Sheet and Monitoring Structure Sheet) is based on the approved methodology and/or Guidelines for Developing the Joint Crediting Mechanism (JCM) Project Design Document, Monitoring Plan, and Monitoring Report. The monitoring points for measurement are appropriate, as well as whether the types of equipment to be installed are appropriate if necessary.	☒
Public inputs	All inputs on the PDD of the proposed JCM project submitted in line with the Project Cycle Procedure are taken into due account by the project participants.	☒
Modalities of communications	The corporate identity of all project participants and a focal point, as well as the personal identities, including specimen signatures and employment status, of their authorized signatories are included in the MoC.	☒
	The MoC has been correctly completed and duly authorized.	☒
Avoidance of double registration	The proposed JCM project is not registered under other international climate mitigation mechanisms.	☒
Start of operation	The start of the operating date of the proposed JCM project does not predate January 13, 2014.	☒

Authorised signatory:	Mr. ☒ Ms. ☐
Last name: Inoue	First name: Tadashi
Title: Senior Executive of GHG Certification Center, JMA	
Specimen signa [redacted]	Date: 19/03/2020

B. Validation team and other experts

	Name	Company	Function*	Scheme competence*	Technical competence*	On-site visit
Mr. ☒ Ms. ☐	Motoyuki Matsumoto	JMA	Team Leader	☒	Technical competence qualified	☐
Mr. ☒ Ms. ☐	Toshiaki Takeda	JMA	Team Member	☒	Technical competence qualified	☐
Mr. ☒ Ms. ☐	Kenji Suzuki	JMA	Internal Reviewer	☒	Technical competence qualified	☐
Mr. ☐ Ms. ☐				☐		☐

Please specify the following for each item.

* *Function: Indicate the role of the personnel in the validation activity such as team leader, team member, technical expert, or internal reviewer.*
* *Scheme competence: Check the boxes if the personnel have sufficient knowledge on the JCM.*
* *Technical competence: Indicate if the personnel have sufficient technical competence related to the project under validation.*

C. Means of validation, findings, and conclusion based on reporting requirements

C.1. Project design document form

<Means of validation>

The PDD (Ref.1) was checked against the "JCM Guidelines for Developing Project Design Document (PDD) and Monitoring Report (MR) (JCM_PW_GL_PDD_MR_ver01.0) (Ref.14)."

Review history of the PDD is as follows.

- PDD version 1: PDD was submitted to validation team on 23th Jan.2020.
- PDD version 2: PDD was revised on 2nd Mar. 2020 based on the change of the project.
- PDD version 3: PDD was revised on 13th Mar. 2020 based on the desk review.
- PDD version 4: PDD was revised on 19th Mar. 2020 based on the change.

PDD version 4 (Ref.1-4) is the final version.

Validation team confirmed that the latest version of the PDD form was used for the PDD, and also, the form of Monitoring Spreadsheet (JCM_PW_AM001_ver01.0) approved as a methodology by Joint Committee (Ref.2) was used for the proposed project.

<Findings>

Please state if CARs, CLs, or FARs are raised, and how they are resolved.

No CAR, CL, or FAR were raised for this section.

<Conclusion based on reporting requirements>

Please state conclusion based on reporting requirements.

Validation team confirmed that the PDD was completed using the latest version of the PDD form and developed in accordance with the "JCM Guidelines for Developing PDD and MR."

C.2. Project description

<Means of validation>

The PDD outlines the proposed project as below:

1) It installs a total of 427.46kW grid-connected solar photovoltaic (PV) systems at the two project sites: 351.48kW at the supermarket and 75.98 kW at West Plaza Hotel in Republic of Palau.

2) The power generated by the solar PV systems is basically self-consumed at each project site and its surplus power is exported to the grid, and thus reduces GHG emissions by replacing the grid and captive electricity mostly derive from diesel generators.

Validation team conducted the assessment with the step below by following "JCM Guidelines for Validation and Verification (JCM_PW_GL_VV_ver01.0) (Ref.13)."

- Document review was conducted using the checklist based on the "JCM Guidelines for Validation and Verification (Ref.13)."
- Follow-up interviews with Project Participants (PPs) were conducted.
- Remaining issues including the response of CLs were checked with references.

Validation team did not conduct a site visit considering the following:

1) Project information obtained through the site visit is limited, as the solar PV system has not yet been installed at the two project sites.

2) Japan Management Association (JMA) has an experience of validating the three JCM projects in Republic of Palau (PW001~003) with the same applied methodology (JCM_PW_AM001_ver01.0) and the same technology (Introduction of solar PV system) as the proposed JCM project (PW004).

3) JMA has experiences of validating JCM projects in Palau with Pacific Consulting Co., Ltd. and Western Caroline Trading Company.

Each section in the PDD was checked as follows through document review and interviews with PPs.

Two CLs were raised and resolved in the below Findings.

A.1, 2:

Validation team conducted review of specification sheets of project equipment and relevant drawings (Ref. 3-1-1~8), and confirmed that the PDD correctly specified the installed capacities

of the two project sites, and the installed solar PV systems reduce GHG emissions by replacing grid and captive electricity. Installation of the monitoring equipment addressed in the PDD was also confirmed through review of above references and interview with PPs.
Validation team raised CL1 regarding replacement of captive electricity with the solar PV system electricity at each site.
A.3:
Locations of the two project sites were checked with Google map system on website.
Validation team concluded that the PDD correctly identified the locations of the two project sites.
A.4:
PPs' names of the proposed project from the two countries (Republic of Palau and Japan) were checked through interviews with PPs and by checking the Modalities of communications (MoC) (Ref.8-1). Validation team concluded the PDD correctly listed PPs' names of the proposed project.
A.5:
Ten (10) years of expected operational lifetime for the proposed project was checked with document review of the inverter specification sheet (Ref. 3-1-5) and interviews with PPs.
CL2 was raised regarding the warranty of the PV module.
"Starting date of project operation" is validated in section C.10.
A.6:
Financial support by the Ministry of the Environment, Japan was checked through document review of "Notification of grant decision of JCM financing support program issued by the Ministry of the Environment, Japan (Ref.3-5)" and interviews with PPs.
Validation team concluded the PDD correctly provided information on "Contribution from Japan."
<Findings>
Please state if CARs, CLs, or FARs are raised, and how they are resolved.
CL1:
It was requested to PPs to clarify whether the captive power electricity is also replaced with the solar PV system electricity at each site.
⇒Summary of Response and Validation team Conclusion：
PPs informed in the response/answer sheet (Ref.10) that the captive power electricity also be replaced with the solar PV system electricity at the two sites, and revised relevant PDD sections appropriately.
Validation team confirmed the above revision and closed CL1.
CL2:
It was requested to PPs to submit limited warranty of the PV module to be issued by the

manufacturer.
⇒Summary of Response and Validation team Conclusion：
PPs submitted “Product Supply Agreement (Ref.12)”, in which the limited warranty of the PV module is specified to be 25 years on the degradation of the module.
Validation team assessed that it is appropriate and reasonable that the PDD specified the expected operational life of the proposed project to be 10 years, based on the limited warranty of the inverter (10 years) and the PV module (25 years). CL2 was closed.
<Conclusion based on reporting requirements>
Please state conclusion based on reporting requirements.
Validation team confirmed that information on the proposed project provided in the PDD is accurate and complete.

C.3. Application of approved methodology(ies)

<Means of validation>
Approved methodology "Displacement of Grid and Captive Genset Electricity by a Small-scale Solar PV System, Ver. 01.0 (Ref. 2)" is applied to the proposed project. The methodology was approved by the Joint Committee on 20 Feb 2015.
Validity of the version of the applied methodology was confirmed by checking JCM website.
Validation team assessed whether the proposed project is eligible for applying the selected methodology.
Validation team conducted the assessment for each criterion of the applied methodology with the step below by following “JCM Guidelines for Validation and Verification (Ref.13).”
- Document review was conducted using the checklist based on the “JCM Guidelines for Validation and Verification (Ref.13)”.
- Follow-up interviews with PPs were conducted.

Criterion 1:
-Description specified in the methodology: “The project installs solar PV system(s).”
-Assessment for Criterion 1:
Validation team reviewed technical specification sheets of the solar PV systems of the proposed project (Ref. 3-1-1~8) and interviewed with PPs. As a result, validation team confirmed that the proposed project satisfied Criterion 1 as below:
1) The solar PV system consists of PV modules (Sharp NU-AD290) and inverters (SMA Sunny Tripower 30000TL-US) are installed at the supermarket and the hotel.
2) The install capacities of the PV systems of the two project sites (351.48kW and 75.98 kW) are consistent with those specified in the PDD.
CL3 was raised regarding a project contract.

Criterion 2:

-Description specified in the methodology: “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.”

-Assessment for Criterion 2:

Validation team reviewed “Single wire connection diagrams (Ref.3-1-4)” and “Approval of application of Renewal Energy System (Ref.3-2)”, and interviewed with PPs.

As a result, validation team confirmed that the proposed project satisfied Criterion 2 as below:

1) The solar PV system is connected to the internal grid of the project site and to the grid for displacing grid and captive electricity at the two project sites.

Criterion 3:

-Description specified in the methodology: “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).”

-Assessment for Criterion 3:

Validation team reviewed “Test report: Certificate for design qualification (IEC61215) and safety qualification (IEC 61730-1 and IEC 61730-2) (Ref.3-6-1).”

As a result, validation team confirmed that the proposed project satisfied Criterion 3 as below:

1) PV module (Sharp NU-AD290) has obtained the required qualifications for design and safety.

Criterion 4:

-Description specified in the methodology: “The equipment to monitor output power of the solar PV system and irradiance is installed at the project site.”

-Assessment for Criterion 4:

Validation team reviewed “Monitoring system configurations of the solar PV systems of the two project sites (Ref. 3-1-3)”, “Single wire connecting diagrams of the two project sites (Ref.3-1-4)”, “Specification of the electricity meter (Ref. 3-1-7)” and “Specification of the pyranometer (Ref.3-1-8).” .

As a result, validation team confirmed that the proposed project satisfied Criterion 3 as below:

1) The electricity meter and the pyranometer with a remote monitoring system are installed at the two project sites.

<Findings>

Please state if CARs, CLs, or FARs are raised, and how they are resolved.

CL3:

CL3 was raised to request PPs to provide a project contract to ensure that the proposed project is implemented as planned in the PDD.

⇒Summary of Response and Validation team Conclusion：

PPs instead provided “Product Supply Agreement (Ref.12)” (PSA). Through review of the PSA, validation team confirmed that the PV modules and the Inverters are supplied by the vendor, and the proposed project is implemented as planned.
CL3 was closed.

<Conclusion based on reporting requirements>

Please state conclusion based on reporting requirements.

Validation team concluded that the proposed project meets the eligible criteria of the applied methodology and therefore, is eligible for applying the methodology of which version was valid at the time of submission for validation.

C.4. Emission sources and calculation of emission reductions

<Means of validation>

Through desk review of the references (Ref. 3-1-4, 3-2 and 12) and interview with PPs, validation team assessed conformance of the PDD descriptions of the reference and project emissions, with the applied methodology (Ref.2) that:

1) The PDD appropriately specified “Consumption of grid electricity and captive electricity” as the reference emission sources of the proposed project. Electricity generated by the solar PV systems, and consumed at the project sites, corresponds to electricity otherwise generated by grid and captive power, and consumed.

2) CO2 is appropriately specified in the PDD as the GHG type of the reference emissions, since diesel oil is used for generation of grid and the captive electricity

3) The PDD appropriately specified “Generation of electricity from solar PV system(s)” as the project emission sources of the proposed project, as the proposed project installs solar PV systems and generate electricity.

4) As the GHG type of the project emissions, N/A is appropriately specified in the PDD, since solar PV systems are considered to develop no emissions. Validation team, however, identified the electricity consumption by inverters during night as the project emission source, not addressed in the methodology. Validation team assessed the electricity consumption is negligible as it is estimated at 1W/unit/night in the manufacturer specification (Ref. 3-1-5).

As a result, validation team assessed that the descriptions of the PDD fully covered emission sources and GHG types complying with the methodology correctly reflecting the context of the proposed project.

Validation team checked the Monitoring Plan Sheet (MPS) provided by PPs, against the Monitoring Plan Sheet of the applied methodology (JCM_PW_AM001_ver01.0) (Ref.2) and the PDD (Ref.1).

Validation team conducted interviews with PPs to check actual status of the proposed project and reviewed the “Emission Calculation Sheets (Ref.9-1)” (ECS).

As a result, validation team confirmed following:
1) The MPS is developed using the latest version of the methodology, not altered, and the required fields are all appropriately filled in.
2) The MPS appropriately applied 0.533 tCO2/MWh as the reference emission factor fixed ex-ante derived from the applied methodology. The proposed project replaces grid and captive electricity which complies with the condition specified in (b) "Description of data" of the MPS of the applied methodology.
3) The MPS specified the project emission to be zero, according to its definition in the PDD.
4) The ECS correctly estimated daily electricity generation by site (kW/day/site), based on the appropriated irradiation data sourced from "Meteonorm (Ref.9-2)" and some electricity loss factors historically obtained by PPs. The ECS then correctly estimated monthly electricity (kW/month) and with use of the reference emission factor 0.533 tCO2/MWh, monthly emissions (tCO2/month).
As a result, the ECS appropriately estimated the annual electricity generation (534.85 MWh/p) and the annual emission reductions (285.1 tCO2/p).
Validation team confirmed these two estimates are reported in the MPS appropriately.
CL4 was raised regarding the reference of irradiance data.

<Findings>

Please state if CARs, CLs, or FARs are raised, and how they are resolved.

CL4:
CL4 was raised to PPs to submit the reference of irradiation data used to estimate electricity generation by the proposed project.
⇒Summary of Response and Validation team Conclusion：
PPs submitted "Meteonorm Version7.2.2.20891 (Ref.9-2)", and validation team confirmed appropriateness of the data used through cross checking with the ECS, and closed CL4.

<Conclusion based on reporting requirements>

Please state conclusion based on reporting requirements.

Validation team concluded that:
1) The PDD appropriately addressed all relevant GHG emissions covered in the methodology.
2) The MPS is not altered and the required fields are appropriately filled in.
3) The reference emission factor 0.533 tCO2/MWh, specified in the applied methodology is appropriately applied to the proposed project.
4) PPs correctly estimated annual generated electricity and emission reductions as indicated in the ECS based on the appropriate reference on irradiance and reliable historical data for loss factors.

C.5. Environmental impact assessment

<Means of validation>

The PDD stated that an Environmental Impact Assessment (EIA) is not required for the proposed project by Palau's laws and regulations. Palau's regal requirements for EIA are specified in "Guide to Environmental Impact Assessment (EIA Guide) (Ref.4-1)", issued by Environmental Quality Protection Board (EQPB), Republic of Palau. Validation team confirmed with communication records between PPs (Ref.4-2) that the EIA Guide received is the latest version.

Through review of the EIA Guide, validation team confirmed that the proposed project is not a type of project for which EIA is required.

<Findings>

Please state if CARs, CLs, or FARs are raised, and how they are resolved.

No CAR, CL, or FAR were raised for this section.

<Conclusion based on reporting requirements>

Please state conclusion based on reporting requirements.

Validation team confirmed that the proposed project is not required to conduct EIA by Palau's laws and regulations.

C.6. Local stakeholder consultation

<Means of validation>

Validation team confirmed that PPs identified candidate participants based on comments from Palauan side and by sending e-mail, invited them to a local stakeholder consultation meeting of the proposed project held at a meeting room of WCTC on 11 November 2019. Validation team reviewed "Local stakeholder consultation meeting minutes (Ref.5)" and interviewed with PPs.

CL5 was raised regarding PDD description about the process for the invitation taken by PPs.

<Findings>

Please state if CARs, CLs, or FARs are raised, and how they are resolved.

CL5:

Validation team assessed that in the PDD, explanation of the process for inviting comments from the local stakeholders is insufficient and raised CL5.

⇒Summary of Response and Validation team Conclusion：

As PPs appropriately added some explanations of the invitation process to the PDD, validation team closed CL5.

<Conclusion based on reporting requirements>

Please state conclusion based on reporting requirements.

<Conclusion>

Validation team confirmed that the PPs invited comments to the proposed project from the

relevant local stakeholders, and the summary of the comments received was described in the PDD appropriately. Also, validation team confirmed that the local stakeholder consultation of the proposed project was adequate.

C.7. Monitoring

<Means of validation>

Validation team assessed the description of the Monitoring Plan (Monitoring Pan Sheet (MPS) and Monitoring Structure Sheet (MSS)) (Ref.1) against the applied methodology (Ref.2), and the JCM Guidelines for Developing PDD and MR (Ref.14).

As a result, validation team confirmed the following about the monitoring point:

1) With "Single wire connection diagrams of the two project sites (Ref. 3-1-4)", each project site has one monitoring point to measure the AC output from the inverters by an electricity meter. PPs selected the most suitable position as the monitoring point for measurements, between the AC collection box and the Distribution board as illustrated in the PDD.

2) With "Factory Test Report on calibration of the electricity meter delivered (Ref.3-6-2)" and "Declaration on meter accuracy by the electricity meter manufacturer (Ref.3-6-3)", the electricity meter employed in the proposed project is calibrated before delivered, and requires calibration every 10 years. With "PPs response/answer to question/request by Validation Team (Ref.10)" validation team confirmed that PPs plan the calibration every 10 years in line with the manufacturer's guidance.

Validation team assessed the feasibility of implementation of the monitoring plan by PPs specified in the MSS and the PDD:

1) Through interviews with PPs and review of "Project MRV organization chart including the JCM project monitoring (Ref.3-7)", validation team confirmed the specified monitoring structure is established at each site by PPs.

2) Through review of "Monitoring system configurations of the solar PV system of the two project sites (Ref.3-1-3)", validation team confirmed that an automated and internet-connected monitoring system is introduced to the two project sites.

<Findings>

Please state if CARs, CLs, or FARs are raised, and how they are resolved.

No CAR, CL, or FAR were raised for this section.

<Conclusion based on reporting requirements>

Please state conclusion based on reporting requirements.

Validation team concluded that the Monitoring Plan was described in compliance with the approved methodology and "JCM Guidelines for developing PDD and MR (Ref.14)."

Also, validation team assessed that it is feasible for PPs to establish the monitoring structure as specified and implement the monitoring task as planned at the two project sites.

C.8. Modalities of Communication

<Means of validation>

Validation team reviewed the "MoC (Ref.8-1)" received to check its contents in line with the JCM Guideline for VV (Ref. 13).

As a result, validation team confirmed the MoC was developed using the latest form of "JCM_PW_F_MoC_ver01.0".

Validation team raised CL6 to request submission of a Written Confirmation on the MoC.

<Findings>

Please state if CARs, CLs, or FARs are raised, and how they are resolved.

CL6:

Validation team raised CL6 to request PPs to submit a written confirmation so that validation team can validate the MoC's correctness and authorization in line with the JCM Guideline for VV (Ref. 13).

⇒Summary of Response and Validation team Conclusion:

The "Written Confirmation of MoC (Ref.8-2)" was submitted by Sharp Energy Solutions Co. (SESC) on 16 March 2010.

Through review of the Written Confirmation, Validation team confirmed that it is signed by Mr. Tetsuya Sato who is the primary authorized by SESC as specified in the MoC and ensured that all corporate and personal details of attached MoC of the JCM project, including specimen signatures, are valid and accurate.

CL6 was closed.

<Conclusion based on reporting requirements>

Please state conclusion based on reporting requirements.

Validation team confirmed that the "MoC (Ref.8-1)" is completed using the latest form. Also, validation team confirmed the "MoC (Ref.8-1)" has been developed in compliance with the requirements of the "JCM Guidelines (Ref.13)" and the "Project Cycle Procedure (Ref. 15)".

C.9. Avoidance of double registration

<Means of validation>

The following websites relevant to CDM, JI and VCS were checked on 10 March 2020, whether the projects with similar technology and location had been registered.

1) Website of UNFCCC (Project Search for CDM, JI Projects)

2) Website of IGES (IGES CDM Project Database, IGES JI Project Database)

3) Website of Verified Carbon Standard

Validation team confirmed that there was no registered project with similar technology and location identified on the three websites.

<Findings>

Please state if CARs, CLs, or FARs are raised, and how they are resolved.

No CAR, CL, or FAR were raised for this section.

<Conclusion based on reporting requirements>

Please state conclusion based on reporting requirements.

Validation team confirmed that the proposed JCM project was not registered under other international climate mitigation mechanisms.

C.10. Start of operation

<Means of validation>

Validation team reviewed "Project overall schedule chart (Ref.3-3-1)" and interviewed with PPs to confirm the start date of operation of the proposed project, specified as 31 May 2020 in the PDD.

As a result, Validation team raised CL7 to request PPs to submit a new schedule chart.

<Findings>

Please state if CARs, CLs, or FARs are raised, and how they are resolved.

CL7:

Since the provided schedule chart did not clearly indicate the operation start date specifically, CL7 was raised to request submission of a new chart which specifically indicates the start date.

⇒Summary of Response and Validation team Conclusion：

PPs postponed the start date to 30 June 2020, and provided the revised project schedule chart (Ref. 3-3-2) and the revised PDD.

Validation team could confirm that the PDD and the schedule chart were revised appropriately reflecting the revised new start date, 30 June 2020. CL7 was closed.

<Conclusion based on reporting requirements>

Please state conclusion based on reporting requirements.

Validation team concluded that PPs appropriately specified 30 June 2020 as the start date of operation that does not predate 13 January 2014.

C.11. Other issues

<Means of validation>

No other issue was identified.

<Findings>

Please state if CARs, CLs, or FARs are raised, and how they are resolved.

Not applicable.

<Conclusion based on reporting requirements>

Please state conclusion based on reporting requirements.

Not applicable.

D. Information on public inputs

D.1. Summary of public inputs

In line with the JCM Project Cycle Procedure (JCM_PW_PCP_ver02.0) (Ref.15), for calling public inputs, the PDD was made publicly available from 28 Jan. 2020 through 26 Feb. 2020 on the following URL: https://www.jcm.go.jp/pw-jp/projects/75

D.2. Summary of how inputs received have been taken into account by the project participants

No comment was received during the period above.

E. List of interviewees and documents received

E.1. List of interviewees

Pacific Consultants Co., Ltd. (PCKK): Mr. Shigezane.Kidoura Sharp Energy Solutions Corporation: Mr. Hiroya Ota

E.2. List of documents received

Ref.1: Project Design Document for JCM project "Introduction of 0.4MW Rooftop Solar Power System in Supermarket and Hotel” Ref.1-1: Ver.1.0: Submitted to the secretariat of JCM for public inputs. Ref.1-2: Ver.2.0: Revised complying with requests by validation team Ref.1-3: Ver.3.0: Revised complying with requests by validation team Ref.1-4: Ver.4.0: The final version Ref.2: Approved Methodology "Displacement of Grid and Captive Genset Electricity by a Small-scale Solar PV System, Ver. 01.0" Ref.3-1-1: Major project equipment specification sheet Ref.3-1-2: Specification of solar PV module

Ref.3-1-3: Monitoring system configurations of the solar PV system of the two project sites
Ref.3-1-4: Single wire connecting diagrams of the solar PV systems of the two project sites
Ref.3-1-5: Specification of the inverter
Ref.3-1-6: Layouts of PV module installation at the two project sites
Ref.3-1-7: Specification of the electricity meter
Ref.3-1-8: Specification of the pyranometer
Ref. 3-2: Approval of application for Renewable Energy System (Grid connection approval)
(Submitted by Renewable Energy Division, Palau Public Utilities Corporation on 19 July 2019)
Ref.3-3-1: Project overall schedule chart
Ref.3-3-2: Revised project overall schedule chart
(The proposed project is rescheduled to start operation from 30 June 2020)
Ref.3-5: JCM subsidy grant decision letter issue on 18 September 2018
Ref.3-6-1: IEC Test Report of the PV module: Certificate for design qualifications (IEC 61215) and safety qualification (IEC 61730-1 and IEC 61730-2)
Ref.3-6-2: Factory Test Report on calibration of the electricity meter delivered
Ref.3-6-3: Declaration on meter accuracy by the electricity meter manufacturer
(Electricity meters need calibration every 10 years)
Ref.3-7: Project MRV organization chart including the JCM monitoring
Ref.4-1: Guide to Environmental Impact Assessment issued by Environmental Quality Protection Board, Republic of Palau
Ref.4-2: Communication records between PPs regarding the validity of the Guide
Ref.5: Local Stakeholder Consultation Meeting Minutes with appendixes of Participants List, Presentation Material, and Photographs
Ref.8-1: JCM Modalities of Communications Statement (Date of submission: 27 January 2020)
Ref.8-2: Written Confirmation
Ref. 9-1: Spreadsheet for calculation of estimated solar PV output_rev.3
Ref.9-2: Meteonorm Version7.2.2.20891
Ref.10: PPs response/answer to question/request raised by Validation Team, submitted on 13 March 2020
Ref.12: Product Supply Agreement between WCTC and Sharp Solar Solution Asia Co., Ltd.
The agreement includes the quantity of PV modules and inverters to be delivered, and the limited warranty of the PV module (25 years for degradation of PV panel).
Ref.13: Joint Crediting Mechanism Guidelines for Validation and Verification (JCM_PW_GL_VV_ver01.0)
Ref.14: Joint Crediting Mechanism Guidelines for Developing Project Design Document and Monitoring Report (JCM_PW_GL_PDD_MR_ver01.0)
Ref.15: Joint Crediting Mechanism Project Cycle Procedure (JCM_PW_PCP_ver02.0)

Ref.16: Joint Crediting Mechanism Glossary of Terms (JCM_PW_Glossary_ver01.0)

Annex Certificates or curricula vitae of TPE's validation team members, technical experts and internal technical reviewers

Please attach certificates or curricula vitae of TPE's validation team members, technical experts and internal technical reviewers.

Certificate of validation team and technical review team is attached to this report.

Certificate of Competence for Validation/Verification team

GHG Certification Center
Japan Management Association

Scheme:

The Joint Crediting Mechanism (JCM)

Project Title:

Introduction of 0.4MW Rooftop Solar Power System in Supermarket and Hotel

Validation or Verification:

Validation

Name	Qualification*1	Leader/Member/ Technical expert/ Technical Reviewer(TR)	Qualification of Technical area (Renewables)*2	JCM scheme competence
Mr. Motoyuki Matsumoto	Lead Validator/ Verifier	Leader	☑	☑
Mr. Toshiaki Takeda	Lead Validator/ Verifier	Member	☑	☑
Competence of Validation Team	-	-	☑	☑

*1 Qualification in accordance with "JMACC's Procedures for Contract and Evaluation of Validators/Verifiers and Technical Experts (GA-110)"

*2 Competence Requirement in accordance with Competence for Technical area sheet (GA-110-09)

Date 14 Jan. 2020

[redacted]

Kenji Suzuki
Director of Validation & Verification Dept.
GHG Certification Center
Japan Management Association

Certificate of Competence for Technical Review team

GHG Certification Center
Japan Management Association

Scheme:
The Joint Crediting Mechanism (JCM)
Project Title:
Introduction of 0.4MW Rooftop Solar Power System in Supermarket and Hotel
Validation or Verification:
Validation

Name	Qualification*1	Leader/Member/ Technical expert/ Technical Reviewer(TR)	Qualification of Technical area (Renewables)*2	JCM scheme competence
Mr. Kenji Suzuki	Lead Validator/ Verifier	Technical Reviewer	☑	☑
Competence of Technical Review Team	-	-	☑	☑

*1 Qualification in accordance with "JMACC's Procedures for Contract and Evaluation of Validators/Verifiers and Technical Experts (GA-110)"
*2 Competence Requirement in accordance with Competence for Technical area sheet (GA-110-09)

Date 14 Jan. 2020

[redacted]

Kenji Suzuki
Director of Validation & Verification Dept.
GHG Certification Center
Japan Management Association