

JCM Validation Report Form

A. Summary of validation

A.1. General Information

Title of the project	Palau / Introduction of 1MW Solar Power System on Supermarket Rooftop
Reference number	PW005
Third-party entity (TPE)	Japan Quality Assurance Organization (TPE-PW-003)
Project participant contracting the TPE	Sharp Energy Solutions Corporation
Date of completion of this report	18/03/2022

A.2 Conclusion of validation

Overall validation opinion	<input checked="" type="checkbox"/> Positive <input type="checkbox"/> 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.	<input checked="" type="checkbox"/>
Project description	The description of the proposed JCM project in the PDD is accurate, complete, and provides comprehension of the proposed JCM project.	<input checked="" type="checkbox"/>
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.	<input checked="" type="checkbox"/>
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.	<input checked="" type="checkbox"/>
	The values for project specific parameters to be fixed <i>ex ante</i> listed in the Monitoring Plan Sheet are appropriate, if applicable.	<input checked="" type="checkbox"/>
Environmental impact assessment	The project participants conducted an environmental impact assessment, if required by the Republic of Palau in line with Palauan procedures.	<input checked="" type="checkbox"/>
Local stakeholder	The project participants have completed a local stakeholder consultation process and that due steps were taken to engage	<input checked="" type="checkbox"/>

Item	Validation requirements	No CAR or CL remaining
consultation	stakeholders and solicit comments for the proposed 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.	<input checked="" type="checkbox"/>
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.	<input checked="" type="checkbox"/>
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.	<input checked="" type="checkbox"/>
	The MoC has been correctly completed and duly authorized.	<input checked="" type="checkbox"/>
Avoidance of double registration	The proposed JCM project is not registered under other international climate mitigation mechanisms.	<input checked="" type="checkbox"/>
Start of operation	The start of the operating date of the proposed JCM project does not predate January 13, 2014.	<input checked="" type="checkbox"/>

Authorised signatory:	Mr. <input checked="" type="checkbox"/> Ms. <input type="checkbox"/>
Last name: Sumio	First name: Asada
Title: Senior Executive	
Specimen signature:	Date: 18/03/2022
	

B. Validation team and other experts

	Name	Company	Function*	Scheme competence*	Technical competence*	On-site visit
Mr. <input checked="" type="checkbox"/> Ms. <input type="checkbox"/>	Hiroshi Motokawa	JQA	Team Leader	<input checked="" type="checkbox"/>	Authorized	<input type="checkbox"/>
Mr. <input checked="" type="checkbox"/> Ms. <input type="checkbox"/>	Tsuyoshi Nakamura	JQA	Team Member	<input type="checkbox"/>		<input type="checkbox"/>
Mr. <input type="checkbox"/> Ms. <input checked="" type="checkbox"/>	Sachiko Hashizume	JQA	Internal Reviewer	<input checked="" type="checkbox"/>	Authorized	<input type="checkbox"/>
Mr. <input type="checkbox"/> Ms. <input type="checkbox"/>				<input type="checkbox"/>		<input type="checkbox"/>

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>

In this report, the validation team (hereinafter, the team) validates two versions of PDD, the version 01.0 submitted for validation (hereinafter, the PDD), and the version 02.2 revised during the validation (hereinafter, the revised PDD).

Regarding the documents referred to in this report, the same applies to the Monitoring Plan Sheet (i.e. the MPS and the revised MPS), Monitoring Structure Sheet (the MSS and the revised MSS) and the Modalities of Communication (the MoC and the revised MoC).

By reviewing the PDD, it is checked and confirmed that the PDD is completed using the latest version of the PDD form (JCM_PW_F_PDD_ver02.1) appropriate to the type of project and drafted in line with JCM Guidelines for Developing PDD and MR, JCM_PW_GL_VV_ver01.0 (hereinafter, the guidelines).

<Findings>

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

No outstanding issue was raised.

<Conclusion based on reporting requirements>

Please state conclusion based on reporting requirements.

The team concludes that the PDD is completed using the valid form and drafted in line with

the guidelines.

C.2. Project description

<Means of validation>

The proposed JCM project is “Palau / Introduction of 1MW Solar Power System on Supermarket Rooftop” (hereinafter, the project). The project aims to reduce carbon dioxide (CO₂) emissions by introducing 1.3MW grid-connected solar photovoltaic (PV) system on top of the supermarket building of Surangel & Sons Company in Airai State.

The starting date of project operation is 09/01/2022 and the expected operational lifetime of the project is 10 years, which is based on the legal lifetime issued by National Tax Agency, Japan.

The team conducted no on-site inspection for the project. The reasons for this are that the following were available;

- Sufficient evidences and information relevant to the project description;
- Photos taken before and after the project start;
- Interviews with the PPs through e-mail and/or telephone, when necessary the related stakeholders, for understanding the project;
- Purchase records and/or relevant contracts of the project equipment.

An issue was raised.

<Findings>

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

< CAR01 >

The MPS(calc_process) of Monitoring Plan Sheet (MPS) shows annual "Estimated Reference emissions (tCO₂e)" are 871.5 during the period from 2023 to 2030, and 730.6 in 2022. However, those of the table in the C.3. of PDD are inconsistent with the values mentioned above.

Furthermore, the value of 2022 is to be recalculated based on the value of MPS(calc_process).

< PP response to this issue >

The PPs changed those numbers in the PDD to be consistent with the MPS.

< Assessment of PP response >

The team confirms that the revisions in the revised PDD are appropriately made.

Therefore, this issue is to be closed.

< CAR02 >

The PDD states "The solar PV system replace the grid and captive electricity mostly derived from diesel" in A.2.

By reviewing the single line diagram and interviewing with the PPs, it is confirmed that no captive power generator exists in the project site. The PDD description mentioned above is not

consistent with the fact.

< PP response to this issue >

The PPs deleted a captive generator.

< Assessment of PP response >

By reviewing the revised description in A.2, the team confirms that the PPs states the project and applied technology appropriately.

Thus, this issue is closed.

<Conclusion based on reporting requirements>

Please state conclusion based on reporting requirements.

The team concludes that the project description in the revised PDD is accurate and complete.

C.3. Application of approved methodology(ies)

<Means of validation>

The project applies the approved methodology, PW_AM001 Ver01.0, "Displacement of Grid and Captive Genset Electricity by a Small-scale Solar PV System" (hereinafter, the methodology).

By checking the JCM website at the time of submission of the project for validation, the team confirms that the applied version was valid at that time.

By comparing the PDD with the actual text of the methodology, the team confirms that the methodology is correctly quoted and applied.

By checking the relevant documents including documentation referred to in the PDD and reviewing comparable information as deemed necessary, the team confirms that the project meets each eligibility criterion of the methodology as follows:

Criterion 1: The project installs solar PV system(s).

The PDD states "A solar PV system is installed at project site. The solar PV module employed is Sharp NU-JB395. The inverter employed is SMA Sunny Highpower PEAK3 125-US".

By reviewing the layout drawing, shopping invoices, photos of the project equipment and Commissioning document issued by ISLAND ENGINEERING AND DESIGN, it is confirmed that the project newly installs a new PV modules/inverters, and models of the installed PV modules/Inverters are NU-JB395 and Highpower PEAJ3 125-US, as shown in the PDD.

Hence, the team determines that the project meets Criterion 1.

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 PDD states "The solar PV system is connected to the internal power grid of the project site

and to the grid”.

By reviewing the single line diagram, the layout drawing and interviewing with the PPs, it is confirmed that the project solar PV system is connected to the internal power grid of the project site and to the grid for displacing grid electricity at the project site.

Hence, the team determines that the project meets Criterion 2.

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 PDD states “The installed PV module (Sharp NU-JB395) has obtained a certification of design qualifications (IEC 61215) and safety qualification (IEC 61730-1 and IEC 61730-2)”.

By checking the documentation referred to in the PDD and reviewing comparable information, e.g. certificate for the qualifications issued by VDE (No.40049469), it is confirmed that the PV modules installed by the project are certified for design qualifications (IEC 61215) and safety qualification (IEC 61730-1 and 61730- 2)..

Hence, the team determines that the project meets Criterion 3.

Criterion 4: The equipment to monitor output power of the solar PV system and irradiance is installed at the project site.

The PDD states “A pyranometers are installed at the project site to measure irradiance. An electricity meter is installed at the project site to measure output power of the solar PV system”.

By checking the relevant documents, e.g. photos of the project equipment and the pyranometer catalogue issued by the manufacturer, it is confirmed that the equipment to monitor output power of the solar PV system and irradiance, i.e. electricity meters and pyranometer, is actually installed at the project site.

Hence, the team determines that the project meets Criterion 4.

<Findings>

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

No outstanding issue was raised.

<Conclusion based on reporting requirements>

Please state conclusion based on reporting requirements.

The team confirms that the project meets all the eligibility criteria of the methodology whose applied version is valid at the time of submission of the project for validation. Therefore the team concludes that the project is eligible for applying the methodology.

C.4. Emission sources and calculation of emission reductions

<Means of validation>

The MPS was prepared by using JCM_PW_AM001_ver01.0. By reviewing the relevant

documents, the team confirms the following:

- The MPS is not altered,
- Its required fields are appropriately filled in line with the methodology and the guidelines,
- All the emission sources covered by the methodology are included.

Regarding the parameter, $\Sigma EG_{i,p}$, by reviewing the MPS and the relevant documents, the team confirms that the value of 1635.11 kWh is the sum of the estimated electricity generation of the installed solar system for each month, considering the monthly variation of the metrological condition (irradiation and ambient temperature) in Palau.

Regarding the parameter, EFRE, by reviewing the MPS and the supporting evidence, it is confirmed that the value for project specific parameters to be fixed ex ante, "Reference CO2 emission factor", EFRE, is set at 0.533 in accordance with the methodology.

<Findings>

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

No outstanding issue was raised.

<Conclusion based on reporting requirements>

Please state conclusion based on reporting requirements.

The team reaches the conclusion that the selected emission sources and GHG types are justified for the project. The team assesses the estimated values for project specific parameters in the MPS including intermediate processes to derive the values. The questions on the values raised by the team were fully clarified, which didn't result in any revisions of the PDD and the MPS. As a result, the values are considered reasonable in the context of the project.

C.5. Environmental impact assessment

<Means of validation>

By reviewing the EIA legal requirement by the Republic of Palau, i.e. the Chapter 2401-61 of "Guide to Environmental Impact Assessment" (EIA Guide) issued by Palau Environmental Quality Protection Board, especially Figure 1 and Significance criteria, it is confirmed that the EIA is not required for the project in line with the EIA Guide.

<Findings>

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

No outstanding issue was raised.

<Conclusion based on reporting requirements>

Please state conclusion based on reporting requirements.

The team concludes that the PPs did not conduct any EIA in line with the regulations in the Republic of Palau.

C.6. Local stakeholder consultation

<Means of validation>

Since no EIA was required to the project under the regulations in the Republic of the Palau, local stakeholder consultation (hereinafter, LSC) was carried out as described in the PDD.

By reviewing the relevant documents and interviews with the PPs, the team confirms the following:

- Before LSC held on 28/10/2021, through various communication means, e.g. telephone, email and letter, the invitation were delivered to the stakeholders with an interest or concern in the project;
- The complete list of organizations/agencies of stakeholders participated in the LSC is not provided in the PDD;
- The summary of the received comments provided in the PDD is provided;
- This process are described in the PDD.

Furthermore, by reviewing the relevant documents and interviewing with the PPs, the following are confirmed:

- (a) Comments have been invited from local stakeholders relevant to the project;
- (b) The summary of the comments received as provided in the PDD is complete;
- (c) The PPs have taken due account of all comments received and have described this process in the PDD.

An issue was raised.

<Findings>

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

< CAR03 >

All the organizations participated in the LSC is not listed in the PDD. Although the organization names which participated in the LSC meeting are included in the table of “Meeting agenda”, it is not clear whether all the organizations are listed.

And all the comments received require no further action. If so, "No further action is needed." is to be added at the end of each comment.

< PP response to this issue >

The PPs wrote all organizations names in the PDD, who participated in the LSC and add "No further action is needed".

< Assessment of PP response >

All the organizations names were provided in the table of “Meeting agenda” in the revised PDD. The team confirms that the local stakeholders provided no negative comments and no issues that require actions to be taken by the PPs.

Therefore, this issue was closed.

<Conclusion based on reporting requirements>

Please state conclusion based on reporting requirements.

The team concludes that the LSC of the project has completed adequately and the process and information considered above are stated in the revised PDD.

C.7. Monitoring

<Means of validation>

By reviewing the MPS and relevant documents based on the methodology, the team confirms the following:

- Monitoring point and the type of monitoring equipment, i.e. electricity meter, are illustrated in the figure of C.2.;
- Monitored parameter is one, "EGRE" listed in line with the methodology;
- Monitoring information described in the MPS(input) complies with the requirements of the methodology and the guidelines.

The team cannot confirm whether the monitoring structure described in the MSS of the monitoring plan seems to be feasible within the project design, because who is responsible for the calibration and how the monitored data is archived, are not described in the MSS.

Therefore, an issue was raised.

<Findings>

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

< CAR04 >

The information on the personnel who are responsible for calibrating the electricity meter and archiving the measurement data are to be provided in the MSS.

< PP response to this issue >

Technical support is responsible for calibrating the electricity meter. The monitored data is automatically archived by the monitoring system.

< Assessment of PP response >

By reviewing the revised MSS, the team confirms that "Technical Support" is responsible for the calibration.

By interviewing with the PPs, the team confirms that measured data is automatically archived by the monitoring system.

Thus, this issue is closed.

<Conclusion based on reporting requirements>

Please state conclusion based on reporting requirements.

The team concludes that the monitoring plan described in the MPS complies with the requirements of the methodology and the guidelines, and that the PPs have ability to implement the described monitoring plan including feasibility of monitoring structure.

C.8. Modalities of Communication

<Means of validation>

By directly reviewing the evidences, i.e. company websites, personal business cards and specimen signatures of all the personnel shown in the MoC, the team confirms:

- MoC provided by the PP, Sharp Energy Solutions Corporation, with whom JQA has a contractual relationship, has applied the latest version of the form, JCM_PW_F_MoC_ver01.0,
- All corporate and personal details described in the MoC are valid and accurate, and the MoC is correctly completed and duly authorized.

<Findings>

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

No outstanding issue was raised.

<Conclusion based on reporting requirements>

Please state conclusion based on reporting requirements.

The team concludes that the MoC complied with all relevant forms and requirements.

C.9. Avoidance of double registration

<Means of validation>

By reviewing the relevant websites (e.g. CDM website, Markit Environmental Registry, etc.) and the Section 7 of the MoC, the team confirms that the project is not registered under other international climate mitigation mechanisms.

<Findings>

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

No outstanding issue was raised.

<Conclusion based on reporting requirements>

Please state conclusion based on reporting requirements.

The team concludes that the project is not registered under the other international climate mitigation mechanisms.

C.10. Start of operation

<Means of validation>

By reviewing the relevant documents, e.g. monitored daily data and implementation report of JCM equipment subsidy project, the team confirms that the starting date of project operation is 09/01/2022 as described in the revised PDD, and that it does not predate January 1, 2013.

Thus, this issue was raised.

<Findings>

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

< CL01 >

By reviewing the relevant documents, it is confirmed that the commissioning of the installed solar system was conducted on 12/21/2021.

The evidence for setting the starting date of the operation at 01/03/2022 is to be provided.

< PP response to this issue >

The PPs confirmed that the starting date of operation can be set for 09/1/2022 conservatively.

< Assessment of PP response >

By reviewing the photos of electricity meter additionally provided by the PPs, the team confirms that the monitoring by the electricity meter has already started on 09/01/2022, and that the starting date of project operation in the revised PDD is correctly set at 09/01/2022.

Therefore, this issue was closed.

<Conclusion based on reporting requirements>

Please state conclusion based on reporting requirements.

The team confirms that the starting date of project operation in the PDD is determined appropriately.

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

The PDD had been publicly available for 30 days between 11/12/2021 and 09/01/2022 to invite public inputs on the JCM website, <https://www.jcm.go.jp/pw-jp/projects/97>.

No public comments were received.

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

No action was required to be taken into due account by the project participants.

--

E. List of interviewees and documents received

E.1. List of interviewees

Mr. Shinichiro YAHIRO	Deputy General Manager, Sharp Energy Solutions Corporation
Mr. Hiroya OTA	Sinor Manager, Overseas Business Development Division I, Sharp Energy Solutions Corporation
Mr. Ikuo TAKAFUJI	Supervisor, Overseas Business Development Division II, Sharp Energy Solutions Corporation

E.2. List of documents received

1. Project Design Documents, JCM_PW_F_PDD_PW001.docx, Version 01.0 and 2.2
2. Monitoring Plan Sheet and Monitoring Structure Sheet, JCM_PW_AM001.xlsx, Version 01.0 and 02.0
3. Modalities of communications statement, JCM_PW_F_MoC_ver.2.0.pdf
4. Project Design Document Form, JCM_PW_F_PDD_ver02.1.docx
5. JCM Modalities of Communication Statement Form, JCM_PW_F_MoC_ver01.0.docx
6. JCM Approved Methodology, JCM_PW_AM001_ver.01.0, “Displacement of Grid and Captive Genset Electricity by a Small-scale Solar PV System”
7. Monitoring Plan Sheet and Monitoring Structure Sheet attached to the methodology, JCM_PW_AM001_ver01.0.xlsx
8. JCM Glossary of Terms, JCM_PW_Glossary_ver01.0
9. JCM Project Cycle Procedure, JCM_PW_PCP_ver04.0
10. JCM Guidelines for Developing Project Design Document and Monitoring Report, JCM_PW_GL_PDD_MR_ver02.1
11. JCM Guidelines for Validation and Verification, JCM_PW_GL_VV_ver01.0.pdf
12. JCM Validation Report Form, JCM_PW_F_Val_Rep_ver01.0.docx
13. JCM website of project information, https://www.jcm.go.jp/pw-jp/projects/97
14. JCM website of JCM_PW_AM001, https://www.jcm.go.jp/pw-jp/methodologies/18
15 Specifications of the solar power system including the solar modules, pyranometers, inverters, electricity meter and monitoring system using data installed by the project.

16. Single line diagram of the supermarket building indicating all the lines connected with the grids and installed solar power system
17. Shipping records of the solar panels and inverters
18. Document showing the location of the project site
19. Evidences for the starting date of project operation (09/01/2022), i.e. Implementation report of JCM equipment subsidy project, the commissioning report, and photos including the monitoring data
- 20 Legal lifetime of the installed equipment under Japanese tax regulation, <https://www.nta.go.jp/publication/pamph/hojin/kaisei2008/pdf/03.pdf>
- 21 Certificate for design qualifications (IEC 61215) and safety qualification (IEC 61730-1 and 61730- 2) issued by VDE (No.40049469)
- 22 Photos taken after the project equipment installtaion
- 23 Palau Environmental Quality Protection Board, <https://www.palau.gov.pw/eqpb/>
- 24 LSC invitation e-mail
- 25 LSC presentation materials, attendees' list, and minitus
- 26 Estimate on the value, $\Sigma EG_{i,p}$ in MPS (input_separate)
- 27 Documents on the meteorological condition in Palau (irradiation and ambient temperature)
- 28 Factory test report before shipping issued by Accuenergy Technology
- 29 Copies of Business cards and signatures of the personnel in the MoC

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.

Statement of competence



Name: Mr. Hiroshi Motokawa

Qualified and authorized by Japan Quality Assurance Organization.

Function	
	Date of qualification
Validator	2014/12/22
Verifier	2014/12/22
Team leader	2014/12/22

Technical area within sectoral scopes	
	Date of qualification
TA 1.1. Thermal energy generation	2014/12/22
TA 1.2. Renewables	2014/12/22
TA 3.1. Energy demand	2014/12/22
TA 4.1. Cement and lime production	2014/12/22
TA 5.1. Chemical industry	-
TA 10.1. Fugitive emissions from oil and gas	-
TA 13.1. Solid waste and wastewater	2014/12/22
TA 14.1. Afforestation and reforestation	-

Statement of competence



Name: Ms. Sachiko Hashizume

Qualified and authorized by Japan Quality Assurance Organization.

Function	
	Date of qualification
Validator	2015/11/20
Verifier	2015/11/20
Team leader	2018/6/22

Technical area within sectoral scopes	
	Date of qualification
TA 1.1. Thermal energy generation	2015/11/20
TA 1.2. Renewables	2015/11/20
TA 3.1. Energy demand	2015/11/20
TA 4.1. Cement and lime production	-
TA 5.1. Chemical industry	-
TA 10.1. Fugitive emissions from oil and gas	-
TA 13.1. Solid waste and wastewater	2015/11/20
TA 14.1. Afforestation and reforestation	-