JCM Validation Report Form

A. Summary of validation

A.1. General Information

Title of the project	Introduction of Solar PV System at shopping mall in Ho Chi Minh
Reference number	VN007
Third-party entity (TPE)	Japan Quality Assurance Organization (TPE-VN-002)
Project participant contracting the TPE	AEON RETAIL CO., LTD.
Date of completion of this report	21/02/2018

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 Socialist Republic of Viet Nam, in line with Vietnamese procedures.	☒
Local stakeholder	The project participants have completed a local stakeholder consultation process and that due steps were taken to engage	☒

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.	☒
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 1, 2013.	☒

Authorised signatory: Mr. ☒ Ms. ☐

Last name: Asada First name: Sumio

Title: Senior Executive

Specimen signature: Date: 21/02/2018

[redacted]

B. Validation team and other experts

	Name	Company	Function*	Scheme competence*	Technical competence*	On-site visit
Mr. ☒ Ms. ☐	Koichiro Tanabe	JQA	Team Leader	☒	Authorized	☒
Mr. ☒ Ms. ☐	Tadashi Yoshida	External Individual	Internal Reviewer	☒	Authorized	☐

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>

Through a review of the draft PDD, it was checked and confirmed that the PDD was completed using the latest version of the PDD form (JCM_VN_F_PDD_ver02.0) appropriate to the type of project and drafted in line with JCM Guidelines for Developing PDD and MR (JCM_VN_GL_PDD_MR_ver02.0).

<Findings>

No outstanding issue was raised.

<Conclusion based on reporting requirements>

The validation team concluded that the PDD was complete using the valid form in line with the JCM Guidelines for Developing PDD and MR.

C.2. Project description

<Means of validation>

The purpose of the proposed JCM project is to reduce CO_2 emission emitted by the national grid system in Viet Nam through installation of Solar PV system at shopping mall in Ho Chi Minh City and its operation. The proposed JCM project consists of solar photovoltaic modules (total rated capacity is 366.18kW = 255 W per unit x 1436 units)

with 320kW power conditioning system (total rated capacity is 320kW = 20kVA per unit x 16 units). Solar PV modules are installed on the rooftop of car/bicycle parking area at the shopping mall. The expected emission reductions that would be achieved by the proposed JCM project in its operation are estimated to be 125 tCO_2 annually. The emission reductions of the period from 2016 through 2020 are estimated to be 562 tCO_2 in the PDD.

The validation team conducted one-day on-site inspection on 07/12/2017, after its document review of this proposed JCM project, and had a follow-up interview with the project participants and the entities involved in this project as below.

- AEON VIETNAM CO., LTD. (as one of project participants)
- AEON DELIGHT (VIETNAM) CO., LTD.
- Next Energy & Resources Co., Ltd.
- Anh Thy Joint Stock Company

The location information of the proposed JCM project and the other description stated in Section A (Project description) of the PDD were cross-checked through the physical inspection and follow-up interview with a representative of the entities above. Regarding the duration of the proposed JCM project, it was confirmed that the starting date of project operation is 01/07/2016, which is the date of the official grand opening of the shopping mall. The expected operational lifetime of the proposed JCM project is defined as 9 (nine) years, which is in compliance with legal useful life of the operational equipment under Japanese tax regulation. Contribution from Japan is also described in the PDD appropriately.

As a result, the team determined that the description of the proposed JCM project in the PDD was accurate, complete, and provided an understanding of the proposed JCM project.

<Findings>

No outstanding issue was raised.

<Conclusion based on reporting requirements>

It is confirmed that the project description of the PDD is reasonable and appropriate.

C.3. Application of approved methodology(ies)

<Means of validation>

Selection of methodology(ies)

Through a review of the draft PDD and Monitoring Plan (Monitoring Plan Sheet and Monitoring Structure Sheet), it was confirmed that the following latest version of methodology was correctly quoted and applied in the proposed JCM project.

- JCM_VN_AM007_ver01.0

Eligibility criteria

The assessment results of the eligibility criteria in the approved methodology are summarized as below:

Criterion 1

"The project newly installs solar PV system(s)."

Through reviewing supporting documents and interviewing during the physical inspection, the project information of Criterion 1, described in the PDD, was checked and confirmed as below, with a satisfactory result.

- The solar PV modules with power conditioning system have been installed in the shopping mall, which was newly built and started commercial operations from July 1st, 2016.

Criterion 2

"The PV modules are certified for design qualifications (IEC 61215, IEC 61646 or IEC 62108) and safety qualification (IEC 61730-1 and IEC 61730-2)."

Through reviewing supporting documents and interviewing during the physical inspection, the project information of Criterion 2, described in the PDD, was checked and confirmed as below, with a satisfactory result.

- The model of the project solar PV modules is "NERP156×156-60-P SI 255W".
- The specification sheet shows that "NERP156×156-60-P" PV module series are based on IEC61215, IEC61730-1 and IEC61730-2.

Criterion 3

"The equipment to monitor output power of the solar PV system(s) and irradiance is installed at the project site."

Through the physical inspection, the project information of Criterion 3, described in the PDD, was checked and confirmed as below.

- Electronic revenue meter (Mk6N by EDMI) and monitoring system (NEDL101003TTL40L6 by Next Energy & Resources) have been installed in

the substation located indoors of the shopping mall. They are in operation to monitor electricity generated and consumed. AEON DELIGHT is primarily in charge of operation and maintenance of these measuring equipment.

- A pyranometer (SiRS485-TC-T) has been installed on the rooftop located outdoors of the shopping mall. However, the validation team could not confirm who was in charge of operation and maintenance of this measuring equipment.

As for Criterion 3, the validation team raised CL01. This was resolved in “Findings”.

<Findings>

Issue raised as CL01

It is confirmed through interview with the PP at the on-site assessment that the electricity meter of Monitoring Point (1) is operated and maintained by AEON DELIGHT. However, it is also confirmed that management system of the operation and maintenance for monitoring/recording irradiance data, which is measured by the installed pyranometer, have not been established yet, even though the monitoring activities have commenced for the proposed JCM project. Therefore, CL01 is raised.

Resolution of CL01 by the PPs

The PPs ensure that they will establish the operation and maintenance management system of the installed pyranometer for monitoring/recording irradiance data no later than the verification opportunity, which is planned next year. The validation team confirms that the current state is still acceptable at this point, and thus this CL is closed. Instead, FAR01 is raised as this situation is to be improved and then verified. It is required to establish the operation and maintenance management structure for monitoring irradiance at the beginning.

<Conclusion based on reporting requirements>

The validation team reached the conclusion that the relevant information contained in the PDD is in compliance with the eligibility criterion listed in the approved methodology applied. The issue raised by the validation team was fully clarified, and the aspect that results in FAR01 is expected to be verified at the subsequent verification.

C.4. Emission sources and calculation of emission reductions

<Means of validation>

It is confirmed through desk review that the emission sources and GHGs, which are

described in the PDD, are in line with the evidential documents properly. It is also confirmed through an on-site inspection that they are corroborated as below:

- As illustrated in the PDD, the proposed JCM project includes solar PV modules, power conditioning system, monitoring system, and the corresponding monitoring point (electricity measuring meter).
- It was explained by the PPs that captive power generator had been installed in the building, for emergency use. The PPs exclude it from the project boundary, and the validation team considered it reasonable.

Since the applied methodology does not allow the PPs to choose any source or gas to be included, all emission sources and their associated GHGs relevant to the proposed JCM project meet the applied methodology. As for Monitoring Spreadsheet, the appropriate form, which is defined in the applied methodology and not altered, is used. It is cross-checked and concluded that the required fields of the spreadsheet are filled in appropriately.

Reference CO_2 emission factor for the project solar PV system is 0.333 tCO_2/MWh, in accordance with the approved methodology, as the PV system is connected to both the national grid and a captive power generator.

As for the annual electricity production of the proposed solar PV project, the validation team raised CL02. This was resolved in Findings below.

<Findings>

Issue raised as CL02

It is not confirmed through an interview with the PP that the annual electricity production of the proposed solar PV system (377,044kWh) is calculated based on any estimated input values or actual monitored values. Therefore, it is requested to clarify it accordingly.

Resolution of CL02 by the PPs

Annual electricity production of the proposed solar PV project is calculated by doubling the actual monitored values from Jul-2016 to Dec-2016 (half year). As shown in the submitted document, summation of the monthly electricity production from Jul-2016 to Dec-2016 is 188,522 kWh. Therefore, the annual electricity production is 377,044kWh. The data of monthly electricity production shown in the submitted document came from the submitted data sheet, which is raw data of electricity production automatically monitored from PCS (Power Conditioning System).

The validation team confirms that the annual electricity production of the proposed

solar PV project (377,044kWh), calculated by the PPs, is based on evidence data, and thus considered reasonable. Therefore, this CL is closed.

<Conclusion based on reporting requirements>

The validation team reached the conclusion through the validation that the selected emission sources and GHG types were justified for the JCM project. The validation team assessed values for project-specific parameters to be fixed ex ante in the MPS and intermediate processes to derive the values. As a result, those are considered reasonable in the context of the proposed JCM project.

C.5. Environmental impact assessment

<Means of validation>

It is confirmed through document review of legal requirement of environmental impact assessment in Viet Nam that the proposed JCM project is not required to conduct assessment of environmental impact since it is not applicable for the project type, namely housing and/or human settlement sector.

<Findings>

No outstanding issue was raised.

<Conclusion based on reporting requirements>

The validation team concluded that the project design of the proposed JCM project was in accordance with the EIA regulation in Viet Nam.

C.6. Local stakeholder consultation

<Means of validation>

Through reviewing the PDD and the minutes of local stakeholder consultation (LSC) meeting, it was confirmed that a LSC was implemented for the following local stakeholders, and the following information was confirmed with a satisfactory result.

(a) Comments have been invited from local stakeholders that are relevant for the proposed project.

The relevant local stakeholders have been identified by the PPs, and a LSC meeting was held on 05/09/2017, with inviting mainly the managers of AEON VIETNAM CO., LTD and other stakeholders including engineers of EPC companies.

(b) The summary of the comments received as provided in the PDD is complete.

The summary of the comments received has been described in the PDD. Through interview with the PPs, it is confirmed that those comments have been described in the PDD appropriately.

(c) The PPs have taken due account of all comments received and have described this process in the PDD.

The validation team determines that the relevant local stakeholders have been identified appropriate and the information on the LSC meeting has been described in the PDD appropriately. As a result, it is concluded that no additional actions are required for the comments received.

<Findings>

No outstanding issue was raised.

<Conclusion based on reporting requirements>

The validation team concluded that the local stakeholder consultation of the proposed JCM project was adequate.

C.7. Monitoring

<Means of validation>

Through document review and interviews with the project participants, the following information was confirmed.

(a) Assessment of compliance of the monitoring plan with the approved methodology and/or PDD and Monitoring Guidelines

The parameter to be monitored ex-post, which is required in the applied methodology, has been defined in Monitoring Plan Spreadsheet (MPS). $EC_{i,p}$ (Quantity of electricity consumed or sold to the power company from electricity generated by the project solar PV system *i* during the period *p*) is determined through results of the installed monitoring system of the proposed JCM project. Through interview with the PPs, it is confirmed that the Monitoring Structure Sheet (MSS) is feasible as for the means of monitoring.

<Findings>

No outstanding issue was raised.

<Conclusion based on reporting requirements>

The validation team concluded that Monitoring Plan of the proposed JCM project complied with the requirements of the methodology and/or PDD and Monitoring Guidelines, and the project participants had ability to implement the described Monitoring Plan, including Monitoring Structure Sheet.

C.8. Modalities of Communication

<Means of validation>

Through document review, it is confirmed that the Modalities of Communication (MoC), dated 07/12/2017, have applied the applicable version of MoC form. The validation team also conducted interviews with some of the signatories of the Modalities of Communication (MoC), and then identified the personnel and their employment status, including the specimen signatures. Therefore, the validation team determines that the information of all project participants, including the focal point provided in the MoC and its correctness of authority, is appropriate.

<Findings>

No outstanding issue was raised.

<Conclusion based on reporting requirements>

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

C.9. Avoidance of double registration

<Means of validation>

It was confirmed through review of the relevant website (e.g. UNFCCC website, Markit Environmental Registry, etc.) that the proposed JCM project has not been registered under other international climate mitigation mechanisms. Also, the written confirmation of the avoidance of double registration was provided through the signed MoC, and was cross-checked through interview with the project participant, with a satisfactory result.

<Findings>

No outstanding issue was raised.

<Conclusion based on reporting requirements>

The validation team concluded that the proposed JCM project was not registered

under the other international climate mitigation mechanisms at the stage of validation.

C.10. Start of operation

<Means of validation>

Through interview with the project participant, it is confirmed that the starting date of project operation is identified as the date of the official grand opening of the shopping mall, dated on 01/07/2016, which is not before 01/01/2013.

<Findings>

No outstanding issue was raised.

<Conclusion based on reporting requirements>

The validation team concludes that the start of the operating date of the proposed JCM project has been defined appropriately.

C.11. Other issues

<Means of validation>

No other issue was identified.

<Findings>

No outstanding issue was raised.

<Conclusion based on reporting requirements>

Not applicable.

D. Information on public inputs

D.1. Summary of public inputs

The PDD of the proposed JCM project, which was submitted in line with the Project Cycle Procedure, was made publicly available through the JCM website for public inputs. This call for public comments is open from 8 December 2017 to 6 January 2018 (24:00 GMT). The specific JCM website is as below:

- https://www.jcm.go.jp/vn-jp/projects/34

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

Not applicable

E. List of interviewees and documents received

E.1. List of interviewees

- Yoshiyuki HARADA, Construction Planning Staff, AEON RETAIL CO., LTD.
- Masaomi SAKAGAMI, General Manager, AEON VIETNAM CO., LTD.
- Morito WATANABE, Operations Senior Manager, AEON DELIGHT (VIETNAM) CO., LTD.
- Tadashi YOSHIDA, General Manager, Next Energy & Resources Co., Ltd.
- Toshiyuki TAKANO, Senior Manager, Next Energy & Resources Co., Ltd.
- Kumiko TANAKA, Manager, Anh Thy Joint Stock Company
- Atsushi AJIRO, Senior consultant, NTT DATA INSTITUTE OF MANAGEMENT CONSULTING, Inc.

E.2. List of documents received

1. Project Design Document for publication ([English]Introduction of Solar PV System at shopping mall.docx)
2. Monitoring Plan Sheet and Monitoring Structure Sheet for publication ([English]Introduction of Solar PV System at shopping mall.xlsx)
3. Modalities of communications statement for publication ([English]MoC_Introduction of Solar PV System at shopping mall.pdf)
4. JCM Approved Methodology VN_AM007 (JCM_VN_AM007_ver01.0.pdf)
5. Monitoring Plan Sheet and Monitoring Structure Sheet VN_AM007 (JCM_VN_AM007_ver01.0.xlsx)
6. JCM Glossary of Terms (JCM_VN_Glossary_ver01.0.pdf)
7. JCM Project Cycle Procedure (JCM_VN_PCP_ver03.0.pdf)
8. JCM Modalities of Communication Statement Form (JCM_VN_F_MoC_ver02.0.pdf)
9. JCM Guidelines for Developing Project Design Document and Monitoring Report (JCM_VN_GL_PDD_MR_ver02.0)
10. JCM Project Design Document Form (JCM_VN_F_PDD_ver02.0.pdf)
11. JCM Guidelines for Validation and Verification (JCM_VN_GL_VV_ver01.0.pdf)
12. JCM Validation Report Form (JCM_VN_F_Val_Rep_ver01.0.docx)
13. Final design document of the installed solar PV module system, issued by Anh Thy Stock Company
14. Company profile of AEON VIETNAM CO., LTD.
15. Company profile of AEON RETAIL CO., LTD.
16. News release of the grand opening of AEON MALL Binh Tan

17. Legal useful life table of the machinery and equipment, issued by Japanese government
18. Product brochure/specification of
    - Power Conditioning System (RPI-M20A)
    - Solar PV Module (NERP156×156-60-P SI 255W)
    - Monitoring system (NEEB0002)
    - Temperature sensor (Si-RS485TC-2T-v)
    - Digital silicon irradiance sensor (Si-RS485-TC-T)
19. Single wire connection diagram of the project solar PV systems
20. Calculation summary of the estimated reference emissions of Year 2016, achieved by the proposed JCM project
21. Guideline for legal requirement of environmental impact assessment in Viet Nam
22. The minutes of the local stakeholder consultation meeting, including the invitation letter and the participant list
23. Presentation materials for the local stakeholder consultation
24. Product brochure of electricity meter (Mk6N) and the certificate of verification of the electricity meter (serial No.215329464)
25. Raw data of electricity production automatically monitored from the Power Conditioning System from
26. Product certification of PV module under tested according to IEC/EN61215, IEC61730-1, and IEC61730-2
27. The signed Modalities of Communications Statement, issued on 07/12/2017

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

Statement of competence

JQA

Name: Mr. Koichiro Tanabe

Qualified and authorized by Japan Quality Assurance Organization.

Function

	Date of qualification
Validator	-
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	-
TA 4.6. Other manufacturing industries	2014/12/22
TA 5.1. Chemical industry	2014/12/22
TA 10.1. Fugitive emissions from oil and gas	2014/12/22
TA 13.1. Solid waste and wastewater	2014/12/22
TA 14.1. Afforestation and reforestation	-

Statement of competence

JQA

Name: Dr. Tadashi Yoshida

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	2015/11/12
TA 4.6. Other manufacturing industries	2014/12/22
TA 5.1. Chemical industry	2014/12/22
TA 10.1. Fugitive emissions from oil and gas	-
TA 13.1. Solid waste and wastewater	-
TA 14.1. Afforestation and reforestation	-