JCM Verification Report Form

A. Summary of verification

A.1. General Information

Title of the project	Energy Saving for Air-Conditioning at Shopping Mall with High-efficiency Centrifugal Chiller.
Reference number	JCM ID009
Monitoring period	01/01/2017 - 30/04/2018
Date of completion of the monitoring report	30/04/2018
Third-party entity (TPE)	PT. Mutuagung Lestari
Project participant contracting the TPE	NTT Facilities Inc.
Date of completion of this report	08/10/2018

A.2 Conclusion of verification and level of assurance

Overall verification opinion	☒ Positive ☐ Negative
☐ Unqualified opinion	Based on the process and procedure conducted, *PT. Mutuagung Lestari* (TPE's name) provides reasonable assurance that the emission reductions for *Energy Saving for Air-Conditioning at Shopping Mall with High-Efficiency Centrifugal Chiller* (project name) ✓ Are free of material errors and are a fair representation of the GHG data and information, and ✓ Are prepared in line with the related JCM rules, procedure, guidelines, forms and other relevant documents
(If overall verification opinion is negative, please check below and state its reasons.) ☐ Qualified Opinion ☐ Adverse opinion ☐ Disclaimer	<State the reasons>

A.3. Overview of the verification results

Item	Verification requirements	No CAR or CL remaining
The project implementation with the eligibility criteria of the applied methodology	The TPE determines the conformity of the actual project and its operation with the eligibility criteria of the applied methodology.	☒
The project implementation against the registered PDD or any approved revised PDD	The TPE assesses the status of the actual project and its operation with the registered/validated PDD or any approved revised PDD.	☒
Calibration frequency and correction of measured values with related requirements	If monitoring Option C is selected, the TPE determines whether the measuring equipments have been properly calibrated in line with the monitoring plan and whether measured values are properly corrected, where necessary, to calculate emission reductions in line with the PDD and Monitoring Guidelines.	☒
Data and calculation of GHG emission reductions	The TPE assesses the data and calculations of GHG emission reductions achieved by/resulting from the project by the application of the selected approved methodology.	☒
Avoidance of double registration	The TPE determines whether the project is not registered under other international climate mitigation mechanisms.	☒
Post registration changes	The TPE determines whether there are post registration changes from the registered PDD and/or methodology which prevent the use of the applied methodology.	☒

Authorised signatory:	Mr. ☒ Ms. ☐
Last name: Sidauruk	First name: Ferry
Title: **Lead Verifier**	
Specimen signature: 	Date: 08/10/2018

B. Verification team and other experts

	Name	Company	Function*	Scheme competence*	Technical competence*	On-site visit
Mr. ☒ Ms. ☐	Ferry Sidauruk	PT Mutuagung Lestari	Lead Verifier	☒		☒
Mr. ☐ Ms. ☒	Yuniar Mitikauji	PT Mutuagung Lestari	Observer	☐		☒
Mr. ☒ Ms. ☐	Manson Naibaho	External Individual	Technical Expert	☐	Yes	☒
Mr. ☒ Ms. ☐	Tony Arifiarachman	PT Mutuagung Lestari	Internal Reviewer	☒		☐

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 verification, findings and conclusions based on reporting requirements

C.1. Compliance of the project implementation and operation with the eligibility criteria of the applied methodology

<Means of verification>

Based on the information obtained from the Project Participant, the JCM's verification activity in PT Pakuwon Jati Tbk is first time conducted. According to the registered/validated PDD, the project chiller was operated since 01/12/2016. The validation report for the JCM's project was completed on 24/03/2017 by Japan Quality Assurance. PT. Mutuagung Lestari has determined during the verification process that the actual implementation and operation of the project has been conducted in conformance with the eligibility criteria of the applied methodology.

The project applied the approved methodology ref. JCM_ID_AM002_ver02.0 "Energy Saving by Introduction of High Efficiency Centrifugal Chiller".

Verification team justified their decision in this report based on the onsite visit and document review methods in accordance with JCM's guidelines. Based on onsite visit, the project are in place and that the PP has operated the project as required by the eligibility criteria.

The steps taken to verify each eligibility criterion and the conclusion on project implementation is summarised as below.

The project has satisfied all of the following criteria:
Criterion 1. Project chiller is a centrifugal chiller with a capacity of less than 1,250 USRt.
* 1 USRt = 3.52 kW.
Justification in the PDD: Verification Team confirmed that the project chiller (HITACHI HC-F550GFG-SSCT and HITACHI HC-F950GFG-SSCT) are centrifugal chillers with a capacity of 569 USRt and 966 USRt respectively.
Assessment process:
Document review was conducted on the technical specification, the records of factory acceptance test (FAT), and a site visit was conducted including assessment of the name plate, operational parameters, maintenance records, and a physical observation.
Conclusion:
Based on the verification processes taken, the verification team confirmed that the project chillers are centrifugal chillers with a capacity of 569 USRt and 966 USRt. Therefore the Criterion 1 is satisfied.

Criterion 2: COP for project chiller i calculated under the standardizing temperature conditions (COP_PJ,tc,i) is more than 6.0. COP_PJ,tc,i is a recalculation of COP of project chiller i (COP_PJ,i) adjusting temperature conditions from the project specific condition to the standardizing conditions. COP_PJ,i is derived in specifications prepared for the quotation or factory acceptance test data at the time of shipment by manufacturer.
The standardizing temperature conditions to calculate COP_PJ,tc,

Chilled water:	Output	7℃
	Input	12℃
Cooling water:	Output	37℃
	Input	32℃

Justification in the PDD: The COP for project chiller (COP_PJ,tc,i) which is introduced to the proposed Project Chiller of 966 USRt is 6.14. The COP number is derived from: 5.99 x (36.89 - 6.07 + 1.5 +1.5) / (37 - 7 +1.5 + 1.5) = 6.14

Justification in the PDD: The COP for project chiller (COP_PJ,tc,i) which is introduced to the proposed Project Chiller of 569 USRt is 6.11. The COP number is derived from, 5.98 x (36.85 - 6.12 + 1.5 +1.5) / (37 - 7 +1.5 + 1.5) = 6.11

Assessment process:
The review is conducted by recomputing and re-tracing the data used for calculating COP_PJ,tc,i. The review also applied for technical specification of the chiller type of 966 USRt and 569 USRt. Based on document review, verification team verified that the validated Monitoring Plan Sheet, value of COP_PJ,i was changed from 5.98 for chiller type 569USRt and 5.99 for chiller type 966 USRt (as FAT value) to 6.28 (specification value). Based on the JCM verification/validation guideline, the fixed ante parameter can not be changed during the project implementation unless there is a justification from JCM Secretariat on the revision. Therefore CAR 01 is raised.

The output cooling water temperature of the condensor for chiller type of 966 USRt and 569 USRt is 36.89℃ and 36.85℃ respectively. Meanwhile, the output chilled water temperature of cooler used for the calculation for chiller type of 966 USRt and chiller type of 569 USRt are 6.07℃ and 6.12°C respectively. The value of COP project, output cooling water temperature of the condensor, and output chilled water temperatur of the cooler are as specified in the factory acceptance tests data by manufacturer.

Conclusion:
Based on the document review, the verification team confirmed that COP project chiller calculated under the standardizing temperature condition has been calculated as formulated in the approved methodology. However, the PP change the COP project chiller of chiller type 569 USRt and 966 USRt from 5.98 and 5.99 respectively to 6.28 (CAR 01).

Criterion 3. Periodical check is planned more than four (4) times annually.
Justification in the PDD: Periodical check is planned four times annually. Letter of consent on the conductance of four times periodical check in a year for the project chiller was prepared by participant, in order to check the troubles occurred from the last check.

Assessment process:
The verification team reviewed the letter of consent issued by PT Pakuwon Jati on commitment to conduct periodic maintenance test 4 times annually outsourced to PT Westindo Esa Perkasa, the distributor of Hitachi's chiller. However, PP can only provide two maintenance reports dated 1 October 2017 and 2 February 2017. Therefore, CAR 02 is raised. PP has a procedure to monitor the chiller operation condition and recording the chiller data every two hour dated on August 2018. There is a logbook contained information on chiller's conditions on its motor, compressor, evaporator and condensor. The sample of information covers in the monitoring sheet are kWh chiller and chilled water outlet temperature.

PT Pakuwon has a procedure to monitor the chiller operation every two hours that is stated in the Procedure of Technical Enginering dated August 2018. There is a logbook contained information on chiller's conditions on its motor, compressor, evaporator and condensor. The information covers monitoring on kwH chiller, chilled water outlet temperature. The manual monitoring period is started in January 2017

Conclusion:
Based on document review, PP can only provide two maintenance reports dated 1 October 2017 and 2 February 2017. Therefore, CAR 02 is raised.

Criterion 4. Ozone Depletion Potential (ODP) of the refrigerant used for project chiller is zero.
Justification in the PDD: Refrigerant for the project chiller is HFC 134 Fa in which the ODP is zero.
Assessment process :
Review document the installation manual Hitachi Centrifugal Water Chiller using HFC 134 Fa (p. 34 on properties refrigerant) and delivery specification of HC F550GFG-SSCT. Based on site visit on the project site, the HFC 134 Fa is used as the refrigerant.
Conclusion:
The project chiller uses the refrigerant is HFC 134 Fa which ODP is zero. Based on site visit on chiller area in the project site, the HFC 134 Fa is applied.

Criterion 5. Plan for not releasing refrigerant used for project chiller is prepared. In the case of replacing the existing chiller with the project chiller, refrigerant used for the existing chiller is not released to the air.
Justification in PDD:
Letter of consent on not releasing refrigerant used for project chiller and existing chillers were prepared by project participant.

Assessment process :
Document review on letter of consent of not releasing refrigerant used for project chiller. Site visit on the refrigerant keeping for the old chiller technology.
Conclusion:
The verification team has reviewed the letter of consent on not releasing refrigerant used for the project chiller made by PT Pakuwon Jati on 1 December 2016. And due to the refrigerant replacement, based on site visit known that the replaced refrigerant is all kept in sealed containers on site. There is no replaced refrigerant release of the project.

<Findings>

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

CAR 01

Nature of the issue raised:

Verification team verified that the validated Monitoring Plan Sheet, value of COP_PJ,i was changed from 5.98 for chiller type 569 USRt and 5.99 for chiller type 966 USRt (as FAT value) to 6.28 (specification value). Based on the JCM verification/validation guideline, the fixed ante parameter can not be changed during the project implementation unless there is a justification from JCM Secretariat on the revision.

Nature of responses provided by the Project Participants:

PP did not change the Project COP, so COP shall be 5.98 for chiller type 569 USRt and 5.99 for chiller type 966USRt as FAT value. Please refer to the revised MPS.

Assessment of the responses:

Verification team then received the revised Monitoring Plan Sheet (MPS) through electronic mail from the PPs. Based on review on the revised MPS, the project COP has been returned to 5.98 for chiller type 569 USRt and 5.99 for chiller type 966 USRt which is the same value as the Factory Acceptance Test (FAT). Thus, CAR-01 is closed.

CAR-02

Nature of the issue raised

There is a commitment of conducting four times periodic maintenance annually stated in letter of consent issued by PT Pakuwon Jati outsourcing to PT Westindo Esa Perkasa who is the distributor of Hitachi's chiller. However, during the verification, there were only two times periodic maintenance report provided during year 2017 which were on 2 February 2017 and 1 October 2017.

Nature of responses provided by the Project Participants:

Response on 7 September 2018

There were periodical check by vendor during target period (from January 2017 until April 2018) as following: 2 February 2017, 3 February 2017, 24 September 2017, 1 October 2017 and 1 March 2018. Additional check report of chiller was sent by email to the Verification Team.

Response on 20 September 2018

There were periodical check by vendor during target period (from January 2017 until April

2018) as following; 2 February 2017, 3 February 2017, 24 September 2017, 1 October 2017 and 1 March 2018.
Pakuwon has been taking actions to keep improving chiller efficiency by periodical monthly water treatment of cooling water by outsourced professional vendor. Cooling water conditions from cooling tower is related chiller efficiency. TPE has sent by email an attachment of sample of the cooling water maintenance report to the Verifiation Team.
The purpose of maintenance check on 24 September 2017 is to check power supply and electrical component to ensure there's no external factor that can affect to all chiller units performance and efficiency.

Assessment of the responses:
Assessment on 7 September 2018
No information on action taken on chiller efficiency improvement in line with FAT referring to the maintenance result. Further, there are additional evidence and explanation required on the maintenance check of 24 September 2017 on the chiller check whether the check covers for all five chiller type implemented for JCM project. The PP was requested to provide additional maintenance check record to meet the requirement of Criterion 3 on the Applied Methodology. CAR 02 is remained open.

Assessment on 20 September 2018
PPs provided additional evidence on periodic check conducted in 2-3 February 2017, 24 September 2017, 1 October 2017 and 1 March 2018. Maintenance check on 24 September 2017 is confirmed conducted for checking power supply and electrical component to ensure there is no external factor affecting all chiller performance. Further, there is evidence sent of sample cooling water maintenance report that is conducted monthly in order to keep improving chiller's efficiency. Based on the additional information and evidence given. Thus, CAR-02 is closed.

<Conclusion based on reporting requirements>
Please state conclusion based on reporting requirements.
The verification team confirmed, that the project has been implemented in conformity with the eligibility criteria of the applied methodology since all CAR have been fulfilled.

C.2. Assessment of the project implementation against the registered PDD or any approved revised PDD

<Means of verification>
The verification team assessed the Monitoring Report and supporting documents, conducted

on-site visit to assess the status of actual project and its operation in accordance with the registered/validated PDD. Based PDD document review and cross checking information with wikimapia and google map, the GPS coordinate of project location is not pointed the correct location of the project. Therefore CL 01 is raised.

The verification team determined through the verification process that the implementation and operation of the project has been in accordance with the description contained in the registered/validated PDD. The verification team, by means of a desk review and an on-site visit, it is assessed that:
- All physical features of the JCM project described in the registered PDD are in place, and
- The PP has operated the JCM project as per the registered PDD.

Based on site observation, 1 high efficient centrifugal chiller of 569 USRt and 4 high-efficiency centrifugal chiller of 966 USRt replacing 5 cooling system are in place. There are also 8 cooling towers replaced with efficient Japanese models. Based on interview with the Operation Staff and document review, the parameter of data monitored is based on the monitoring parameter in the approved methodology of JCM project ID 009. The monitoring parameter verified is consisted of power consumption of project chiller, electricity imported from the grid to the project site and operating time of captive electricity generator. All the parameter both fixed ex-ante and monitored post ante format of Monitoring Report is referred to Monitoring Plan of registered PDD. The report consists of Monitoring Plan Sheet (MPS) and Monitoring Structure Sheet (MSS).

<Findings>

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

CL 01

Nature of the issue raised:

The format of the project location coordinates stated on the PDD, Latitude of S 7°26'27.4" and Longitude of E 112°73'95.9". Verification team reviewed from wikimapia.org and google maps, the format for the project location coordinates was, Latitude of S 07°15'45”S and Longitude of E 112°44'22.9". The PP is requested to revise the project location coordinates on the PDD accordingly.

Nature of responses provided by the Project Participants:

PPs then revised the project location coordinates on the PDD, then sent it through electronic mail to the verification team.

Assessment of the responses:
Based on document review sent by the PP to verification team, the project location coordinates on the revised PDD has been corrected accordingly. The revision of the PDD is notified as second edition (revision of "A.3. Location of project, including coordinates Latitude and longitude) sent by PP to verification dated on 27 September 2018. Verification team has verified the revised PDD, and has confirmed the project location coordinates is accurate against the reference. Thus, CL-01 is closed.

<Conclusion based on reporting requirements>
Please state conclusion based on reporting requirements.
Based on document review and on site visit, the verification team confirms that the project was implemented and operated in accordance with the registered PDD. The project design, fixed ex-ante parameter and monitored post ante parameter described in the PDD are implemented. The revision of the PDD does not impact on the project design, project parameters and the formulation of the emission reduction.

C.3. Compliance of calibration frequency and correction of measured values with related requirements

<Means of verification>
Referring to the Monitoring Plan, the monitoring conducted for parameters EC_PJ,i,p applying option C and using measuring equipment on its monitoring. There are three monitoring points of the said parameter describes in the PDD and it is relevant to onsite verification. The PP applies five electricity meter for each chiller (refer to PDD is monitoring point 1) and two separate electric meter (monitoring point 2 – MDVP 2 and MDVP 5) from the grid source. The PP has provided calibration certificate of the five electricity meter for each chiller from the manufacturer. The manufacturer's calibration certificate refers MTE_SRS400.3-50319 traceable to International standards. However, the company can not provides calibration documents for MDVP 2 and MDVP 5. For generator (monitoring parameter h_gen,p), it also applies monitoring of option C. There is the use of electricity meter (monitoring point 3) in its monitoring plan but there is no calibration certificate presented for the electricity meter of the said generator during the verification. Therefore, CAR 03 is raised.

<Findings>
Please state if CARs, CLs, or FARs are raised, and how they are resolved.
CAR 03
Nature of the issued raised:
There was no calibration evidence provided for monitoring point 2 (power load grid – MDVP

2 and MDVP 5) and monitoring point 3 (electricity meter for generator) as described in the PDD during the verification.
Nature of responses provided by the Project Participants:
Response on 7 September 2018
Pakuwon provided calibration evidence (power meter) and then sent through electronic mail to the verification team accordingly.
Response on 20 September 2018:
Additional closing evidence provides: PP informs which serial number belongs to power load grid and generator as below:
- 053445 (power load grid 1)
- 045110 (generator 1)
- 23127 (power load grid 2)
- 023345 (generator 2)

Assessment of the responses:
Assessment on 7 September 2018
Initially, the PPs sent by email to the verification team the certificate of calibration of the power meter was issued by Unit of Meteorology Management, Department of Cooperative, SME and Trade of Central Jakarta, under Provincial Governmental of DKI Jakarta No. 1165/-1.821.1.K01 dated on 05 September 2018, and valid through 04 September 2033. However, there is no information of which serial number are the monitoring point 2 (power load grid) and monitoring point 3 (generator) is referred to in the certificate of calibration. PP was requested to provide information on serial number of power load grid meter and generator in the certificate of calibration. Based on closing evidence provided, CAR 03 is remained open.
Assessment on 20 September 2018
PP provided information on serial number of power load grid meter (monitoring point 2 in PDD) and generator (monitoring point 3 in PDD) in the certificate of calibration. Serial number 053445 belongs to power load grid 1; serial number 045110 belongs to generator 1; serial number 23127 belongs to power load grid 2 and serial number 023345 belongs to generator 2. Based on further information provided, CAR 03 is closed.

<Conclusion based on reporting requirements>

Please state conclusion based on reporting requirements.

The verification team confirmed that the use of measuring equipment for parameter electricity meter ECPJ i p has satisfied the requirement of MP concerning the calibration of the equipment the measured values referring to the calibration and no correction was required to the measured values (monitored data) during the monitoring period.

C.4. Assessment of data and calculation of GHG emission reductions

<Means of verification>

Verification team assessed the data and calculation of GHG emission reductions achieved by/resulted from the project chiller by the implementation of approved methodology of JCM_ID_AM_002_ver02.0, with title "Energy Saving for Air-Conditioning at Shopping Mall with High Efficiency Centrifugal Chiller". The applied emission factor EF_elec is confirmed to be 0.840 tCO2/MWh, as applied at the time of validation and PDD registration.

Based on on-site observation, the power consumption of the project chiller is directly and continuously measured by an electricity meter. The project applies an automatic data collection system. Based on interview with PP representative, the online data collection is used to calculate emission reduction of the project and the manually recorded data in the log book as a back up data. However, there manual data from January – July 2017 can not be presented by the PP during the verification. Therefore, CAR 04 is raised.

Result of interview with PIC of database reveals that the recorded data is checked on a monthly basis by the responsible staff and the data is also checked through the on line system. The electricity imported from the grid to the project site is sourced from the invoices of grid consumption issued by national grid company on a monthly basis.

The Verification Team confirmed that during the on site visit that there is no captive electricity generator being used in the project site since there is continous supply of grid electricity. If there is any black out, it was only for couple of minutes. Meanwhile the generator takes also couple of minutes for functioning and once it has been functioned, the supply of grid electricity has been back. The Engineering Department also prioritizes electricity supply from generator for escalator and lift rather than air conditioner in black out situation. Therefore, monitoring of the said parameter is not applicable since there is no use of captive electricity.

The roles and responsibilities of the persons are described in the Monitoring Structure Sheet (MSS) in accordance with the requirements of the applied methodology. The monitored data collected is to be checked by the Chiller Operators and the Supervisor, and reported after approval by the Facility Manager and Project Deputy Manager. Facility Manager is not changed and there is no other changes in the organizational structure during the monitoring period. However, PP can not provide operating procedures or work instructions related GHG information management system of the project chillers, including but not limited to raw data recording, data entry to the computer system, data and report distribution, and data backup. Based on this evidence CAR 05 is raised.

When verifying the reported emission reductions, verification team confirmed that there is an audit trail which contains evidence and records that validate the stated values in the Monitoring Report Sheet. It is included the source documents forming the basis of calculations and other information underlying the emission reductions. However, the verification team find out that the value of COP_PJ,i in the Monitoring Plan Sheet is changed from 5.98 (as FAT value) to 6.28 (specification value). Based on verification/validation guideline is fixed during the project therefore, CAR 03 is raised.

Parameters	Monitored values	Method to check values in the monitoring report with sources
EC_PJ,i,p	5,469 MWh/p	The verification team conducts re-tracing and re-computing data used for emission reducation calculation in the monitoring report. Cross checking data used for calculating emission reduction with the raw data in the log book and online data.
EI_grid,p	151,758 MWh/p	[for Option B] The verification team conducts re-tracing and re-computing grid electricity data that is used for calculating emission reduction reduction in the monitoring report.
h_gen,p	9.4 hours/p	The verification team conducts re-tracing and re-computing operation time of generator data that is used for calculating emission reduction in the monitoring report.

<Findings>

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

CAR 04

Nature of the issue raised:

Based on document review the verification team could not obtained documented information of the electricity consumption of project chillers during the period of January to July 2017 at the Pakuwon Jati's site office.

Nature of responses provided by the Project Participants:

Pakuwon has the electricity consumption data (the energy long side report), aside from monitoring data by website.

Assessment of the responses:

PPs have provided and sent through electronic mail to verification team, the Energy Meter

Daily Log Sheet which consist of electricity consumption data for the period January, February, March, April, May, June, and July 2017. Verification team has verified the Energy Meter Daily Log Sheet, and concluded that the electricity consumption data for the period as such mentioned are valid. Those reports and other supporting information sent to verification team are appropriate and accurate as communicated by the PPs. Thus, CAR 04 is closed.

CAR-05
Nature of the issue raised:
The PPs have not provided operating procedures or work instructions related on how to conduct the GHG information management of the project chillers, including but not limited to raw data recording, data entry to the computer system, data and report distribution, and data backup.

Nature of responses provided by the Project Participants:
PPs have provided the operating procedures as requested, and sent them by email to verification team.

Assessment of the responses:
Initially, the PPs sent through electronic mail document of work instruction to the verification team to review. Based on document review, it was found that PP has only provided a work instruction of "Operating the Centrifugal Chiller and Cooling Tower", ref. IK – TP3.ENG – 02 Revision 1, dated on 23 July 2017. Thus, PPs were requested to provide completely the operating procedures and/or work instructions related on how to conduct the GHG information management of the project chiller, including but not limited to raw data recording, data entry to the computer system, data and report distribution, and data backup.
The PPs then provided manual procedures of data recording and accessing for web-based data including for data recording, data entry, data and report distribution, and data backup. Those manual procedures were sent by the PP through electronic mail to the verification team. Thus, CAR-05 is closed.

<Conclusion based on reporting requirements>
Please state conclusion based on reporting requirements.
Based on verification result, verification team concluded some points, as follows:
(a) The PPs have used the appropriate Monitoring Report Sheet of the applied methodology;
(b) A set of data provided by the PP for the monitoring period of 01/01/2017 to 01/04/2018 was complete, and data were available;
(c) Verification team assures reported data by the PP through document review and interview during the on-site visit at project site factory have been justified;

(d) Verification team confirmed that appropiate methods and formula for calculating reference emissions and project emissions have been followed. The verification team is on the opinion that all assumptions, emission factors, default values, and other reference values that were applied in the calculations have been justified.

C.5. Assessment of avoidance of double registration

<Means of verification>

The verification team assessed and confirmed relevance of the written confirmation from the PP that the project is not registered under the other international climate mitigation mechanisms. In addition to the interviews with the PP, the verification team checked publicly accessible information of Clean Development Mechanism (CDM), Joint Implementation (JI), Verified Carbon Standard (VCS), and Gold Standard (GS) and found no identical project as the proposed JCM project in terms of the name of entities, applied technology, scale and the location. The verification team has checked through the website on similar project with similar technology and location in the Republic of Indonesia. Particular attention was given to that there are appoved CDM Methodologies:

- AM0060 - Power saving through replacement by energy efficient chillers,
- AM0070 - Manufacturing of energy efficient domestic refrigerators,
- AM0071 - Manufacturing and servicing of domestic and/or small commercial refrigeration appliances using a low GWP refrigerant,
- AMS II.C - Demand-side energy efficiency activities for specific technologies, and
- AMS II.E - Energy efficiency and fuel switching measures for buildings

Based on verification team's check, there is no such similar project registered under other carbon schemes. The details of the persons interviewed and the documents reviewed are shown in the Section F of this report.

<Findings>

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

CAR 06 - The PP have not been able to show its declaration of avoidance of double registration that the PP ensures the proposed JCM project will not result in double registration in other climate mitigation mechanisms intended to avoid double counting of GHG emission reductions by the project.

Nature of responses provided by the Project Participants:

PPs then submitted the declaration of avoidance of double registration to PT. Mutuagung Lestari's verification team.

Assessment of the responses:

Verification team received from the PP, the declaration of avoidance of double registration

dated on 06 September 2018 through electronic mail. The declaration of avoidance of double registration was signed by the primary authorized person of the NTT FACILITIES INC. (Deputy Senior Executive Manager). Thus, CAR-06 is closed.

<Conclusion based on reporting requirements>

Please state conclusion based on reporting requirements.

The verification team confirmed that the project of "Energy Saving for Air-Conditioning at Shopping Mall with High-efficiency Centrifugal Chiller" is not registered under other international climate mitigation programs.

C.6. Post registration changes

<Means of verification>

The verification team assessed the project documentation applied during verification on site, check the project implementation on site and interview with the company representatives. It was revealed that there was no post registration change of the registered PDD or the approved methodology.

<Findings>

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

No issue was raised to the requirements of this section.

<Conclusion based on reporting requirements>

Please state conclusion based on reporting requirements.

Verification team through the verification process determined that the project of "Energy Saving for Air-Conditioning at Shopping Mall with High-efficiency Centrifugal Chiller", there was no post registration change from the registered/validated PDD or approved methodology which prevent from the use of the applied methodology.

D. Assessment of response to remaining issues

An assessment of response to the remaining issues including FARs from the validation and/or previous verification period, if appropriate

No remaining issues appropriate, including FAR from the JCM project validation report of NTT FACILITIES INC.

E. Verified amount of emission reductions achieved

Year	Verified Reference Emissions (tCO_2e)	Verified Project Emissions (tCO_2e)	Verified Emission Reductions (tCO_2e)
2013	-	-	-
2014	-	-	-
2015	-	-	-
2016	-	-	-
2017	6045.60	5846.56	197
2018	1747.35	1689.58	55
2019			
2020			
Total (tCO_2e)	7792.95	7536.14	252

F. List of interviewees and documents received

F.1. List of interviewees

1. NTT Facilities Inc., Japan
   - Mr. Go Muto (Asst. Chief Representative)
   - Mr. Baron Noviyanto (Project Manager)

2. PT. Pakuwon Jati, Tbk.
   - Mr. Eko Supriyanto (Engineering Manager)
   - Mr. Achmad Qurani (Assistant of Engineering Manager)
   - Mr. Saleh (Boiler dan MVDP Operator)
   - Mr. Supriyanto (Chiller Operator)
   - Mr. Dedy (Genset Operator)
   - Mr. Rudy (Genset Operator)

F.2. List of documents received

1. JCM Project Design Document Form Version 01.0 dated on14/03/2017.
2. JCM_ID_AM002_ver02.0 Energy Saving by Introduction of High Efficiency Centrifugal Chiller dated on 10/11/2015.
3. JCM Validation Report of "Energy Saving for Air-Conditioning at Shopping Mall with High

Efficiency Centrifugal Chiller.

4. JCM Modalities of Communication Statement Form of related project dated on 31/06/2017.
5. Emission factors for electric power interconnection systems in 2015 (2016 release, source: Indonesia JCM Secretariat website).
6. Set of documents of sample invoices from PT. Perusahaan Listrik Negara (Persero).
7. Organizational structure of the Engineering Department of PT. Pakuwon Jati Tbk.
8. Daily Log Book report of the electric energy meter of Engineering Departement of PT. Pakuwon Jati Tbk.
9. Montly report of the electricity power consumption of Engineering Departement of PT. Pakuwon Jati Tbk.
10. Maintenance report of the centrifugal chiller of Engineering Department of PT. Pakuwon Jati Tbk.
11. Letter of Consent of Periodical Check and Use of Refrigerant by NTT Facilities Inc.
12. Monitoring Plan Sheet and Monitoring Structure Sheet (MPS and MSS) (JCM_ID_AM002_ver02.0(Chiller569RT)_ver4.xlsx)
13. Monitoring Plan Sheet and Monitoring Structure Sheet (MPS and MSS) (JCM_ID_AM002_ver02.0(Chiller966RT①)ver4.xlsx)
14. Monitoring Plan Sheet and Monitoring Structure Sheet (MPS and MSS) (JCM_ID_AM002_ver02.0(Chiller966RT②)ver4.xlsx)
15. Monitoring Plan Sheet and Monitoring Structure Sheet (MPS and MSS) (JCM_ID_AM002_ver02.0(Chiller966RT③)ver4.xlsx)
16. Monitoring Plan Sheet and Monitoring Structure Sheet (MPS and MSS) (JCM_ID_AM002_ver02.0(Chiller966RT④)ver4.xlsx)
18. Modalities of communications statement, a validated version for submission of request for registration
19. JCM Approved Methodology ID_AM002 (JCM_ID_AM002_ver02.0.pdf)
20. Monitoring Plan Sheet and Monitoring Structure Sheet ID_AM002 (JCM_ID_AM002_ver02.0.xlsx)
21. JCM Glossary of Terms (JCM_ID_Glossary_ver02.0)
22. JCM Guidelines for Developing Project Design Document and Monitoring Report (JCM_ID_GL_PDD_MR_ver02.0.pdf)
23. JCM Project Cycle Procedure (JCM_ID_PCP_ver05.0.pdf)
24. JCM Guidelines for Validation and Verification (JCM_ID_GL_VV_ver01.0.pdf)
25. JCM Modalities of Communication Statement Form (JCM_ID_F_MoC_ver01.0.pdf)
26. JCM Project Design Document Form (JCM_ID_F_PDD_ver02.0.docx)
27. JCM Validation Report Form (JCM_ID_F_Val_Rep_ver01.0.docx)
28. Company profile of PT. PAKUWON JATI Tbk

29. Test results of trial operation of the installed project chillers
30. List of operating life of equipment/fixtures provided by Japanese national tax agency
31. Specification of the chillers for both the model of 569USRt and 996USRt
32. Factory acceptance test data by manufacturer
33. Letter of consent on the conductance of periodical check four times annually for the project chiller
34. Installation, Operation, and Maintenance Manual of the existing chillers, indicating the specification and type of the refrigerant used
35. Letter of consent on not releasing refrigerant used for project chiller and existing chillers
36. Test and calibration certificate for chiller for 569USRt
37. Test and calibration certificate for chiller for 996USRt
38. CDM approved small scale methodology: AMS-I.A
39. Specification of meter for measuring operating time
40. Calculation spreadsheet of estimated values of power consumption of the project chiller (Monitoring point No.1)
41. Calculation spreadsheet of estimated values of electricity imported from the gid to the project site (Monitoring point No.2)
42. O&M procedure for internal use, indicating the rated capacity of captive electricity generators
43. Summary of calculation of emission reductions achieved by the proposed JCM project
44. JCM Sustainable Development Implementation Plan Form (JCM_ID_F_SDIP_ver01.0)
45. JCM Sustainable Development Implementation Report Form (JCM_ID_F_SDIR_ver01.0)

Annex Certificates or curricula vitae of TPE's verification 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.