



**Verified Carbon  
Standard**

**“UPGRADE OF DOMINICAN POWER  
PARTNERS’ LOS MINA POWER STATION  
FROM OPEN CYCLE TO COMBINED CYCLE  
POWER GENERATION”**



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### Summary:

LGAI Technological Center, S.A.(Applus+ Certification) has performed the verification of the project “Upgrade of Dominican Power Partners’ Los Mina power station from open cycle to combined cycle power generation.” VCS ID1103, against VCS Standard Version 4.1. The scope of verification includes confirming the implementation of the monitoring plan of the registered VCS PD (Version 04) dated 27-May-2013 and the application of the monitoring methodology “Conversion from single cycle to combined cycle power generation”, ACM0007, Version 6.1.0.

The verification is consisted of three phases: i) desk review of the project; ii) remote visit and interviews with project stakeholders; iii) resolution of outstanding issues and the issuance of the final verification report and opinion. The overall verification, from Contract Review to Verification Report & Opinion, was conducted following Applus+ certification internal quality procedures.

During the verification process 03 CARs, 01CL and 02 FARs were raised. All the findings have been closed satisfactorily and the same has been discussed in Appendix 4.

Applus+ certification confirms that the monitoring system is in place and the emission reductions are calculated without material misstatements. The emission reductions from the project activity “Upgrade of Dominican Power Partners’ Los Mina power station from open cycle to combined cycle power generation” in Santo Domingo during the period 01- April -2017 to 31-October-2021(including both days) amount to 1,202,884 tones of CO<sub>2</sub>e.

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# 1 INTRODUCTION

## 1.1 Objective

DOMINICAN POWER PARTNERS, LCDhas contracted LGAI Technological Center, S.A. (Applus+ Certification) to perform the periodic verification of the 'Upgrade of Dominican Power Partners' Los Mina power station from open cycle to combined cycle power generation' in Santo Domingo (hereafter called project). This project has already been registered as a VCS project (VCS ID 1103). The objective of this verification is a thorough and independent assessment of registered project activities against the applicable VCS requirement by the VVB. The verification process shall determine whether the proposed project activity complies with the requirements of latest VCS guidelines, applicability conditions of the selected methodology, relevant host country regulations and guidance issued by the VCS Board.

## 1.2 Scope and Criteria

The scope of verification is to assess the claims and assumptions made in the VCS monitoring report (MR) against the VCS criteria, including but not limited to, VCS standard, applied methodology and other relevant rules and requirements established for VCS project activities. The verification of this project was based on the registered project description & monitoring report /4/ and supporting documents submitted by the project proponent to the verification team. The documents were reviewed against the following guidance and protocols:

VCS standard Version 4.1, Issued: 19-September-2019; updated: 22-April-2021 /16/

Approved baseline and monitoring methodology ACM0007, Version 6.1.0: "Conversion from single cycle to combined cycle power generation"/14/

VCS Program Guide, Version 4.0, dated 19-September-2019 /17/

The Verification is not meant to provide any consulting towards the project participants. However, stated requests for clarification and/or correction actions request may have provided inputs for improvement of the project design.

### 1.3 Level of Assurance

The verification team verified the complete monitoring data for all the parameters of the monitoring plan and confirms that the reported emission reductions are free from any type of material errors. Therefore, Applus+ certification confirms that the verification is conducted with reasonable level of assurance.

### 1.4 Summary Description of the Project

The project activity involves electricity generation by Heat Recovery Steam Generators (HRSGs) that will take advantage of the open cycle generation of the existing natural gas based power plant in Los Mina to produce steam, which will in turn be used to power a 108 MW steam turbine. Los Mina power plant currently includes two 105 MW units, with average historical production of 80MW each, due to grid system requirement. The total capacity of the plant will increase from 210 MW to an expected 318 MW that would be able to cater for the supply to the grid. The project activity results in reductions of greenhouse gas (GHG) emissions that are real, measurable, and verifiable and also plays beneficial role in the mitigation of climate change.

Total power output by 108 MW in order to increase the total capacity without increasing the existing fuel consumption and gas turbines emissions. This will also reduce the existing unit heat rate from 12,000 BTU/Kwh to 8,000 BTU/Kwh. The final combined cycle configuration will be a 2x2x1(2 turbines, 2 HRSG, 1 steam turbine). It is estimated that the upgrade will increase the existing generating net capacity of about 210 MW to 318 MW that would be able to cater for the supply to the grid.

This information was verified during remote assessment and found to be in line with the details provided in the registered PD /01/.

This is commercial operation start date of combined cycled power generator on 01/04/2017. However, the project start date is 01/01/2017 and the same was verified against the registered VCS PD/01/ and also commercial operation start date is verified from commissioning certificates/11/.The emission reductions from the project activity during the period 01- April -2017 to 31-October-2021(including both days) amount to 1,202,884 tonnes of CO<sub>2</sub>e.

## 2 VERIFICATION PROCESS

The registered VCS project is undergoing periodic verification under VCS, the approach adopted to ensure the quality of emission reductions is described in the following sections.

### 2.1 Method and Criteria

Verification was conducted using Applus+ Certification procedures in line with the requirements for the project activity and “VCS standard version 4.1 and program guideline version 4.0” and is conducted using standard auditing techniques to assess the correctness of the information provided by the project participants. Before the assessment begins, members of the team covering the technical scope(s), sectoral scope(s), and relevant host country experience for evaluating the VCS project activity are appointed. The project activity does not fall under category “grouped projects”, hence any sampling methods not to be employed by the validation/verification body for the verification of GHG emission reductions or removals generated by the project.

Applus+ certification assessed and determined whether the proposed implementation and operation of the project activity, and the steps taken to report emission reductions comply with the criteria and relevant guidance provided by the VCS Board. The validation/verification process consist of the following three phases;

- A desk review of the VCS PD and VCS MR
- Remote visit and follow up interviews with project stakeholders
- The resolution of outstanding issues and issuance of final report and opinion

### 2.2 Document Review

The verification is performed primarily as a document review of the approved revised VCS PD, previous MR and Verification report and associated documents as stated in detail in appendix 1 of this document. The assessment is performed by a verification team using a protocol. The cross checks between information provided in the Monitoring report, VCS PD and information from sources other than those used, if available, the team’s sectoral or local expertise and, if necessary, independent background investigations.

### 2.3 Interviews

Due to the current situation with the global COVID-19 pandemic scenario and country wide lock down in most of countries across the globe, an on-site inspection has not been performed by the assessment team. However, the representatives of the PPs and onsite staff of PP were interviewed online via Microsoft Teams meeting on 28-February-2022 i.e. personnel responsible for monitoring of the project activity, data collection and management, and QA/QC procedure. The details of the people interviewed are mentioned in the table below:

S N	Name	Organization
1	Mr. Freddy Obando	PP Representative//DOMINICAN POWER PARTNERS, LCD
2.	Ms. Dhannyelly Cruz Santos	PP Representative//DOMINICAN POWER PARTNERS, LCD
3.	Mr. Alda Reyes Santiago	PP Representative//DOMINICAN POWER PARTNERS, LCD
4.	Mr. Edgar Vladimir Rodriguez Cueto	PP Representative//DOMINICAN POWER PARTNERS, LCD
5.	Mr. Jorge Jimenez Bismark	PP Representative//DOMINICAN POWER PARTNERS, LCD
6.	Ms. Hang Pham	Advisor/Consultant// Coral Future Pte. Ltd.
7.	Mr. Santosh Kumar Singh	Advisor/Consultant// Coral Future Pte. Ltd.

The topics covered during interview ranges from general features and implementation of project to technical details of the project like calibration details, monitoring and measuring system and data collection, recording and archiving procedures. The assessment was drawn based on the feedback received during interview coupled with the documentation and remote observations.

## 2.4 Site Inspections

As discussed in the above section, physical site inspection is not done for the current verification. However, to achieve a reasonable level of assurance, the assessment team has followed the alternative means to substantiate the verification criteria as described in the below table -

Assessment Criteria	Means of verification/source documents	Assessment opinion
Description of project activity	i. Commissioning certificates /9/ ii. PPA signed with DRG/10/ iii. VCS Validationreport /2.1/. iv. Interview with PP	The information's with reference to project capacity, technology, plant equipment's and commissioning dates as

Assessment Criteria	Means of verification/source documents	Assessment opinion
	representatives on 28-February-2022	provided in section 1.1 of MR are found consistent with the documents.
<b>Compliance of the project implementation with the registered project design document</b>	i. Monthly JMRs signed by DRG/8/ ii. Geographical co-ordinates (Location of Project activity) verified through Google Map <sup>1</sup> as well as sharing of live location from PP representative onsite. iii. VCS validation report /2.1/. iv. PPA signed with DRG /10/ v. Interview with PP representatives on 28-February-2022 vi. Latest photographs of major project equipment's installed at site (i.e. Turbine, generators, energy meters, weir intake, penstock, tailrace etc.)/18/	Verified documents indicated the following information: <ul style="list-style-type: none"> <li>• Serial number of energy meters (Main and Check)</li> <li>• Capacity of project</li> <li>• Name of project participant (Ownership of the project activity)</li> </ul> Location of power house is verified through Google Map.  Daily generation records are verified on sample basis to check the operational status of project activity.  Grid connectivity of the project is confirmed through the PPA.  All the information's regarding the project implementation as discuss above are further verified through VCS validation report/2.1/ and found consistent.
<b>Compliance of the registered monitoring plan with applied methodologies and standardized baselines</b>	i. Interview with PP representatives on 28-February-2022 ii. PPA signed with DRG /10/ iii. Monthly JMRs signed by DRG/8/ iv. Invoices raised by project developer to DRG/7/ v. Photograph of all the PLANTS, energy meters installed at site and screen shots of online	The organizational structure, responsibilities and competencies of the personnel confirmed through interview with PP representatives.  Frequency of monitoring of parameters listed under approved monitoring plan is verified through JMRs /Invoices.  The methods used for

<sup>1</sup><https://www.gps-coordinates.net/>

Assessment Criteria	Means of verification/source documents	Assessment opinion
	monitoring system/18/	<p>measuring, recording, storing, aggregating, and reporting the data on monitored parameters are verified through PPA and interactions with site personnel.</p> <p>Procedure for data uncertainty, emergency preparedness, roles and responsibility, operational and management structure are mentioned in the MR is confirmed through interview with PP representatives and found satisfactory.</p>
<b>Compliance with the calibration frequency requirements for measuring instruments</b>	i. Calibration certificates of energy meters/6/ ii. Monthly JMRs signed by DRG/8/ iii. PPA signed with DRG/10/	<p>Calibration frequency and energy meter specifications (Sr.No., make, accuracy class) is verified through calibration certificates, photographs of energy meters and further verified through monthly JMRs and found consistent.</p> <p>Responsibility of calibration and maintenance of energy meters is solely under control of DRG; this is verified through the PPA.</p>
<b>Assessment of data and calculation of emission reductions or net removals</b>	i. Monthly JMRs signed by DRG/8/ ii. Invoices raised by project developer to DRG/7/ iii. VCS validation report /2.1/	<p>Monthly values of monitoring parameters used in ER calculation are verified through JMRs and cross verified with the invoices.</p> <p>Methods, formulae and emission factor for calculating baseline emissions have been followed are in accordance with the applied methodology /14/ and as described in the VCS validation report/2.1/.</p>

It is noteworthy that no sampling plan for verification is applied as 100% data is verified for the current monitoring period. Most of the reference document referred by the assessment team (above table) are either issued /endorsed by grid utility (Dominican Republic grid) DRG, a government agency, hence is deemed authentic.

The assessment team has also used documents such as validation report/2.1/ available publicly. Furthermore, the project activity validated under VCS and currently undergoing first VCS verification. Hence, based on the information's available through approved documents (VCS validation), it can be confirmed that project is implemented and being operated as described in the registered PD/1.1/.

The assessment team has verified sufficient appropriate audit evidences, to reduce audit risk to an acceptably low level as requisite to achieve reasonable level of assurance for the current verification.

## 2.5 Resolution of Findings

The objective of this step is to identify, discuss and conclude on the issues related to the monitoring, implementation and operations of the registered project activity that could impair the capacity of the registered project activity to achieve emission reductions or influence the monitoring and reporting of emission reductions. This is done based on the desk review and remote assessment. The verification team prepares and/or updates a verification protocol (internal document) that records the conformities and non-conformities, which may be of following types;

CAR (Corrective Action Request) is raised if one of the following occurs:

- Non-compliance with the monitoring plan, the methodology or the standardized baseline are found in monitoring and reporting and has not been sufficiently documented by the project participants, or if the evidence provided to prove conformity is insufficient;
- Modifications to the implementation, operation and monitoring of the registered project activity has not been sufficiently documented by the project participants;
- Mistakes have been made in applying assumptions, data or calculations of emission reductions that will impact the quantity of emission reductions;
- Issues identified in a FAR during validation to be verified during verification or previous verification(s) have not been resolved by the project participants.

Clarification request (CL) is raised if information is insufficient or not clear enough to determine whether the applicable VCS requirements have been met. All CARs and CLs raised by the Applus+ certification during verification shall be resolved prior to submitting a request for issuance.

FAR (Forward Action Request) is raised during verification if the monitoring and reporting require attention and/or adjustment for the next verification period.

All the findings that are raised and communicated to project participant during the verification are included under Appendix 4. The section also includes the response, if provided, by the project participants and an assessment by the verification team if it was closed out or otherwise.

### 2.5.1 Forward Action Requests

The project activity is undergoing first verification under VCS; there were two FARs raised during the validation /2.1/. Same has been closed during this verification assessment, the details has been provided in APPENDIX 4: <FINDINGS OVERVIEW> of this verification report.

## 2.6 Eligibility for Validation Activities

Not applicable, as Applus+ holds the accreditation to perform validation activities in this Sectoral Scope.

# 3 VALIDATION FINDINGS

## 3.1 Participation under Other GHG Programs

The project is not applied under any other GHG program like CDM, GS, hence not applicable. This was confirmed through a declaration/14/ submitted by the PP and hence accepted by the assessment team. Further, declaration for the same is checked and found correct by the assessment team. Also assessment team checked the following registries to confirm the same. The details of the registries checked are as follows:

1. <http://cdm.unfccc.int/>
2. <http://www.goldstandard.org/>

### Rejection by other GHG programs

The Project is not rejected by other GHG programs. A declaration/14/ for the same is checked and found correct by the assessment team. Also assessment team checked the following registries to confirm the same. The details of the registries checked are as follows:

1. <http://cdm.unfccc.int/>
2. <http://www.goldstandard.org/>
3. <https://verra.org/verra-standards-and-programs/>

The Project has no intend to generate any other form of GHG-related environmental credit for GHG emission reductions or removals claimed under the VCS Program. Renewable energy certificates are available for trading in the host country However, the same is not availed by the Project Proponent. The undertaking regarding the same is submitted by the PP which is

acceptable to the assessment team and assessment team also checked the web site and found the declaration/14/ to be correct.

### 3.2 Methodology Deviations

The Section 2.6 of the project description (version 4) and MR section 3.2 mentioned the methodology deviation as the equations in the methodology assume that the fuel used is measured in mass or weight units and so include conversion to energy units. When using NG it is common to measure energy content as well as refer to energy content in the supply contracts. In such cases mass and/or weight is often not measured or recorded, as in the case of DPP. To follow the methodology, we used energy data instead of mass or weight and cancelled the conversion to energy. The deviation does not affect the meaning of the equation or the result of the calculations.

However, the above deviation is not applicable for the current monitoring period.

### 3.3 Project Description Deviations

In the project description version 4 issued on 27/05/2013, the project start date was expected on 1st January 2016 and the crediting period was from 1st January 2016 until 31st December 2025. Since the proposed project has actual commissioning date from 1st April 2017, the new project start date will be 1st April 2017 and the project crediting period will be from 1st April 2017 until 31st March 2027. This change does not impact the applicability of the methodology, additionality or the appropriateness of the baseline scenario.

In the project description, EF grid is ex-ante parameter which is fixed for the whole crediting period. The value is used for calculation and fixed for the whole crediting period is 0.6765 tCO<sub>2</sub>/MWh. As EF grid is ex-ante parameter value is considered for whole crediting period as per the tool, this change does not impact the applicability of the methodology, additionality or the appropriateness of the baseline scenario. The same has been found to be correct and hence accepted by the VVB assessment.

During the current monitoring period PP has apply for deviation. The verification team has confirm the there is no impact on the project additionality, and emission reduction calculation. Hence the same has been check and acceptable by the verification and checked with the registered PD and ER sheet calculation.

### 3.4 Grouped Project

This is not a grouped project. Therefore, this section is Not Applicable.

## 4 VERIFICATION FINDINGS

### 4.1 Project Implementation Status

During the onsite audit with PP representative, it was concluded that the project is implemented as per the requirement of the registered VCS PD and approved monitoring plan. During the current monitoring period, it was observed through breakdown log sheet records onsite that no unforeseen incident/event evolved which can impact the operation of the project activity. The project underwent continuous operation and only scheduled maintenance as per the manufactures specification which is acceptable to the assessment team. Moreover, there is no unforeseen incident which can affect the applicability of the methodology and thus the same is acceptable to the assessment team.

Project location is confirmed by the assessment team through Google software. Moreover, assessment team confirm that the latitudes and longitudes as mentioned in the registered PD is correct.

The geographic coordinates of the plant are:

Site Latitude: 18.499418° or in degrees 18°29'59.23 N

Site Longitude: -69.867831° or in degrees 69°52'06.91 W

Starting date of the operation of the project activity is 01/04/2017 which is the date of commissioning/commercial operation of the plant; team checked the commissioning certificate and confirmed that the dates of Commission for the PLANTs are correct. Assessment team also conform during the remote audit that there is no change in project design except deviation requested and the project is implemented as per the description provided in the registered PD. Commissioning dates for 01/04/2017 (changed from 01/01/2016). This is commercial operation start date of combined cycled power generator.

The technical parameters have been verified with the name plates as well as with the technical specifications of PLANTs and also cross checked from the technical manual of the Manufactures. Assessment team confirms that the technical parameters are consistent with the registered VCS PD. The major equipment and specifications of Los Mina project are as follows:

Equipment	Technical Parameters	Value
Two Heat Recovery Steam Generators (HRSGs)	Manufacturer	Nooter Eriksen
	Serial number	1421002
	HP section	47.8 kg/s; 517 °C; 91.7 barg
	LP section	10.28 kg/s; 223.2 °C; 9.8 barg
One Steam turbine	Manufacturer	Mitsubishi Hitachi
	Serial number	D-094

	Type	Induction condensing turbine
	Output	122,700 kW
	Speed	3,600 rpm
One GSU transformer	Manufacturer	Siemens
	Serial number	881348
	Type	SF-150000/138 – 3 phases
	Rated power	90/120/150 MVA
	Rated voltage	138 kV
One generator	Manufacturer	Brush
	Frame size	BDAX 82-445ERH
	Rated output	123.25 MW
	Terminal voltage	13.8 kV
	Speed	3,600 rpm

The assessment team confirmed through remote site interview with PP representative that there is no proposed or actual change to the project design during this monitoring period. It was observed that the monitoring plan was implemented as per the registered VCS PD and applied methodology ACM0007Version 6.1.0. The organisational role and responsibility as mentioned in the registered VCS PD is followed onsite. Meters are not calibrated as per calibration frequency in registered VCS PD. There is delay in calibration and same has been discussed in section 4.5 of this verification report. All the emergency preparedness as mentioned in the registered VCS PD is followed onsite and no discrepancies were found regarding the same. The total emission reductions achieved in this monitoring period i.e. from 01/04/2017 to 31/10/2021 (both days included), the proposed project has achieved total 1,144,395 tCO<sub>2</sub>e of GHG emission reductions. During the monitoring period there were no break downs and plant operated continuously.

**Assessment team concludes the following:**

- a) There is no material discrepancies between project implementation and the project description provided in the registered PD/04/.
- b) The monitoring plan is implemented completely and monitoring system (i.e., process and schedule for obtaining, recording, compiling and analysing the monitored data and parameters) is appropriate.

- c) There is no material discrepancies between the actual monitoring system, and the monitoring plan set out in the project description and the applied methodology/08/.
- d) The GHG emission reductions or removals generated by the project have not included in an emissions trading program or any other mechanism that includes GHG allowance trading/16/.
- e) The project has not received or sought any other form of environmental credit, or has become eligible to do so since validation or previous verification.
- f) The project is registered under VCS only.

In view of the information's as verified above the assessment team is able to conclude that the project has been implemented as described in the project description.

## 4.2 Safeguards

### 4.2.1 No Net Harm

DPP holds the environmental permit for the project activity, which ensures that all environmental requirements, as defined by Law No. 64-00, are performed. The environment permit – see SQS ref. [B\_4] DisposicionPermiso Ambiental, dated 29/03/2012 includes the installation of the combined cycle with an output of 108 MW – see first section, PRIMERO. To further confirm the project's contribution to the sustainable development of the country, as part of the CDM validation process LoA host party – SQS ref. [F\_1] dated 16/07/2012, has been issued by the DNA of the Dominican Republic. The authenticity of the LoA was confirmed by a telephone interview on 26/10/2012 with Mr Moisés Alvarez of the DNA of Dominican Republic, the issuer of the LoA. He confirmed the authenticity of the LoA, dated 16/07/2012. The project activity's negative environmental impacts are therefore not greater than the Los Mina plant without the project, and will mainly occur during the construction period plus the noise of the new turbine. The project will comply with environmental regulation and any additional requirements made by local authority. An environmental license for the plant's operation together with the project activity has already been given to the plant by the Secretary of Environmental Management– see SQS ref. [B\_4] DisposicionPermiso Ambiental, dated 29/03/2012. According to the Secretary of Environmental Management, the Subsecretaria de Gestión Ambiental, (SGA), under the Ministry of Environment, the Secretaría de Estado de Medio Ambiente y Recursos Naturales (SEMARENA), an Environmental Impact Assessment (EIA) is not required for this project activity and the Los Mina plant already holds an updated environmental license which only requires the power plant to comply with local regulations, not including any specific conditions.

#### **Impact on the landscape:**

The project does not have any impact on the landscape, as it is in the boundaries of the plant. Impact on fauna and flora The cooling technology that was chosen for the project are cooling towers with a total make up water consumption of 2 100 GPM. The water studies have been

finalised and results show evidence of a reliable source of underground water for Los Mina power plant. The main source of water will be 4 wells at Los Mina site with a capacity of 500 GPM. Additionally, there will be a well at Ozama River shore that will serve as a backup. Due to the backup well at the river, the project may have an impact on the fauna and flora in the Ozama River when it is used. Permitting process has been started and any requirements and regulations to minimise the environmental impact will be followed. Impact on air and climate The plant does not pose any risk of emitting more air pollutants to the environment, as the project is planned to consume the same amounts of fuel, and to reduce the temperatures of emitted air. The fact that more electricity will be generated from the same amount of fuel means that less GHG will be emitted per kWh and therefore, the project will have positive impact on mitigating climate change. During the remote-site interview with the PP, VVB assessment team could observe three barges that operate as power plants in the port: Estrella del Mar, Estrella del Norte and Sultana del Este (capacity and generation information is included in the grid emission calculation), thus confirming that clean energy is not the standard for Dominican Republic and the project implementation would make considerable environmental benefits for the Dominican Republic. Impact on safety The project does not have any impact on the safety and all continuous monitoring of pollution (liquids, solids and gas) will be carried out in the same way they are being carried out without the project activity.

**Noise.**

The project may have an impact on noise, as the two new HRSGs and the additional turbine will generate noise. During the construction period noise may be created by transportation of material and by construction works. The project will comply with environmental regulation and any additional requirements made by local authority. An environmental license for the plant's operation together with the project activity, given by the Secretary of Environmental Management, is already given to the plant (DPP's environmental permit, "Permiso Ambiental DEA No.0481-MODIFICADO", 2012). According to the Secretary of Environmental Management, the Subsecretaria de Gestión Ambiental, (SGA), under the Ministry of Environment, the Secretaría de Estado de Medio Ambiente y Recursos Naturales (SEMARENA), an Environmental Impact Assessment (EIA) is not required for this project activity and the Los Mina plant already holds an updated environmental license which only requires the power plant to comply with local regulation and does not include any specific condition. In consultation with the above mentioned authority, it was agreed that the only environmental parameter that may change due to the project activity is the noise level. Therefore, an environmental noise analysis was commissioned to establish the current baseline and the results will be submitted for evaluation to the environmental authorities. If additional environmental conditions relating to noise impacts will be agreed upon, DPP will comply and act accordingly.

#### 4.2.2 Local Stakeholder Consultation

The Project is already registered with VCS and registered VCS Project Description; sections 6 describe the Local Stakeholder Consultation Process as in-line with VCS requirement.

As a part of continuous feedback from stakeholders, there were no other major comments or protest raised by the stakeholders and they were totally in support for setting up of these kinds of projects in the region.

For ongoing communication, the PP has also placed a grievance register onsite where in the stakeholder can put down his/her complain and the same if found genuine will be addressed immediately. However, being exhaust heat to generate steam for power generation project there is no feedback/grievance has been reported within this monitoring period verified from the photos provided by the Project participant.

#### 4.3 AFOLU-Specific Safeguards

Not applicable for this verification.

#### 4.4 Accuracy of GHG Emission Reduction and Removal Calculations

The project monitoring has been carried in accordance with the registered VCS PD/01/ and the monitoring report/04/. The monitoring plan laid in the registered PD is being followed at the site/18/. The assessment team has verified the information flow (from data generation, aggregation, to recording, calculation and reporting for these parameters including the values) in the MR/04/.The emission reductions are purely based on the net electricity generated and exported from the machines. PP has provided all the sufficient data for current monitoring period. The values of the parameter net electricity generation supplied to the grid by each phase used in deriving the GHG emission reduction could be very well correlated between the data sets and ER spreadsheet/05/ provided by PP. the verification of each monitoring parameter has been discussed later in section 4.5.

The emission factor for the grid electricity system was calculated as per “Tool to calculate the emission factor for an electricity system” (Version 3) in the VCS-PD. This value is fixed for the whole crediting period which is 0.6765 tCO<sub>2</sub>/MWh

The baseline emission calculation for the monitoring period is described in the table below:

Time	EG <sub>BL,avr</sub> (MWh)	EG <sub>max</sub> (MWh)	EG <sub>PJ,adj,y</sub> (MWh)	EF <sub>CO2,BL</sub> (tCO <sub>2</sub> /MWh)	EF <sub>grid</sub> (tCO <sub>2</sub> /MWh)	BE <sub>y</sub> (tCO <sub>2</sub> )
01/04/2017 - 31/12/2017	763,150	1,379,700	1,685,102	0.6911	0.6765	<b>1,151,144</b>
01/01/2018 - 31/12/2018	1,017,533	1,839,600	2,331,735	0.6911	0.6765	<b>1,592,316</b>
01/01/2019 - 31/12/2019	1,017,533	1,839,600	2,393,668	0.6911	0.6765	<b>1,634,213</b>

01/01/2020 - 31/12/2020	1,017,533	1,839,600	2,040,010	0.6911	0.6765	<b>1,394,964</b>
01/01/2021 - 31/10/2021	847,944	1,533,000	1,749,781	0.6911	0.6765	<b>1,196,141</b>
<b>Total</b>						<b>6,968,778</b>

The baseline emission for the monitoring period is **6,968,778tCO<sub>2</sub>**.

The project emission calculation for the monitoring period is described in the table below:

Time	FC <sub>NG,y</sub> (MMBtu)	EF <sub>CO<sub>2</sub>,y</sub> (tCO <sub>2</sub> /GJ)	PE <sub>y</sub> (tCO <sub>2</sub> )
01/04/2017 - 31/12/2017	14,559,702	0.0583	<b>895,564</b>
01/01/2018 - 31/12/2018	20,146,777	0.0583	<b>1,239,224</b>
01/01/2019 - 31/12/2019	20,681,891	0.0583	<b>1,272,139</b>
01/01/2020 - 31/12/2020	17,626,198	0.0583	<b>1,084,184</b>
01/01/2021 - 31/10/2021	15,118,545	0.0583	<b>929,939</b>
<b>Total</b>			<b>5,421,050</b>

The project emission for the monitoring period is **5,421,050 tCO<sub>2</sub>**.

The leakage emission calculation for the monitoring period is described in the table below:

Time	FC <sub>NG,y</sub> (MMBtu)	LE <sub>LNG,CO<sub>2</sub>,y</sub> (tCO <sub>2</sub> )	LE <sub>y</sub> (tCO <sub>2</sub> )
01/04/2017 - 31/12/2017	14,559,702	92,168	<b>34,434</b>
01/01/2018 - 31/12/2018	20,146,777	127,536	<b>118,657</b>
01/01/2019 - 31/12/2019	20,681,891	130,923	<b>126,724</b>
01/01/2020 - 31/12/2020	17,626,198	111,580	<b>80,660</b>
01/01/2021 - 31/10/2021	15,118,545	95,705	<b>42,858</b>
<b>Total</b>			<b>4,03,333</b>

The project emission for the monitoring period is **403,333 tCO<sub>2</sub>**.

The calculation method and formulae used in calculating baseline emission, project emission and leakage emission is in compliance to the methodology used i.e. ACM0007Version 6.1.0/09/.

#### 4.5 Quality of Evidence to Determine GHG Emission Reductions and Removals

The below tables describe how the parameter, that is to be measured according to the monitoring plan, has been verified to confirm that the actual monitoring complies with the monitoring plan, monitoring data has been thoroughly assessed and that the calibration requirements are met.

<b>Parameter</b>	EG <sub>PJ,y</sub> (Total amount of electricity supplied to the electricity grid by the project power units in year y)	
<b>Means of verification</b>	<b>Criteria/Requirements</b>	<b>Assessment/Observation</b>
	Measuring /Reading /Recording frequency	The parameter is continuously monitored and recorded on monthly basis by Electronic meters (ION Power Meters).
	Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes. The reporting frequency is in line with the monitoring plan as outlined in the registered PD and monitoring methodology.
	Monitoring equipment	Electronic meters (ION Power Meters). Electricity meters which are owned by the grid operator. The details on electricity meters are mentioned in section 4.3 of the MR. Same was found to be correct and verified during remote assessment and cross-checked with calibration certificates.
	Is accuracy of the monitoring	The accuracy of the monitoring

	<p>equipment as stated in the monitoring plan? If the monitoring plan does not specify the accuracy of the monitoring equipment, does the accuracy of the monitoring equipment comply with local/national standards, or as per the manufacturer's specification?</p>	<p>equipment used to measure the input values is 0.2S/IEC, which is as per the registered PD.</p>
	<p>Is the accuracy valid for the entire measuring range or do different accuracy levels apply to different measuring ranges?</p>	<p>Yes. The accuracy of monitoring equipment's is valid for the entire range.</p>
	<p>Calibration frequency /interval:</p>	<p>Calibration frequency of the meters is once in 2 years.</p>
	<p>Is the calibration interval in line with the monitoring plan and/or methodology? If the monitoring plan does not specify the frequency of calibration, is the selected frequency in accordance with the local/national standards, or as per the manufacturer's specifications?</p>	<p>Yes. The calibration frequency is once in 2 years as outlined in the registered PD is in accordance with the national standards.</p>
	<p>Is the calibration of measuring equipment carried out by an accredited person or institution?</p>	<p>Calibration of the measuring equipment's is carried out by an accredited entity. However, there was calibration delay because of the pandemic. The meters belong to the utility, which is responsible for verifying them every two years. For the calibration delay maximum permissible error is taken in to consideration in emission reduction calculation and same has been found to</p>

		correct, hence accepted.
	Is(are) calibration(s) valid for the whole reporting period?	Calibration of meters is not valid for the current monitoring period. There was calibration delay because of the pandemic. The meters belong to the utility, which is responsible for verifying them every two years. For the calibration delay maximum permissible error is taken in to consideration in emission reduction calculation and same has been found to correct, hence accepted.
	Is the calibration carried out for a measuring range comparable with the range for which measurements have been carried out?	The calibration is not carried out appropriately. There was calibration delay because of the pandemic. The meters belong to the utility, which is responsible for verifying them every two years. For the calibration delay maximum permissible error is taken in to consideration in emission reduction calculation and same has been found to correct, hence accepted.
	How were the values in the monitoring report verified?	<p>Cumulative value of <math>EG_{P,y}</math> for entire monitoring period is reported in the monitoring report, and monthly values in the ER calculation sheet. The monthly values were verified from the invoices issued by grid and found to be consistent.</p> <p>Value of this parameter for the current monitoring period was verified as</p> <p>01/04/2017 - 31/12/2017 is 1,786,139 MWh</p>

		<p>01/01/2018 - 31/12/2018 is 2,522,738 MWh</p> <p>01/01/2019 - 31/12/2019 is 2,393,668 MWh</p> <p>01/01/2020 - 31/12/2020 is 2,116,524 MWh</p> <p>01/01/2021 - 31/10/2021 is 1,810,840 MWh</p>
	If applicable, has the reported data been cross-checked with other available data?	The monthly reported values were further cross checked with the monthly invoices raised by the PP and found to be consistent.
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Onsite assessment of the project activity confirms that the necessary QA/QC procedures are in place and the data management system is effective and reliable.
	In case project participants have temporarily not monitored the parameter, has either i) a deviation been approved by the CDM EB or ii) has the parameter been estimated as stipulated by Appendix 1 to the CDM Project Standard?	No such issues.
<b>Findings</b>	CAR#3 was raised and resolved	
<b>Conclusion</b>	<p>The parameter has been monitored appropriately, in accordance with the registered monitoring plan (as per measurement methods and procedures to be applied) and applied methodology. The monitoring results were recorded consistently as per the approved frequency in the monitoring plan.</p> <p>The emission reduction calculation for the project activity is estimated based on the electricity supplied by the wind farm. Since 100% data was verified, the team can ascertain that the values taken for emission reduction calculation are free from material errors.</p>	

Parameter	FC <sub>NG,y</sub> (Quantity of fuel type i used by the project power units in year y)	
Means of verification	<b>Criteria/Requirements</b>	<b>Assessment/Observation</b>
	Measuring /Reading /Recording frequency	The parameter is Continuously monitored and recorded on monthly basis by gas flow meter.
	Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes. The reporting frequency is in line with the monitoring plan as outlined in the registered PD and monitoring methodology.
	Monitoring equipment	NG meters(Daniel Gas Meters). The details NG meters(Daniel Gas Meters) are mentioned in section 4.3 of the MR. Same was found to be correct and verified during remote assessment and cross-checked with calibration certificates.
	Is accuracy of the monitoring equipment as stated in the monitoring plan? If the monitoring plan does not specify the accuracy of the monitoring equipment, does the accuracy of the monitoring equipment comply with local/national standards, or as per the manufacturer's specification?	The accuracy of the monitoring equipment used to measure is as per the registered PD.
	Is the accuracy valid for the entire measuring range or do different accuracy levels apply to different measuring ranges?	Yes. The accuracy of monitoring equipment's is valid for the entire range.

	Calibration frequency /interval:	The gas meters are only calibrated if there is a request or recommendation from manufacturers
	Is the calibration interval in line with the monitoring plan and/or methodology? If the monitoring plan does not specify the frequency of calibration, is the selected frequency in accordance with the local/national standards, or as per the manufacturer's specifications?	Yes. The gas meters are only calibrated if there is a request or recommendation from manufacturers as outlined in the registered PD is in accordance with the national standards.
	Is the calibration of measuring equipment carried out by an accredited person or institution?	Calibration of the measuring equipment's is carried out by an accredited entity.
	Is(are) calibration(s) valid for the whole reporting period?	Calibration of meters is valid for the current monitoring period.
	Is the calibration carried out for a measuring range comparable with the range for which measurements have been carried out?	The calibration is carried out appropriately.
	How were the values in the monitoring report verified?	<p>Cumulative value of <math>FC_{NG,y}</math> for entire monitoring period is reported in the monitoring report, and monthly values in the ER calculation sheet. The monthly values were verified from the invoices issued by supplier and found to be consistent.</p> <p>Value of this parameter for the current monitoring period was verified as</p> <p>01/04/2017 - 31/12/2017 is</p>

		14,559,702 MMBTU  01/01/2018 – 31/12/2018 is 20,146,777 MMBTU  01/01/2019 – 31/12/2019 is 20,681,891MMBTU  01/01/2020 – 31/12/2020 is 17,626,198 MMBTU  01/01/2021 – 31/10/2021 is 15,118,545 MMBTU
	If applicable, has the reported data been cross-checked with other available data?	The monthly reported values were further cross checked with the monthly invoices raised by the PP and found to be consistent.
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Onsite assessment of the project activity confirms that the necessary QA/QC procedures are in place and the data management system is effective and reliable. The consistency of metered fuel consumption quantities should be cross-checked with available purchase invoices from the financial records.
	In case project participants have temporarily not monitored the parameter, has either i) a deviation been approved by the CDM EB or ii) has the parameter been estimated as stipulated by Appendix 1 to the CDM Project Standard?	No such issues.
<b>Findings</b>	CAR#3 was raised and resolved	
<b>Conclusion</b>	The parameter has been monitored appropriately, in accordance with the registered monitoring plan (as per measurement methods and procedures to be applied) and applied methodology. The monitoring	

	<p>results were recorded consistently as per the approved frequency in the monitoring plan.</p> <p>The emission reduction calculation for the project activity is estimated based on the electricity supplied by the wind farm. Since 100% data was verified, the team can ascertain that the values taken for emission reduction calculation are free from material errors.</p>
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<b>Parameter</b>	$\eta_{PU,y}$ (Average energy efficiency of the project power units in year y of the crediting period)													
<b>Means of verification</b>	<table border="1"> <thead> <tr> <th>Criteria/Requirements</th> <th>Assessment/Observation</th> </tr> </thead> <tbody> <tr> <td>Measuring /Reading /Recording frequency</td> <td>The parameter is calculated and recorded at Project activity site.</td> </tr> <tr> <td>Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)</td> <td>Yes. The reporting frequency is in line with the monitoring plan as outlined in the registered PD and monitoring methodology.</td> </tr> <tr> <td>Monitoring equipment</td> <td>Not Applicable</td> </tr> <tr> <td>Is accuracy of the monitoring equipment as stated in the monitoring plan? If the monitoring plan does not specify the accuracy of the monitoring equipment, does the accuracy of the monitoring equipment comply with local/national standards, or as per the manufacturer's specification?</td> <td>Not Applicable</td> </tr> <tr> <td>Is the accuracy valid for the entire measuring range or do different accuracy levels apply to different measuring ranges?</td> <td>Not Applicable</td> </tr> </tbody> </table>	Criteria/Requirements	Assessment/Observation	Measuring /Reading /Recording frequency	The parameter is calculated and recorded at Project activity site.	Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes. The reporting frequency is in line with the monitoring plan as outlined in the registered PD and monitoring methodology.	Monitoring equipment	Not Applicable	Is accuracy of the monitoring equipment as stated in the monitoring plan? If the monitoring plan does not specify the accuracy of the monitoring equipment, does the accuracy of the monitoring equipment comply with local/national standards, or as per the manufacturer's specification?	Not Applicable	Is the accuracy valid for the entire measuring range or do different accuracy levels apply to different measuring ranges?	Not Applicable	
Criteria/Requirements	Assessment/Observation													
Measuring /Reading /Recording frequency	The parameter is calculated and recorded at Project activity site.													
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes. The reporting frequency is in line with the monitoring plan as outlined in the registered PD and monitoring methodology.													
Monitoring equipment	Not Applicable													
Is accuracy of the monitoring equipment as stated in the monitoring plan? If the monitoring plan does not specify the accuracy of the monitoring equipment, does the accuracy of the monitoring equipment comply with local/national standards, or as per the manufacturer's specification?	Not Applicable													
Is the accuracy valid for the entire measuring range or do different accuracy levels apply to different measuring ranges?	Not Applicable													

	Calibration frequency /interval:	Not Applicable
	Is the calibration interval in line with the monitoring plan and/or methodology? If the monitoring plan does not specify the frequency of calibration, is the selected frequency in accordance with the local/national standards, or as per the manufacturer's specifications?	Not Applicable
	Is the calibration of measuring equipment carried out by an accredited person or institution?	Not Applicable
	Is(are) calibration(s) valid for the whole reporting period?	Not Applicable
	Is the calibration carried out for a measuring range comparable with the range for which measurements have been carried out?	Not Applicable
	How were the values in the monitoring report verified?	<p>Cumulative value of <math>\eta_{PJ,y}</math> for entire monitoring period is reported in the monitoring report, and monthly values in the ER calculation sheet.</p> <p>Value of this parameter for the current monitoring period was verified as</p> <p>01/04/2017 - 31/12/2017 is 0.42</p> <p>01/01/2018 - 31/12/2018 is 0.43</p> <p>01/01/2019 - 31/12/2019 is 0.39</p> <p>01/01/2020 - 31/12/2020 is</p>

		0.41 01/01/2021 - 31/10/2021 is 0.41
	If applicable, has the reported data been cross-checked with other available data?	The yearly reported values were further cross checked with the plant data given by the PP and found to be consistent.
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Onsite assessment of the project activity confirms that the necessary QA/QC procedures are in place and the data management system is effective and reliable.
	In case project participants have temporarily not monitored the parameter, has either i) a deviation been approved by the CDM EB or ii) has the parameter been estimated as stipulated by Appendix 1 to the CDM Project Standard?	No such issues.
<b>Findings</b>	CAR#3 was raised and resolved	
<b>Conclusion</b>	<p>The parameter has been monitored appropriately, in accordance with the registered monitoring plan (as per measurement methods and procedures to be applied) and applied methodology. The monitoring results were recorded consistently as per the approved frequency in the monitoring plan.</p> <p>The emission reduction calculation for the project activity is estimated based on the electricity supplied by the wind farm. Since 100% data was verified, the team can ascertain that the values taken for emission reduction calculation are free from material errors.</p>	
<b>Parameter</b>	Q <sub>HR,y</sub> (Quantity of heat recovered from the exhaust heat of the project power units for purposes other than power generation in year y)	

Means of verification	Criteria/Requirements	Assessment/Observation
	Measuring /Reading /Recording frequency	The parameter is calculated as direct measurements by project participants through appropriate metering devices (e.g. temperature, pressure and flow meters for air or feed water)
	Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes. The reporting frequency is in line with the monitoring plan as outlined in the registered PD and monitoring methodology.
	Monitoring equipment	Not Applicable
	Is accuracy of the monitoring equipment as stated in the monitoring plan? If the monitoring plan does not specify the accuracy of the monitoring equipment, does the accuracy of the monitoring equipment comply with local/national standards, or as per the manufacturer's specification?	Not Applicable
	Is the accuracy valid for the entire measuring range or do different accuracy levels apply to different measuring ranges?	Not Applicable
	Calibration frequency /interval:	Not Applicable
	Is the calibration interval in line with the monitoring plan and/or methodology? If the monitoring plan does not specify the frequency of calibration, is the	Not Applicable

	selected frequency in accordance with the local/national standards, or as per the manufacturer's specifications?	
	Is the calibration of measuring equipment carried out by an accredited person or institution?	Not Applicable
	Is(are) calibration(s) valid for the whole reporting period?	Not Applicable
	Is the calibration carried out for a measuring range comparable with the range for which measurements have been carried out?	Not Applicable
	How were the values in the monitoring report verified?	Monitoring of this parameter is only required if heat recovered from the exhaust heat in the most recent years prior to the implementation of the project activity and the amount recovered is more than 3% of energy of the fuel consumed by the project power plant in the same year. There was no heat recovery in Los Mina plant prior to project activity; therefore this parameter is not monitored.
	If applicable, has the reported data been cross-checked with other available data?	Not Applicable
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Onsite assessment of the project activity confirms that the necessary QA/QC procedures are in place and the data management system is effective and reliable.

	In case project participants have temporarily not monitored the parameter, has either i) a deviation been approved by the CDM EB or ii) has the parameter been estimated as stipulated by Appendix 1 to the CDM Project Standard?	No such issues.
<b>Findings</b>	CAR#3 was raised and resolved	
<b>Conclusion</b>	<p>The parameter has been monitored appropriately, in accordance with the registered monitoring plan (as per measurement methods and procedures to be applied) and applied methodology. The monitoring results were recorded consistently as per the approved frequency in the monitoring plan.</p> <p>The emission reduction calculation for the project activity is estimated based on the electricity supplied by the wind farm. Since 100% data was verified, the team can ascertain that the values taken for emission reduction calculation are free from material errors.</p>	

<b>Parameter</b>	NCV <sub>i,y</sub> (Average net calorific value of the natural gas used by the project power units in year y)											
<b>Means of verification</b>	<table border="1"> <thead> <tr> <th>Criteria/Requirements</th> <th>Assessment/Observation</th> </tr> </thead> <tbody> <tr> <td>Measuring /Reading /Recording frequency</td> <td>The parameter values provided by the fuel supplier in invoices.</td> </tr> <tr> <td>Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)</td> <td>Yes. The reporting frequency is in line with the monitoring plan as outlined in the registered PD and monitoring methodology.</td> </tr> <tr> <td>Monitoring equipment</td> <td>Not Applicable</td> </tr> <tr> <td>Is accuracy of the monitoring equipment as stated in the monitoring plan? If the monitoring plan does not specify the accuracy of the monitoring equipment, does the accuracy of</td> <td>Not Applicable</td> </tr> </tbody> </table>	Criteria/Requirements	Assessment/Observation	Measuring /Reading /Recording frequency	The parameter values provided by the fuel supplier in invoices.	Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes. The reporting frequency is in line with the monitoring plan as outlined in the registered PD and monitoring methodology.	Monitoring equipment	Not Applicable	Is accuracy of the monitoring equipment as stated in the monitoring plan? If the monitoring plan does not specify the accuracy of the monitoring equipment, does the accuracy of	Not Applicable	
Criteria/Requirements	Assessment/Observation											
Measuring /Reading /Recording frequency	The parameter values provided by the fuel supplier in invoices.											
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes. The reporting frequency is in line with the monitoring plan as outlined in the registered PD and monitoring methodology.											
Monitoring equipment	Not Applicable											
Is accuracy of the monitoring equipment as stated in the monitoring plan? If the monitoring plan does not specify the accuracy of the monitoring equipment, does the accuracy of	Not Applicable											

	the monitoring equipment comply with local/national standards, or as per the manufacturer's specification?	
	Is the accuracy valid for the entire measuring range or do different accuracy levels apply to different measuring ranges?	Not Applicable
	Calibration frequency /interval:	Not Applicable
	Is the calibration interval in line with the monitoring plan and/or methodology? If the monitoring plan does not specify the frequency of calibration, is the selected frequency in accordance with the local/national standards, or as per the manufacturer's specifications?	Not Applicable
	Is the calibration of measuring equipment carried out by an accredited person or institution?	Not Applicable
	Is(are) calibration(s) valid for the whole reporting period?	Not Applicable
	Is the calibration carried out for a measuring range comparable with the range for which measurements have been carried out?	Not Applicable
	How were the values in the monitoring report verified?	The NCV should be obtained for each fuel delivery, from which weighted average annual values should be calculate. "Fuel delivery" refers to each time a ship unloads LNG at the ANDRES site which is the source of fuel for DPP. NCV

		value may vary a little between ship loads and the equivalent value in BTU/kg is measured by a “third party” (currently by SGS) for each load. The number of ship loads per year depend on consumption rates, but usually an LNG ship unloads fuel once every few weeks.
	If applicable, has the reported data been cross-checked with other available data?	Not Applicable
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Onsite assessment of the project activity confirms that the necessary QA/QC procedures are in place and the data management system is effective and reliable.
	In case project participants have temporarily not monitored the parameter, has either i) a deviation been approved by the CDM EB or ii) has the parameter been estimated as stipulated by Appendix 1 to the CDM Project Standard?	No such issues.
<b>Findings</b>	CAR#3 was raised and resolved	
<b>Conclusion</b>	<p>The parameter has been monitored appropriately, in accordance with the registered monitoring plan (as per measurement methods and procedures to be applied) and applied methodology. The monitoring results were recorded consistently as per the approved frequency in the monitoring plan.</p> <p>The emission reduction calculation for the project activity is estimated based on the electricity supplied by the wind farm. Since 100% data was verified, the team can ascertain that the values taken for emission reduction calculation are free from material errors.</p>	

<b>Parameter</b>	$EF_{NG,upstream,CH_4}$ (Emission factor for upstream fugitive methane emissions from production, transportation, distribution of natural gas used by the project power units in year y.)																	
<b>Means of verification</b>	<table border="1"> <thead> <tr> <th data-bbox="598 405 1011 465">Criteria/Requirements</th> <th data-bbox="1011 405 1417 465">Assessment/Observation</th> </tr> </thead> <tbody> <tr> <td data-bbox="598 465 1011 680">Measuring /Reading /Recording frequency</td> <td data-bbox="1011 465 1417 680">The parameter values provided Reliable and accurate national data on fugitive CH<sub>4</sub> emissions associated with the production, or default emission factors</td> </tr> <tr> <td data-bbox="598 680 1011 904">Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)</td> <td data-bbox="1011 680 1417 904">Yes. The reporting frequency is in line with the monitoring plan as outlined in the registered PD and monitoring methodology.</td> </tr> <tr> <td data-bbox="598 904 1011 965">Monitoring equipment</td> <td data-bbox="1011 904 1417 965">Not Applicable</td> </tr> <tr> <td data-bbox="598 965 1011 1397">Is accuracy of the monitoring equipment as stated in the monitoring plan? If the monitoring plan does not specify the accuracy of the monitoring equipment, does the accuracy of the monitoring equipment comply with local/national standards, or as per the manufacturer's specification?</td> <td data-bbox="1011 965 1417 1397">Not Applicable</td> </tr> <tr> <td data-bbox="598 1397 1011 1585">Is the accuracy valid for the entire measuring range or do different accuracy levels apply to different measuring ranges?</td> <td data-bbox="1011 1397 1417 1585">Not Applicable</td> </tr> <tr> <td data-bbox="598 1585 1011 1646">Calibration frequency /interval:</td> <td data-bbox="1011 1585 1417 1646">Not Applicable</td> </tr> <tr> <td data-bbox="598 1646 1011 1926">Is the calibration interval in line with the monitoring plan and/or methodology? If the monitoring plan does not specify the frequency of calibration, is the selected frequency in accordance with the</td> <td data-bbox="1011 1646 1417 1926">Not Applicable</td> </tr> </tbody> </table>		Criteria/Requirements	Assessment/Observation	Measuring /Reading /Recording frequency	The parameter values provided Reliable and accurate national data on fugitive CH <sub>4</sub> emissions associated with the production, or default emission factors	Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes. The reporting frequency is in line with the monitoring plan as outlined in the registered PD and monitoring methodology.	Monitoring equipment	Not Applicable	Is accuracy of the monitoring equipment as stated in the monitoring plan? If the monitoring plan does not specify the accuracy of the monitoring equipment, does the accuracy of the monitoring equipment comply with local/national standards, or as per the manufacturer's specification?	Not Applicable	Is the accuracy valid for the entire measuring range or do different accuracy levels apply to different measuring ranges?	Not Applicable	Calibration frequency /interval:	Not Applicable	Is the calibration interval in line with the monitoring plan and/or methodology? If the monitoring plan does not specify the frequency of calibration, is the selected frequency in accordance with the	Not Applicable
Criteria/Requirements	Assessment/Observation																	
Measuring /Reading /Recording frequency	The parameter values provided Reliable and accurate national data on fugitive CH <sub>4</sub> emissions associated with the production, or default emission factors																	
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes. The reporting frequency is in line with the monitoring plan as outlined in the registered PD and monitoring methodology.																	
Monitoring equipment	Not Applicable																	
Is accuracy of the monitoring equipment as stated in the monitoring plan? If the monitoring plan does not specify the accuracy of the monitoring equipment, does the accuracy of the monitoring equipment comply with local/national standards, or as per the manufacturer's specification?	Not Applicable																	
Is the accuracy valid for the entire measuring range or do different accuracy levels apply to different measuring ranges?	Not Applicable																	
Calibration frequency /interval:	Not Applicable																	
Is the calibration interval in line with the monitoring plan and/or methodology? If the monitoring plan does not specify the frequency of calibration, is the selected frequency in accordance with the	Not Applicable																	

	local/national standards, or as per the manufacturer's specifications?	
	Is the calibration of measuring equipment carried out by an accredited person or institution?	Not Applicable
	Is(are) calibration(s) valid for the whole reporting period?	Not Applicable
	Is the calibration carried out for a measuring range comparable with the range for which measurements have been carried out?	Not Applicable
	How were the values in the monitoring report verified?	Value applied is 0.000296 tCH <sub>4</sub> /GJ. This is verified and found to be correct.
	If applicable, has the reported data been cross-checked with other available data?	Not Applicable
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Onsite assessment of the project activity confirms that the necessary QA/QC procedures are in place and the data management system is effective and reliable.
	In case project participants have temporarily not monitored the parameter, has either i) a deviation been approved by the CDM EB or ii) has the parameter been estimated as stipulated by Appendix 1 to the CDM Project Standard?	No such issues.
<b>Findings</b>	CAR#3 was raised and resolved	
<b>Conclusion</b>	The parameter has been monitored appropriately, in accordance with the registered monitoring plan (as per measurement methods and procedures to be applied) and applied methodology. The monitoring	

	<p>results were recorded consistently as per the approved frequency in the monitoring plan.</p> <p>The emission reduction calculation for the project activity is estimated based on the electricity supplied by the wind farm. Since 100% data was verified, the team can ascertain that the values taken for emission reduction calculation are free from material errors.</p>
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<b>Parameter</b>	<p>EF<sub>CO2,upstream,LNG</sub> (Emission factor for upstream CO<sub>2</sub> emissions due to fossil fuel combustion/ electricity consumption associated with the liquefaction, transportation, re-gasification and compression of LNG into a natural gas transmission or distribution system during year y of the project activity. distribution of natural gas used by the project power units in year y.)</p>											
<b>Means of verification</b>	<table border="1"> <thead> <tr> <th>Criteria/Requirements</th> <th>Assessment/Observation</th> </tr> </thead> <tbody> <tr> <td>Measuring /Reading /Recording frequency</td> <td> <p>The parameter values provided based on ACM0007, where reliable and accurate data on upstream CO<sub>2</sub> emissions due to fossil fuel combustion/ electricity consumption associated with the liquefaction, transportation, re-gasification and compression of LNG into a natural gas transmission or distribution system is available, project participants should use this data to determine an average emission factor.</p> <p>If reliable and accurate data is not available, then a default value of 0.006 tCO<sub>2</sub>/GJ may be used as a rough approximation.</p> </td> </tr> <tr> <td>Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)</td> <td>Yes. The reporting frequency is in line with the monitoring plan as outlined in the registered PD and monitoring methodology.</td> </tr> <tr> <td>Monitoring equipment</td> <td>Not Applicable</td> </tr> <tr> <td>Is accuracy of the monitoring equipment as stated in the monitoring plan? If the</td> <td>Not Applicable</td> </tr> </tbody> </table>		Criteria/Requirements	Assessment/Observation	Measuring /Reading /Recording frequency	<p>The parameter values provided based on ACM0007, where reliable and accurate data on upstream CO<sub>2</sub> emissions due to fossil fuel combustion/ electricity consumption associated with the liquefaction, transportation, re-gasification and compression of LNG into a natural gas transmission or distribution system is available, project participants should use this data to determine an average emission factor.</p> <p>If reliable and accurate data is not available, then a default value of 0.006 tCO<sub>2</sub>/GJ may be used as a rough approximation.</p>	Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes. The reporting frequency is in line with the monitoring plan as outlined in the registered PD and monitoring methodology.	Monitoring equipment	Not Applicable	Is accuracy of the monitoring equipment as stated in the monitoring plan? If the	Not Applicable
Criteria/Requirements	Assessment/Observation											
Measuring /Reading /Recording frequency	<p>The parameter values provided based on ACM0007, where reliable and accurate data on upstream CO<sub>2</sub> emissions due to fossil fuel combustion/ electricity consumption associated with the liquefaction, transportation, re-gasification and compression of LNG into a natural gas transmission or distribution system is available, project participants should use this data to determine an average emission factor.</p> <p>If reliable and accurate data is not available, then a default value of 0.006 tCO<sub>2</sub>/GJ may be used as a rough approximation.</p>											
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes. The reporting frequency is in line with the monitoring plan as outlined in the registered PD and monitoring methodology.											
Monitoring equipment	Not Applicable											
Is accuracy of the monitoring equipment as stated in the monitoring plan? If the	Not Applicable											

	monitoring plan does not specify the accuracy of the monitoring equipment, does the accuracy of the monitoring equipment comply with local/national standards, or as per the manufacturer's specification?	
	Is the accuracy valid for the entire measuring range or do different accuracy levels apply to different measuring ranges?	Not Applicable
	Calibration frequency /interval:	Not Applicable
	Is the calibration interval in line with the monitoring plan and/or methodology? If the monitoring plan does not specify the frequency of calibration, is the selected frequency in accordance with the local/national standards, or as per the manufacturer's specifications?	Not Applicable
	Is the calibration of measuring equipment carried out by an accredited person or institution?	Not Applicable
	Is(are) calibration(s) valid for the whole reporting period?	Not Applicable
	Is the calibration carried out for a measuring range comparable with the range for which measurements have been carried out?	Not Applicable
	How were the values in the monitoring report verified?	Value applied is 0.006 tCH <sub>4</sub> /GJ. This is verified and found to be correct.

	If applicable, has the reported data been cross-checked with other available data?	Not Applicable
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Onsite assessment of the project activity confirms that the necessary QA/QC procedures are in place and the data management system is effective and reliable.
	In case project participants have temporarily not monitored the parameter, has either i) a deviation been approved by the CDM EB or ii) has the parameter been estimated as stipulated by Appendix 1 to the CDM Project Standard?	No such issues.
<b>Findings</b>	CAR#3 was raised and resolved	
<b>Conclusion</b>	<p>The parameter has been monitored appropriately, in accordance with the registered monitoring plan (as per measurement methods and procedures to be applied) and applied methodology. The monitoring results were recorded consistently as per the approved frequency in the monitoring plan.</p> <p>The emission reduction calculation for the project activity is estimated based on the electricity supplied by the wind farm. Since 100% data was verified, the team can ascertain that the values taken for emission reduction calculation are free from material errors.</p>	

**Parameters fixed ex ante:**

EG<sub>x</sub> : Quantity of electricity supplied by the project power units with three years operational history and no retrofit in this period, to the electricity grid in year x. The applied value 2009: 465,518 MWh/yr; 2010: 1,223,529 MWh/yr; 2011: 1363,551 MWh/yr, this found to be consistent with the registered PD which is fixed at the time of project registration.

FC<sub>NG,x</sub>: Quantity of natural gas used by the project power units in year x. The applied value 2009: 5,595,895 MMBTU/yr; 2010: 14,672,476 MMBTU/yr; 2011: 16,558,146 MMBTU/yr, this found to be consistent with the registered PD which is fixed at the time of project registration.

$NCV_{NG,x}$ : Net calorific value of natural gas used by the project power units in year x. The value provided by the fuel supplier in invoices used. Since fuel consumption data that is available for the three most recent years is in MMBTU, and not in volume or mass unit, NCV for the historical years is not used. This requirement found to be consistent with the registered PD which is fixed at the time of project registration.

$EF_{CO_2,min}$ :  $CO_2$  emission factor of the least carbon intensive fuel type used by the project power units during the three years operational history (NG). The applied value 0.0543 t $CO_2$ /GJ, this found to be consistent with the registered PD which is fixed at the time of project registration.

$EF_{CO_2,max}$ :  $CO_2$  emission factor of the most carbon intensive fuel type used by the project power units during the three years operational history (NG). The applied value 0.0573 t $CO_2$ /GJ, this found to be consistent with the registered PD which is fixed at the time of project registration.

$CAP_{max}$ : Maximum gross power generation capacity of the project power units prior to the implementation of the project activity. The applied value 210 MW this found to be consistent with the registered PD which is fixed at the time of project registration.

$T_{max}$ : Maximum amount of time during a year in which the project power units could have operated at full power generation capacity prior to the implementation of the project activity. The applied value 8760 Hours/yr this found to be consistent with the registered PD which is fixed at the time of project registration.

$HMR_x$ : The average number of hours during which the plant did not operate due to maintenance or repair in year x (hours). The applied value 0 Hours/yr this found to be consistent with the registered PD which is fixed at the time of project registration.

H: Default efficiency of the project power units operated in single cycle mode. This parameter is only required if there is less than three years data for all project power units, or if a major retrofit occurred in this period. Since three years operational data for all project power units is available, this parameter is not used. This requirement is found to be consistent with the registered PD which is fixed at the time of project registration.

$Q_{HR,x}$ : Quantity of heat recovered from the exhaust heat during the most recent year prior to the implementation of the project activity. The applied value 0 GJ/yr this found to be consistent with the registered PD which is fixed at the time of project registration.

$GWP_{CH_4}$ : Global warming potential of methane valid for the relevant commitment period. The applied value 28 t $CO_2e$ /t $CH_4$  this found to be consistent with the registered PD which is fixed at the time of project registration.

$EF_{grid,y}$ : Emission factor of the electricity grid to which the project power units is connected. The applied value 0.0583 t $CO_2$ /MWh this found to be consistent with the registered PD.

#### **Calibration of meters:**

During the verification assessment of the project activity, accuracy of all the metering have been checked and found appropriate. The installation and working conditions of the meters were checked during the remote inspection and were found to be satisfactory. Details of meters are provided in below table:

The current meter details for DOMINICAN POWER PARTNERS, LCD.is as follows:

**Power meter of Los Mina 5:**

Items	Main meter	Backup meter
Manufacturer	Schneider electric	Schlumberger
Model	ION 8650C	Q1000
Serial No.	MW-1109A046-01	20205858
Class-Accuracy	0.2S/IEC	0.2S/IEC
Status during the monitoring period	Good	Good
Calibration frequency	Every 2 years	Every 2 years
Calibration before the monitoring period	27/01/2016	27/01/2016
Calibration in the monitoring period	19/01/2018	19/01/2018
	04/02/2020	04/02/2020
	04/02/2022	04/02/2022
Next Due date of calibration	03/04/2024	03/04/2024

**Power meter of Los Mina 6:**

Items	Main meter	Backup meter
Manufacturer	Schneider electric	Schlumberger
Model	ION 8650C	Q1000
Serial No.	MW-1108A041-01	20205862
Class-Accuracy	0.2S/IEC	0.2S/IEC
Status during the monitoring period	Good	Good
Calibration frequency	Every 2 years	Every 2 years
Calibration before the monitoring period	27/01/2016	27/01/2016
Calibration in the monitoring period	19/01/2018	19/01/2018
	04/02/2020	04/02/2020
	04/02/2022	04/02/2022
Next Due date of calibration	03/04/2024	03/04/2024

**Power meter of Los Mina 7:**

Items	Main meter	Backup meter
Manufacturer	Schneider electric	Schneider electric
Model	ION 8650C	ION 8650C
Serial No.	MW-1603A225-02	MW-1603A226-02
Class-Accuracy	0.2S/IEC	0.2S/IEC
Status during the monitoring period	Good	Good
Calibration frequency	Every 2 years	Every 2 years
Calibration in the monitoring period	28/06/2017	28/06/2017
	24/07/2019	24/07/2019
	24/07/2021	24/07/2021
Next Due date of calibration	23/07/2023	23/07/2023

The assessment team has verified the monthly record issued by the DRG and confirmed that only the data recorded through main meters is used to calculate net electricity supplied to the grid consequently for ER calculations.

**Assessment on delay in calibration:**

There is delay found in meter calibration as the meter calibration frequency is “Once in two years” . There is delay in calibration in Jun 2019 to July 2019 and Jan 2020 to Feb 2020, therefore the PP has applied maximum permissible error for delay period. The last calibration meters results show that all meter are working properly throughout the monitoring period. Furthermore, as per paragraph 366(a) of the VVS version 03, PP has considered maximum permissible error for the delay period as a conservative approach. The PP has updated the calculation in the ER calculation sheet and same was found to be appropriate, hence accepted.

The verification team has remotely checked all the meters and confirmed that the meters were working satisfactorily. Also the calibration of meters is completely under preview of state utility and PP has no control over the same as confirmed through interviews of site personnel and PPA signed by the PP with state utility/12/.

Hence it can be concluded that the approach followed by the PP is conservative and in line with the guidelines provided under paragraph 366(a) of VVS version 03.

The registered VCS PD/01/ & MR /04/ and remote audit observations confirm that the metering equipment are sealed and maintained by the state utility.

In view of the above discussion the assessment team is able to confirm that evidence used to determine the GHG reductions and removals are sufficient and appropriate with respect to quality and quantity.

### GHG Calculations

The emission reduction as per the applied methodology equals the baseline emissions (project emissions and leakage emissions for such project activities is considered zero). The formula provided for the calculation of baseline emissions is:

$$BE_y = EG_{BL,AVR} \cdot EF_{CO_2,BL,y} + (EG_{MAX} - EG_{BL,AVR}) \cdot \min(EF_{CO_2,BL,y}; EF_{grid,y}) + (EG_{PJ,adj,y} - EG_{MAX}) \cdot EF_{grid,y}$$

Where:

$BE_y$  = Baseline emissions in year y (tCO<sub>2</sub>/yr)

$EG_{PJ,adj,y}$  = Quantity of electricity supplied by all project power units to the electricity grid in year y, adjusted for changes to efficiency (MWh/yr)

$EG_{BL,AVR}$  = Average annual quantity of electricity supplied by all project power units to the electricity grid during the defined operational history (MWh/yr)

$EF_{CO_2,BL}$  = Baseline emission factor of all project power units operated in single cycle mode (tCO<sub>2</sub>/MWh)

$EF_{grid,y}$  = Emission factor of the electricity grid to which the project power unit is connected (tCO<sub>2</sub>/MWh)

The maximum annual quantity of electricity that could be generated by the project power units in the baseline scenario ( $EG_{MAX}$ ) is calculated as:

$$EG_{MAX} = CAP_{MAX} \cdot T_{MAX}$$

:

Where,

$EG_{MAX}$  = Maximum annual quantity of electricity that could be generated by all project power units in the baseline scenario (MWh/yr)

$CAP_{MAX}$  = Maximum gross power generation capacity of the project power units prior to the implementation of the project activity (MW)

$T_{MAX}$  = Maximum amount of time during a year in which the project power units could have operated at full power generation capacity prior to the implementation of the project activity (hours/yr)

Since all project power units have three years operational history, and since there was no major retrofit during this period in any of the units, then the maximum annual amount of time that the project power units could have operated at full load prior to the validation of the project activity is calculated as follows

Time	$EG_{BL,avr}$ (MWh)	$EG_{max}$ (MWh)	$EG_{PJ,adj,y}$ (MWh)	$EF_{CO_2,BL}$ (tCO <sub>2</sub> /MWh)	$EF_{grid}$ (tCO <sub>2</sub> /MWh)	$BE_y$ (tCO <sub>2</sub> )
01/04/2017 - 31/12/2017	763,150	1,379,700	1,685,102	0.6911	0.6765	<b>1,151,144</b>
01/01/2018 - 31/12/2018	1,017,533	1,839,600	2,331,735	0.6911	0.6765	<b>1,592,316</b>
01/01/2019 - 31/12/2019	1,017,533	1,839,600	2,393,668	0.6911	0.6765	<b>1,634,213</b>
01/01/2020 - 31/12/2020	1,017,533	1,839,600	2,040,010	0.6911	0.6765	<b>1,395,182</b>
01/01/2021 - 31/10/2021	847,944	1,533,000	1,749,781	0.6911	0.6765	<b>1,196,141</b>
<b>Total</b>						<b>6,968,77</b>

The project emissions ( $PE_y$ ), are defined in “Tool to calculate project or leakage CO<sub>2</sub> emissions from fossil fuel combustion”, and are calculated based on the quantity of fuels combusted and the CO<sub>2</sub> emission coefficient of those fuels, as follows:

$$PE_{FC,j,y} = \sum_i FC_{i,j,y} \cdot COEF_{i,y}$$

Where:

$PE_{FC,j,y}$  = Are the CO<sub>2</sub> emissions from fossil fuel combustion in process j during the year y (tCO<sub>2</sub>/yr);

$FC_{i,j,y}$  = Is the quantity of fuel type i combusted in process j during the year y (mass or volume unit/yr);

$COEF_{i,y}$  = Is the CO<sub>2</sub> emission coefficient of fuel type i in year y (tCO<sub>2</sub>/mass or volume unit)

i = Are the fuel types combusted in process j during the year y

The CO<sub>2</sub> emission coefficient  $COEF_{i,y}$  is calculated based on net calorific value and CO<sub>2</sub> emission factor of the fuel type i, as follows:

$$COEF_{i,y} = NCV_{i,y} \cdot EF_{CO_2,i,y}$$

Where:

$COEF_{i,y}$  = Is the CO<sub>2</sub> emission coefficient of fuel type i in year y (tCO<sub>2</sub>/mass or volume unit)

$NCV_{i,y}$  = Is the weighted average net calorific value of the fuel type i in year y (GJ/mass or volume unit)

$EF_{CO_2,i,y}$  = Is the weighted average CO<sub>2</sub> emission factor of fuel type i in year y (tCO<sub>2</sub>/GJ)

i = Are the fuel types combusted in process j during the year y

The project emission calculation for the monitoring period is described in the table below:

Time	$FC_{NG,y}$ (MMBtu)	$EF_{CO_2,y}$ (tCO <sub>2</sub> /GJ)	$PE_y$ (tCO <sub>2</sub> )
01/04/2017 - 31/12/2017	14,559,702	0.0583	<b>895,564</b>
01/01/2018 - 31/12/2018	20,146,777	0.0583	<b>1,239,224</b>
01/01/2019 - 31/12/2019	20,681,891	0.0583	<b>1,272,139</b>
01/01/2020 - 31/12/2020	17,626,198	0.0583	<b>1,084,184</b>
01/01/2021 - 31/10/2021	15,118,545	0.0583	<b>929,939</b>
<b>Total</b>			<b>5,421,050</b>

The project emission for the monitoring period is **5,421,050 tCO<sub>2</sub>**.

The leakage emissions are associated with the upstream emissions on an increase in fossil fuel use and are determined in the case of Los Mina's project as follows:

$$LE_y = LE_{upstream,y} + LE_{HR,y}$$

Where:

$LE_y$  = Leakage emissions in year y (tCO<sub>2</sub>e/yr)

$LE_{upstream,y}$  = Leakage emissions associated with the upstream emissions of an increase in fossil fuel use in the project activity in year y (tCO<sub>2</sub>e/yr)

$LE_{HR,y}$  = Leakage emissions due to a decrease in the amount of heat recovered from exhaust heat for purposes other than power generation in the project, compared to the most recent year prior to the implementation of the project activity, in year y (tCO<sub>2</sub>e/yr)

#### Determination of $LE_{HR,y}$

Since the quantity of heat recovered from the exhaust heat during the most recent year prior to the implementation of the project activity ( $QHR_x$ ) was zero and therefore was less than 3% of the fossil fuels consumed by the project power units in an energy basis, then emissions from this leakage source are equal to zero and there is no need to calculate  $LE_{HR,y}$ .

#### Determination of $LE_{upstream,y}$

In cases where the fuel consumption in the project activity is lower than the historical fuel consumption in the three historical years x, leakage emissions from this source are equal to zero. Fuel consumption in the project activity is not lower than the historical fuel consumption, therefore, leakage emissions associated with the upstream emissions from an increase in fossil fuel use in the project activity shall be considered. The leakage emissions are calculated as follows:

$$LE_{upstream,y} = MAX \left[ 0, \left( \left( \sum_i FC_{i,y} \cdot NCV_{i,y} \cdot EF_{i,upstream,CH_4} \right) \cdot GWP_{CH_4} + LE_{LNG,CO_2,y} \right) \times \left( 1 - \frac{\frac{1}{3} \cdot \sum_{x=1}^3 FC_{i,x} \cdot NCV_{i,x}}{\sum_i FC_{i,y} \cdot NCV_{i,y}} \right) \right]$$

Where:

$LE_{upstream,y}$  = Leakage emissions associated with the upstream emissions of an increase in fossil fuel use in the project activity in the year y (tCO<sub>2</sub>e/yr)

$FC_{i,y}$  = Quantity of fuel type i used by the project power unit(s) in year y (mass or volume unit/yr)

$NCV_{i,y}$  = Average net calorific value of the fuel type i used by the project power unit(s) in year y (GJ/mass or volume unit)

$EF_{i,upstream,CH_4}$  = Emission factor for upstream fugitive methane emissions from production, transportation, distribution of fossil fuel i used by the project power unit(s) in year y (tCH<sub>4</sub>/GJ)

$GWP_{CH_4}$  = Global warming potential of methane valid for the relevant commitment period (tCO<sub>2</sub>e/tCH<sub>4</sub>)

$LE_{LNG,CO_2,y}$  = Leakage emissions due to fossil fuel combustion/electricity consumption associated with the liquefaction, transportation, re-gasification and compression of LNG into a natural gas transmission or distribution system in year y (tCO<sub>2</sub>e/yr)

$FC_{i,x}$  = Quantity of fuel type i used by the project power unit(s) in year x (mass or volume unit/yr)

$NCV_{i,x}$  = Net calorific value of fuel type i used by the project power unit(s) in year x (GJ/mass or volume unit)

x = Each year of the three years operational history

Leakage emissions due to fossil fuel combustion/electricity consumption associated with the liquefaction, transportation, re-gasification and compression of LNG into a natural gas transmission or distribution system ( $LE_{LNG,CO_2,y}$ ) are calculated, where applicable, as follows:

$$LE_{LNG,CO_2,y} = FC_{LNG,y} \cdot NCV_{LNG,y} \cdot EF_{CO_2,upstream,LNG}$$

Where:

$LE_{LNG,CO_2,y}$  = Leakage emissions due to fossil fuel combustion/electricity consumption associated with the liquefaction, transportation, re-gasification and compression of LNG into a natural gas transmission or distribution system in year y (tCO<sub>2</sub>e/yr)

$FC_{LNG,y}$  = Quantity of natural gas produced from LNG used by the project power unit(s) in year y (mass or volume unit/yr)

$NCV_{LNG,y}$  = Net calorific value of natural gas produced from LNG used by the project power unit(s) in year y (GJ/mass or volume unit)

$EF_{CO_2,upstream,LNG}$  = Emission factor for upstream CO<sub>2</sub> emissions due to fossil fuel combustion/electricity consumption associated with the liquefaction, transportation, re-gasification and compression of LNG into a natural gas transmission or distribution system (tCO<sub>2</sub>e/GJ).

The leakage emission calculation for the monitoring period is described in the table below:

Time	FC <sub>NG,y</sub> (MMBtu)	LE <sub>LNG,CO<sub>2</sub>,y</sub> (tCO <sub>2</sub> )	LE <sub>y</sub> (tCO <sub>2</sub> )
01/04/2017 - 31/12/2017	14,559,702	92,168	<b>29,441</b>
01/01/2018 - 31/12/2018	20,146,777	127,536	<b>101,450</b>
01/01/2019 - 31/12/2019	20,681,891	130,923	<b>108,347</b>
01/01/2020 - 31/12/2020	17,626,198	111,580	<b>68,963</b>
01/01/2021 - 31/10/2021	15,118,545	95,705	<b>36,643</b>
<b>Total</b>			<b>344,844</b>

The project emission for the monitoring period is **344,844 tCO<sub>2</sub>**.

$$ER_y = BE_y - PE_y - LE_y$$

Year	Unit	2017	2018	2019	2020	10/2021
<b>BE<sub>y</sub></b>	tCO <sub>2</sub>	1,151,144	1,592,316	1,634,213	1,394,964	1,196,141
<b>PE<sub>y</sub></b>	tCO <sub>2</sub>	895,564	1,239,224	1,272,139	1,084,184	929,939
<b>LE<sub>y</sub></b>	tCO <sub>2</sub>	29,441	101,450	108,347	68,963	36,643
<b>ER<sub>y</sub></b>	<b>tCO<sub>2</sub></b>	<b>226,139</b>	<b>251,642</b>	<b>253,727</b>	<b>241,817</b>	<b>229,559</b>

Total GHG emission reduction achieved in this monitoring period is **1,202,884tCO<sub>2</sub>**.

The verification team confirms that appropriate methods and formulae for calculating baseline emissions have been followed. The assumptions, emission factors and default values that were applied in the calculations are justified. The verification team confirms that appropriate methods and formulae for calculating baseline emissions have been followed. The assumptions, emission factors and default values that were applied in the calculations are justified. Hence the assessment team has concluded the decrease in emission reduction of the project activity is justified and acceptable.

All the data were made available and have monitored as per required monitoring frequency. The means of verification for the values of parameters, used for baseline emission calculation, is described above. The emission reduction calculation for the project activity is estimated based on the electricity supplied by the TG sets installed at site. Monthly values of electricity generated inserted in the ER sheet was verified with the Meter Reading Report and Invoices provided by the project proponent. Since 100% data was verified, the team can ascertain that the values taken for emission reduction calculation are free from material errors. Therefore, the assessment team confirms that the emission reductions are free from any omissions, misstatement and material errors.

#### 4.6 Non-Permanence Risk Analysis

Not applicable for the project activity. This section is not applicable for non-AFOLU projects.

## 5 VERIFICATION CONCLUSION

Applus+ certification, contracted by DOMINICAN POWER PARTNERS, LCD, has performed the independent verification of the emission reductions for the VCS project activity (VCS ID- 1103) “Upgrade of Dominican Power Partners’ Los Mina power station from open cycle to combined cycle power generation” in Santo Domingo for the monitoring period 01- April -2017 to 31-October-2021as reported in the Monitoring Report Version 03 dated 22-April-2022. The DOMINICAN POWER PARTNERS, LCD is responsible for the collection of data in accordance with the monitoring plan and the reporting of GHG emissions reductions from the project activity.

It is our responsibility to express an independent verification statement on the reported GHG emission reductions from the project activity

Applus+ certification commenced the verification on the basis of the baseline and monitoring methodology ACM0007Version 6.1.0, the monitoring plan contained in the registered VCS PD Version 04, dated 27/05/2013 and VCS guidelines version 4, Monitoring Report Version 03 dated 22-April-2022 as per the process described under Section 2 of this report.

Applus+ certification verification approach is based on the understanding of the risks associated with reporting of GHG emission data and the controls in place to mitigate these. Applus+ certification planned and performed the verification by obtaining evidence and other information and explanations that Applus+ certification considered necessary to give reasonable assurance that reported GHG emission reductions are fairly stated.

In our opinion the GHG emissions reductions reported for the project activity for the period 01-April -2017 to 31-October-2021 are fairly stated in the Monitoring Report Version 03 dated 22-April-2022. The GHG emission reductions were calculated correctly on the basis of the approved baseline and monitoring methodology ACM0007 (Version 6.1.0), and the VCS standard 4.1.

Verification period: From 01- April -2017 to 31-October-2021 (including both days)

Verified GHG Emission reductions and removals in the above verification period:

Year	Baseline emissions or removals (tCO <sub>2</sub> e)	Project emissions or removals (tCO <sub>2</sub> e)	Leakage emissions (tCO <sub>2</sub> e)	Net emission reductions or removals (tCO <sub>2</sub> e)	GHG
2017 (01/04/2017 - 31/12/2017)	1,151,144	895,564	29,441	226,139	
2018 (01/01/2018 - 31/12/2018)	1,592,316	1,239,224	101,450	251,642	
2019 (01/01/2019 - 31/12/2019)	1,634,213	1,272,139	108,347	253,727	
2020 (01/01/2020 - 31/12/2020)	1,394,964	1,084,184	68,963	241,817	
2021 (01/01/2021 - 31/10/2021)	1,196,141	929,939	36,643	229,559	
<b>Total</b>	<b>6,968,778</b>	<b>5,421,050</b>	<b>344,844</b>	<b>1,202,884</b>	

The PP has provided the differences between estimated and achieved emissions reductions in section 5.4 of the MR. There achieved emissions reductions is 27.51 % lesser than the estimated. The power generation and plant efficiency were over estimated by the project proponent and the same has been considered in the PD. The same has been found to be correct, hence accepted by VVB assessment team.

## APPENDIX 1: <REFERENCES>

S.No	Title of Document	Version	Date
1.	Registered VCS PD	04	27/05/2013
2.	VCS Validation Report	1.0	02/06/2009
3.	VCS Monitoring Report	01	24/012/2021
4.	VCS Monitoring Report (Final)	03	22/04/2022
5.	ER spread sheet (corresponding to the final monitoring report)	03	22/04/2022
6	Certificates of Calibration for all the meters belongs to project activity	-	01-04-2017 to 31/10/2021
7.	Invoice issued by PP to state DISCOM	-	For the period 01-04-2017 to 31/10/2021
8.	Monthly JMR and Credit notes issued by DRG for the current verification period.	-	For the period 01-04-2017 to 31/10/2021
9.	“Conversion from single cycle to combined cycle power generation”, ACM0007.	06.1.0	-
10.	Grid Emission Factor.	-	23-10-2012
11.	Commissioning certificate for all the PLANTs of the project activity issued by state electricity authority	-	
12.	Power Purchase Agreements signed between respective Project developer and state electricity authority	-	-
13.	VCS webpage for the project, VCS ID 1103; <a href="https://www.vcsprojectdatabase.org/#/project_details/1103">https://www.vcsprojectdatabase.org/#/project_details/1103</a>	-	Last accessed on 22/03/2022
14.	Letter of declaration dated from PP regarding not having created or sought any other form of environmental credit for the same period	-	03/03/2022
15.	(DPP’s environmental permit, “Permiso Ambiental DEA No.0481-	-	-

S.No	Title of Document	Version	Date
	MODIFICADO”, 2012)		
16.	VCS Standard	Version 4.1	Issued:19-09-2019 Updated: 22-04-2021
17.	VCS Program Guide	Version 4	19/09/2019
18.	Remote assessment –interviews of staff personnel, physical inspection of monitoring system	-	28/02/2022
19.	Monthly generation reports issued by O&M contractor	-	For the period 19/10/2014 to 27/03/2016
20.	Clean Development Mechanism Validation and Verification Standard for Project Activity (CDM-VVS for PA),	3.0	
21.	VCS Monitoring Report	02	04/03/2022
22.	ER spread sheet	02	04/03/2022

## APPENDIX 2: <COMPETENCY STATEMENT>

According to the sectoral scope / technical area and experience in the sectoral or national business environment, Applus+ Certification has composed a project assessment team in accordance with the appointment rules in the internal Quality Management System of Applus+ Certification.

The composition of audit team shall be approved by the Applus+ Certification ensuring that the required skills are covered by the team.

The four qualification levels for team members that are assigned by formal appointment rules are as presented below:

- Lead Auditor (LA).
- Auditor (A) / Auditor in Training (AiT).
- Technical Expert (TE).
- Technical Reviewer (TR).

The sectoral scope / technical area knowledge linked to the applied methodology/ies shall be covered by the assessment team.

Name	Qualification	Coverage of scope	Coverage of technical Area	Financial aspect	Host country Experience	Attendance to the Remote-Site Assessment
Vivek Kumar Ahirwar	Lead Auditor (LA) & Technical Expert (TE)	Yes (1)	Yes (1.1)	N/A	Yes	Yes
Simon Shen	Technical Reviewer (TR)	Yes (1)	Yes (1.1)	N/A	N/A	N/A

The curriculum vitae of the VVB's team members are provided below:

**Vivek Kumar Ahirwar** is a BEE-Certified Energy Auditor by Govt of Santo Domingo with over eight years of relevant experience in energy efficiency, energy audit, thermal and electrical energy generation technology from renewable source and energy conservation in energy intensive industries, designated consumers and commercial buildings, implementation of energy conservation building codes, research, process and green building projects. He is a certified lead auditor for ISO 14001 EMS and 14064. He has experience under various categories of projects stating from renewable to waste to supercritical projects and WCD. He has successfully audited more than 100 GHG (CDM/VCS/GS) projects in different states across the Santo Domingo. He has done Master in Technology (Energy Management) from a premier institute, School of Energy & Environmental Studies, DAVV, Indore (M.P.), Santo Domingo and Bachelor of Engineering (Mechanical Engineering) from Govt. Engineering college, Rewa, RGPV, Santo Domingo.

**Simon Shen** (Master Degree in Thermal Energy Engineering, Bachelor Degree in Environmental Engineering) is a Lead Auditor appointed by Applus+ LGAI for the GHG project assessment. He is based in Shanghai. He has several years of work experience in environmental protection field. Before he joined Applus+ LGAI, he had been worked for TÜV SÜD as a GHG Validator/Verifier and ISO 9001/14001 Lead Auditor for 3.5 Years.

## APPENDIX 3: <ABBREVIATIONS>

ABT	Availability Based Tariff
BEF	Baseline Emission Factor
BM	Build Margin
CAR	Corrective Action Request
CEA	Central Electricity Authority
CERC	Central Electricity Regulatory Commission
CL	Clarification Request
CMS	Central Monitoring System
CMP	Conference of Parties Serving as Meeting of Parties
CO2	Carbon dioxide
DRG	Dominican Republic's grid
EB	Executive Board
EPC	Engineering, Procurement and Construction
FAR	Forward Action Request
GHG	Green House Gas
ISO	International Standards Organization
JMR	Joint Meter Reading
kW	Kilowatt
kWh	Kilowatt hour
MFR	Multi-Function Relay
MR	Monitoring Report
DRG	Tamil Nadu Electricity Board
MW	Megawatt

MWh	Megawatt-hour
NEWNE	Northern Eastern Western Northern-Eastern
O&M	Operation and Maintenance
PD	Project Description
PLF	Plant Load Factor
PP	Project Proponent
PPA	Power Purchase Agreement
QA/QC	Quality Assurance and Quality Control
TOD	Time of the Day
UNFCCC	United Nations Framework Convention on Climate Change
VCS	Voluntary Carbon Standard
VCSA	Voluntary Carbon Standard Association
VCS PD	VCS Project Description
VCUs	Voluntary Carbon Units

## APPENDIX 4: <FINDINGS OVERVIEW>

**Table 1. Remaining FAR from validation and/or previous verification**

<b>FAR ID</b>	01	<b>Section no.</b>	Validation Report PROTOCOL 4: SUMMARY OF REQUESTS	<b>Date : 01/03/2022</b>
<b>Description of FAR</b>				
Actions to analyse environment impact and legal compliance have to be verified. This is especially the case for the cooling water. Report to environment ministry has to be consulted.				
<b>Project participant response</b>				<b>Date : 08/03/2022</b>
Supporting documents towards environment impact and legal compliance submitted				
<b>Documentation provided by project participant</b>				
Supporting Documents				
<b>VBBassessment</b>				<b>Date:19/03/2022</b>
The PP has provided the supporting documents to compliance with environment impact and legal, and also provided compliance with requirement of cooling water. Hence, FAR#1 is closed.				

<b>FAR ID</b>	02	<b>Section no.</b>	Validation Report PROTOCOL 4: SUMMARY OF REQUESTS	<b>Date : 01/03/2022</b>
<b>Description of FAR</b>				
Training for monitoring, monitoring procedures, monitoring organisation, data management, quality control and quality assurance have to be verified.				
<b>Project participant response</b>				<b>Date : 08/03/2022</b>
All supporting documents for Monitoring Plan has been submitted.				
<b>Documentation provided by project participant</b>				
Supporting Documents for Monitoring Plan				
<b>VBBassessment</b>				<b>Date:19/03/2022</b>
The PP has submitted the supporting document for monitoring plan implemented and same has been discussed during remote site visit and confirm its implementation. Hence, FAR#2 closed.				

**Table 2. CL from this verification**

<b>CL ID</b>	01	<b>Section no.</b>	1.9 & 1.10	<b>Date : 01/03/2022</b>
<b>Description of CL</b>				
PP has not submitted the undertaking letter to support the requirement of section 1.9 and 1.10 of the MR.				
<b>Project participant response</b>				<b>Date :08/03/2022</b>
Undertaking letter to support the requirement of section 1.9 and 1.10 of the MR is submitted to the validation team.				
<b>Documentation provided by project participant</b>				

Undertaking letter	
<b>VVB assessment</b>	<b>Date: 19/03/2022</b>
PP has submitted the declaration letter dated 03-March-2022 and same has been reviewed and found inline. Hence CL#01 is closed.	

**Table 3. CAR from this verification**

<b>CAR ID</b>	01	<b>Section no.</b>	1.5, B.1	<b>Date</b> 01/03/2022
<b>Description of CAR</b>				
Project participant mentioned the details regarding the technologies used in the project activity but to verify the same, no such document has been provided by the PP (i.e., technical equipment's details, Commissioning certificates, power purchase agreements, O&M agreement etc.) is provided to VVB team. Corrective action is sought for the same. PP is requested to provide the above documents to assessment team.				
<b>Project participant response</b>				<b>Date : 08/03/2022</b>
PP has submitted the following documents, 1.Technical Details of the equipment 2.Commissioning Certificates 3. PPAs				
<b>Documentation provided by project participant</b>				
1.Technical Details of the equipment 2.Commissioning Certificates 3. PPAs				
<b>VVB assessment</b>				<b>Date: 19/03/2022</b>
PP has provided the required documents as per CAR raised, and same has been reviewed by the assessment team and found correct. Hence CAR#01 is closed.				

<b>CAR ID</b>	02	<b>Section no.</b>	E.3	<b>Date</b> :01/03/2022
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Description of CAR	
<ol style="list-style-type: none"> <li>1. The breakdown details of the power plant are provided in the MR. Further, supporting document regarding the breakdown details are not provided to the assessment team. PP is requested to provide the above documents to assessment team.</li> <li>2. The Line diagram with meter locations are not provided in MR, please provide the same.</li> <li>3. Calibration details of Gas Flow meter (3 meters) is not provided in section 4.2 of the MR. Also provide calibration certificates.</li> <li>4. Supporting document for NCV need to provide by the PP and also what is the frequency has been followed during entire monitoring period.</li> <li>5. How the Average energy efficiency of the project power units in year y is calculated for respective vintage year.</li> <li>6. The PP is requested to update the ER sheet for all parameter as discussed during remote audit interview.</li> </ol>	
Project participant response	Date : 08/03/2022
<ol style="list-style-type: none"> <li>1.Supporting documents for the breakdown details of the power plant has been submitted to PP</li> <li>2.Line diagram with meter locations have been given in the revised MR.</li> <li>3.Calibration details of the gas flow meters has been provided in section 4.2 of the MR and corresponding calibration certificates has been submitted to the assessment team.</li> <li>4.Since fuel consumption data that is available for the three most recent years is in MMBTU i.e (Fuel consumption X NCV), and not in volume or mass unit, NCV for the historical years is not used in the calculation of the baseline emissions.</li> <li>5.Energy Efficiency calculations have been revised in the ER sheet.</li> <li>6.ER Sheet has been revised as per the discussion during remote audit interview.</li> </ol>	
Documentation provided by project participant	
Supporting documents for the breakdown details  ER Sheet	
VVB assessment	Date: 19/03/2022
PP has submitted the revised MR & ER sheet along with the supporting documents to the CAR raised and found correct and inline. Hence, CAR#02 is closed.	

CAR ID	03	Section no.	2.2	Date	:01/03/2022
Description of CAR					

<ol style="list-style-type: none"> <li>1. What are the current practices has been followed at site and also need to update the current MP along with the details. PP shall also provide the evidence for the same.</li> <li>2. The PP is requested to provide ongoing communication with local stakeholder during reported monitoring period.</li> <li>3. The PP is requested details of CSR activity one-half of project if any.</li> </ol>	
<b>Project participant response</b>	<b>Date : 08/03/2022</b>
<ol style="list-style-type: none"> <li>1. During this monitoring period, DPP maintained a formal grievance and redress procedure for local communities and other stakeholders. All reported cases were assessed and resolution was done based on the feedback from the stakeholders.</li> <li>2. PP has submitted the communication with local stakeholder during reported monitoring period.</li> <li>3. Details of the CSR project activity is submitted to the validator</li> </ol>	
<b>Documentation provided by project participant</b>	
communication with local stakeholder	
Details of the CSR	
<b>VVB assessment</b>	<b>Date: 19/03/2022</b>
PP has provided the updated MR along with the evidence i.e. grievance record and feedback from the stakeholder for the current monitoring period and same are acceptable to the assessment team. Hence CAR#03 is closed.	

**Table 4. FAR from this verification**

<b>FAR-ID</b>	<b>XX</b>	<b>Section No.</b>	<b>XX</b>	<b>Date :</b>
<b>Description of FAR</b>				
NA				
<b>Project participant response</b>				<b>Date : DD/MM/YYYY</b>
NA				
<b>Documentation provided by project participant</b>				
NA				
<b>VVB assessment</b>				<b>Date: DD/MM/YYYY</b>
NA				