



Gold Standard[®]
for the Global Goals

TEMPLATE

MONITORING REPORT

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VERSION v. 1.1

RELATED SUPPORT - TEMPLATE GUIDE Monitoring Report v. 1.1

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Key Project Information

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KEY PROJECT INFORMATION

Key Project Information

GS ID (s) of Project (s)	GS5575 ¹
Title of the project (s) covered by monitoring report	20 MW Solar Project in Sanwreej, Jodhpur, Rajasthan
Version number of the PDD/VPA-DD (s) applicable to this monitoring report	07
Version number of the monitoring report	03
Completion date of the monitoring report	28/01/2025
Date of project design certification	11/07/2017
Date of Last Annual Report	20/12/2023
Monitoring period number	4 th
Duration of this monitoring period	01/01/2023 to 29/03/2024 (Both days included)
Project Representative	Infinite Environmental Solutions Limited ²
Host Country	India
Activity Requirements applied	<input type="checkbox"/> Community Services Activities <input checked="" type="checkbox"/> Renewable Energy Activities <input type="checkbox"/> Land Use and Forestry Activities/Risks & Capacities <input type="checkbox"/> N/A
Methodology (ies) applied and version number	ACM0002 "Grid-connected electricity generation from renewable sources" Version 17.0 ³
Product Requirements applied	<input checked="" type="checkbox"/> GHG Emissions Reduction & Sequestration <input type="checkbox"/> Renewable Energy Label <input type="checkbox"/> N/A

¹ <https://registry.goldstandard.org/projects/details/1373>

² Formally known as Infinite Environmental Solutions LLP.

³ <https://cdm.unfccc.int/UserManagement/FileStorage/D5YFS9I3VKBT18MQNGX0LPZ6U7AWCO>

Table 1 - Sustainable Development Contributions Achieved

Sustainable Development Goals Targeted	SDG Impact	Amount Achieved	Units/ Products
SDG 7: Ensure access to affordable, reliable, sustainable and modern energy for all.	MWh of renewable energy generated	48,605.32	MWh
SDG 8: Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all.	Trainings Employees INR	12 Trainings 34 employees INR 3,222,610	Training Employees INR
SDG 13: Climate Action (mandatory)	Emission Reduction	47,521	GS VERs

Table 2 – Product Vintages

Start Dates	End Dates	Amount Achieved		
		MWh	No of Training No of Employees INR	VERs
01/01/2023	31/12/2023	38,923.20 MWh	9 Training 34 Employees INR 2,552,563.13	38,055 tCO ₂ e
01/01/2024	29/03/2024	9,682.12 MWh	3 Training 34 Employees INR 670,047.82	9,466 tCO ₂ e

SECTION A. DESCRIPTION OF PROJECT

A.1. General description of project

The project activity is a 20 MW solar power project, promoted by Janardan Wind Energy Pvt. Ltd. (JWEPL). The purpose of the project activity is to generate clean electricity with utilization of solar energy. The project activity involves installation of 10 MWAC (Project-I) & 10 MWAC (Project-II), totaling to 20 MWAC solar power project under Jawaharlal Nehru National Solar Mission (JNNSM) Phase-II, Batch-II (DCR1 Category). Both the projects are installed in the same project boundary at Village: Sanwreej, Tehsil: Phalodi, District: Jodhpur, State: Rajasthan.

The electricity generated by the project is exported to the NTPC Vidyut Vyapar Nigam (NVVN) Ltd. The electricity generated from the project activity will be evacuated through 132 kV sub- station located at Sanwreej for consumption in the Indian Electricity Grid. The project activity therefore displaces an equivalent amount of electricity, which would have otherwise been generated by fossil fuel dominant electricity grid and there by reduces the associated CO₂ emissions.

Placements of the Purchase Orders i.e., start date of the project activity 20/07/2016. Commissioning Dates of the Project I & Project II are 30/03/2017 and 18/04/2017 respectively. The project is in continuous operation since the implementation.

The present monitoring period is from 01/01/2023 to 29/03/2024 (inclusive of both the dates) through which emission reduction claimed is 47,521 tCO₂e.

The Emission Reductions as per the vintage break-up (2023 & 2024) in the monitoring in the following format:

01/01/2023 to 31/12/2023: 38,055 tCO₂e

01/01/2024 to 29/03/2024: 9,466 tCO₂e

The project proponent actively takes regular feedback from local villagers about project and has also set up a grievance mechanism in place.

The project activity is not registered with any other compliance or voluntary market-based mechanism such as Clean Development Mechanism (CDM)⁴, Voluntary Carbon

⁴ <https://cdm.unfccc.int/Projects/projsearch.html>

Standard (VCS)⁵, Global Carbon Council (GCC)⁶, I-REC⁷ and Indian REC⁸ or any other mechanism. The GHG emissions reductions from the project activity are not accounted for within the relevant system of the host country/regional regulator. The VERs for the same vintage will not be claimed in another standard other than GS4GG and there is no risk of presence of double accounting with national climate policies or programs for the project and GSVERs not included within and counted under a regulated domestic mitigation target or NDC target of India. Also, self-declaration for no double counting has been provided by the Project Developer.

A.2. Location of project

JWEPL has installed solar panels at Village: Sanwreej, Tehsil: Phalodi, District: Jodhpur, State: Rajasthan., India.

Geographical coordinates are given below:

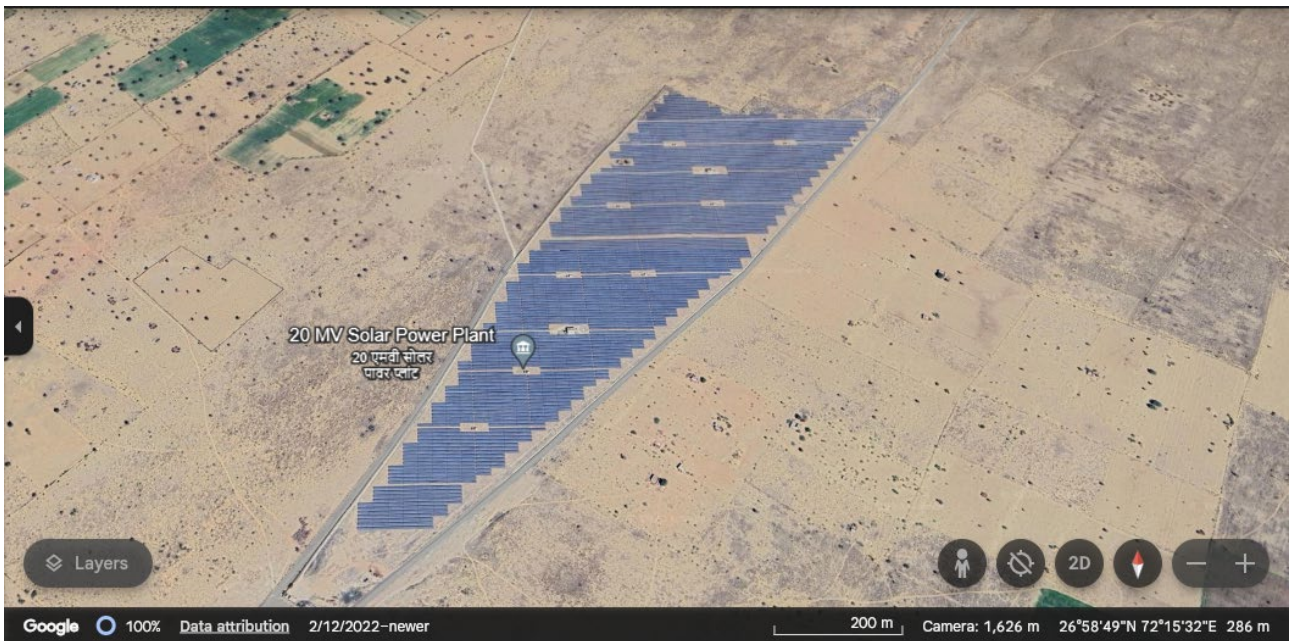
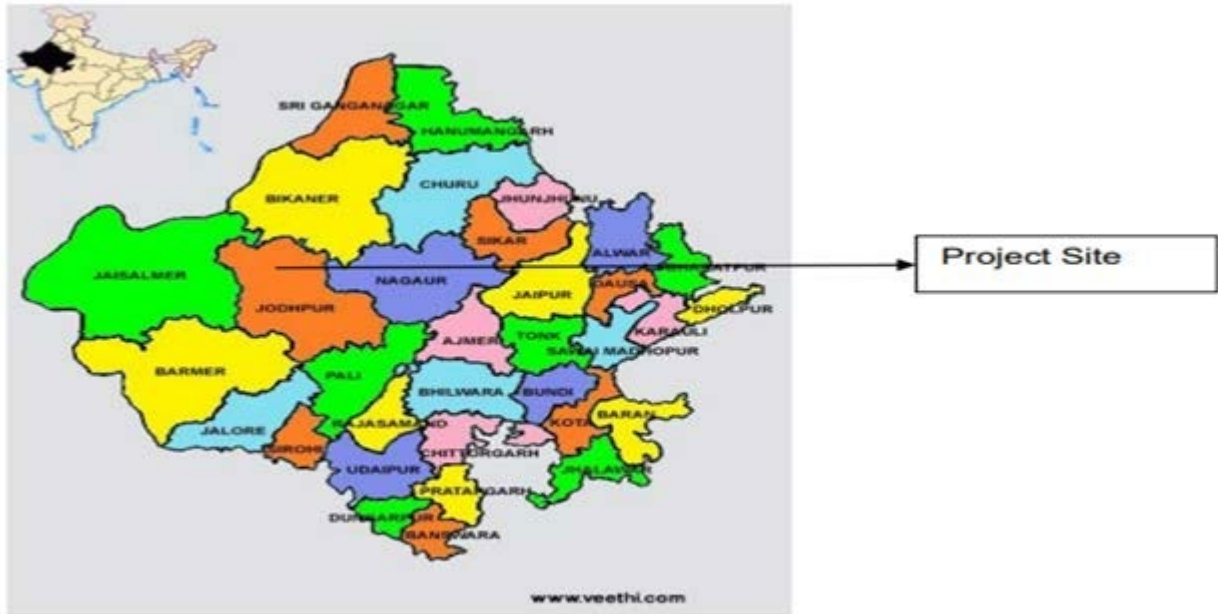
Project Investors' Name	Latitude	Longitude	Altitude of Site	Part Commissioning	Commissioning Date
JWEPL	26.98° N	72.25° E	265 m	10 MW (Project – I)	30/03/2017
				10 MW (Project –II)	18/04/2017

⁵ <https://registry.verra.org/app/search/VCS>

⁶ <https://projects.globalcarboncouncil.com/>

⁷ <https://www.ecohz.com/i-recs>

⁸ https://www.recregistryindia.nic.in/index.php/publics/registered_regens



A.3. Reference of applied methodology

Title: Grid-connected electricity generation from renewable sources

References: Approved Large-Scale Consolidated Methodology: ACM0002 "Grid-connected electricity generation from renewable sources" (Version 17.0)⁹.

Tools:

Tool for the demonstration and assessment of additionality (Tool 1)- Version 7.0¹⁰.

⁹<https://cdm.unfccc.int/UserManagement/FileStorage/D5YFS9I3VKBT18MQNGX0LPZ6U7AWCO>

¹⁰ <https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-01-v7.0.0.pdf>

Tool to calculate the emission factor for an electricity system (Tool 7)- Version 5.0¹¹.

A.4. Crediting period of project

Type of crediting period: Renewable

Start date of crediting period: 30/03/2017 (Retroactive crediting start date)

End date of crediting period: 29/03/2024

Length of crediting period: 7 years

SECTION B. IMPLEMENTATION OF PROJECT

B.1. Description of implemented project

(JWEL) has implemented 20 MW_{AC} solar photovoltaic technology-based power project in Village Sanwreej, Tehsil: Phalodi, District: Jodhpur, State: Rajasthan., India.

Solar power plant has run successfully during the reported monitoring period. No events or situations happened during the reported monitoring period which can alter the applicability of the applied methodology. The solar PV power plant will have solar PV modules, inverters, transformers and other protection system and supporting components.

The details of the project are mentioned in the below table

Project Investor's Name	Janardan Wind Energy Pvt. Ltd. (JWEPL)
Capacity in MW	20 MW _{AC}
Location	Rajasthan, District- Jodhpur
Purchase order	20/07/2016 (Project start date)
Commissioning date	30/03/2017 (Project – I for 10 MW capacity)
	18/04/2017 (Project–II for 10 MW capacity)

The technical details of the project are given below:

Solar PV modules:

Module Supplier	Module Model	Capacity (p)	Number	Total Capacity (MWp)
	TP 303 series	303	19,520	5.91456

¹¹ <https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-07-v5.0.pdf>

TATA Power Solar Systems Ltd.	TP 306 series	306	9,920	3.03552
	TP 309 series	309	19,200	5.9328
	TP 312 series	312	19,360	6.04032
	TP 315 series	315	9,760	3.0744
Total			77,760	23.9976 MWp (23.9976 MW _{DC})

Inverters:

S.No.	Make	10 MW (Project – I)	10 MW (Project – II)
1	Manufacturer	Sungrow Power	Sungrow Power
2	Model	SG2500	SG2500
3	Rated Capacity	2500 kVA	2500 kVA
4	No. of Inverters	4	4
5	Rated Input Voltage (Maximum input Voltage)	1000V	1000V

Transformers:

S.No.	Make	10 MW (Project – I)	10 MW (Project – II)
1	Manufacturer	Danish Private Limited	Danish Private Limited
2	Model	Oil Cooled	Oil Cooled
3	Rated Capacity	2800kVA	2800kVA
4	Type	Step up	Step up
5	No. of Transformers	4	4
6	Rated Input Voltage	33 kV/360V	33 kV/360V

Metering Equipment Details

S.No.	Make	10 MW (Project – I)	10 MW (Project – II)
1	Manufacturer	Secure Make	Secure Make
2	Type	ABT meters	ABT meters
3	Accuracy Level	0.2S	0.2S
4	Total no of meter (Site and Substation)	4	4

B.1.1 Forward Action Requests

No FARs were raised during the previous performance review.

B.2. Post-Design Certification changes

B.2.1. Temporary deviations from the approved Monitoring & Reporting Plan, methodology or standardized baseline

There are no deviations/delays regarding the implementation status from registered PDD, Monitoring & Reporting Plan, applied methodology or applied standardized baseline.

B.2.2. Corrections

There are no Corrections in current monitoring period. The mentioned correction was done during the 2nd verification and the same will be followed for subsequent verifications.

In the registered PDD, there was typographical error related to the Combined Margin emission factor and the same has been identified during the current monitoring period. The value of the parameter $EF_{grid,BM,y}$ under section B.6.2 and section B.6.1 "Step 5: Calculate the build margin (BM) emission factor" of the registered PDD version 3.0 was mentioned as 0.9258 tCO₂e/MWh which was a typographical error.

Therefore, PD has corrected the same information to maintain the consistency in reporting the value for parameter $EF_{grid,BM,y}$ throughout the current monitoring report.

B.2.3. Changes to start date of crediting period

There have not been any changes to start date of crediting period.

B.2.4. Permanent changes from the Design Certified monitoring plan, applied methodology or applied standardized baseline

Monitoring plan is already included, in the registered PDD. No change from registered monitoring plan, applied methodology or applied standardized baseline.

B.2.5. Changes to project design of approved project

There is a change to the project design that happened and in line with the para 241 (a) of the CDM Project standard version 3. PD has been reported the same below during the 2nd monitoring period under this crediting period but there are no changes to project design in current monitoring period and the change mentioned below will be followed for subsequent verifications.

“The number of PV module for the model TP 312 series & TP 315 Series were reported 16,960 and 7,360 in the registered PDD version 3.0 but actual number of PV module commissioned for the model TP 312 series & TP 315 Series are 19,360 and 9,760 respectively. Thus, the total number of PV modules reported in the registered PDD was 72,960 but the number of actual commissioned PV modules are 77,760. Due to this change, the project DC capacity has been changed to 23.9976 MWp from 22.4928 MWp reported in the registered PDD.

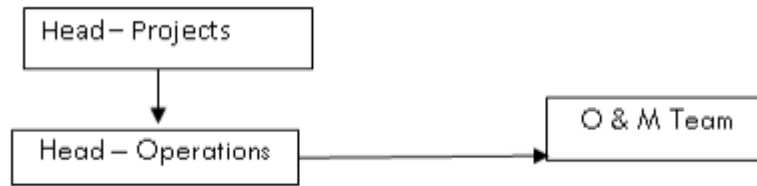
However, the change in the total number of modules does not alter the AC installation capacity of project which is 20 MW_{AC}. There is no change in the Project overall output inverter capacity mentioned in the registered PDD. Therefore, the required correction is done in the current monitoring report.

The reason for the change is to meet contracted capacity, as per PPA section 4.4 “Right to Contracted Capacity & Energy”, PP has to inject 41.18 MU at the max, if not injected the electricity in the contracted capacity range, then PP shall be penalized as per the PPA clause. So, to account the losses, CUF and grid availability, NOs of PV modules has been increased to ensure the reliability of supplying the Contracted Capacity & Energy as per PPA.

SECTION C. DESCRIPTION OF MONITORING SYSTEM APPLIED BY THE PROJECT

The monitoring plan is being devised as per approved methodology ACM0002 “Grid-connected electricity generation from renewable sources” Version 17.0 and as per the modalities and procedures for CDM project activities and the project is grid-connected solar power projects being implemented in Rajasthan, India. The monitoring plan describes about the monitoring organization, parameters to be monitored, monitoring practices, quality assurance, quality control procedures, data storage and achieving.

The authority and team have responsibility for registration, monitoring, measurement, reporting and reviewing of the data rests with the project participants. The following structure is for data monitoring, collection, data archiving and calibration of equipment for this project activity. The team comprises of the following members:



Responsibilities of Head- Projects: Tracking and reviewing the overall functioning and maintenance of the project activity from Head (Operations). Head (Operations) reports to Head (Projects).

Responsibilities of Head – Operations: Overall functioning of the project activity and Coordinating with the O & M Team for the proper functioning of Project activity. He reports to Head (Projects).

Responsibilities of O & M Team: O & M team is responsible for Operations and Maintenance related issues, they are also responsible for day-to-day data collection and monitoring, ensures completeness and reliability of data (calibration of equipment).

Data Measurement

Projects activity comprises of installation of 4 Energy meters, 2 Energy meters (1 main meter (RJB90188) and 1 check meter (RJB90189) for project I 10 MW) at project site PSS end and 2 Energy meters (1 main meter (RJB90190) and 1 check meter (RJB90191) for project I 10 MW) at substation GSS end. Similarly, there are 2 Energy meters (1 main meter (RJB90193) and 1 check meter (RJB90194) for project II 10 MW) at project site PSS end and 2 Energy meters (1 main meter (RJB90195) and 1 check meter (RJB90196) for project II 10 MW) at substation GSS end.

The export and import energy were measured using Main & Check meters installed at Sub-station. Authorized officer of NVVN in the presence of representative of PP took Export & Import readings of Main & Check meters on monthly basis. The meter reading was taken jointly and signed by the representatives of the NVVN and PP. Based on the readings, invoices/ monthly bills was raised by PD. These invoices and monthly bills are used for cross checking the meter readings taken for the respective project activity.

The Project representatives are available during meter reading, the calculations of net electricity supplied to grid is completely under purview of (SEB/DISCOM officer) NTPC Vidyut Vyapar Nigam Ltd. In addition, accuracy class of meters and calibration frequency is under purview of SEB/DISCOM officer and Project owner do not have any

control on it. Project owner gets the monthly credit report from where net electricity supplied to grid is obtained and used for emission reduction calculations.

Mismatch in Monitoring Period and the Billing Period

In case the dates of a particular monitoring period do not match with the dates of the billing period, the net electricity exported to the grid would be calculated from:

$$D = (A/B) * C$$

Where;

D = Net electricity exported to the grid

A = Difference of number of days which are not matching of billing period and monitoring period.

B = Number of days of the billing period/ month which was not matched with the monitoring period.

C = Net Electricity supplied to the grid for that given billing period/ month.

The calculated value after apportioning would be used for calculation of emission reductions during that period.

Data collection and archiving

Export & Import readings from main & check meter are collected under the supervision-authorized representatives of PD. The net electricity supplied to grid are calculated based on export & import readings. Export and Import data would be recorded and stored in electronic &/or Paper. The records are checked periodically by the Head (Operations) and discussed thoroughly with the O & M Team. The period of storage of the monitored data will be 2 years after the end of crediting period or till the last issuance of VERs for the project activity whichever occurs later. Both the main and check meter of both the project I & II are found within the acceptable limits of accuracy functioning properly.

Emergency Preparedness

The project activity does not result in any unidentified activity that can result in substantial emissions from the project activity. No need for emergency preparedness in data monitoring is visualized. However, in the event that the Main meter is not in service as a result of maintenance, repairs or testing, the Check meter will be used for readings. In the unlikely event of failure of both Main meter and check meter installed at grid sub-station, is found to be outside the acceptable limits of accuracy or faulty or not functioning properly, it will be repaired or replaced simultaneously and the meters are

replaced immediately by the spare meter kept available at the site and the export & import readings from Main & Check Meter installed at the PSS end will be used for monitoring of net electricity exported to the grid. During the monitoring period all the meters were operating in the acceptable limits of accuracy at site.

SECTION D. DATA AND PARAMETERS

D.1. Data and parameters fixed ex ante or at renewal of crediting period

Relevant SDG Indicator 13: Take urgent action to combat climate change and its impacts

Data/parameter:	$EF_{grid,OM,y}$
Unit	tCO ₂ e/MWh
Description	Operating Margin CO ₂ Emission Factor in year y
Source of data	Central Electricity Authority: "CO ₂ Emission Database, Version 11" ¹²
Value(s) applied)	0.9941
Choice of data or measurement methods and procedures	Calculated as per "Tool to calculate the emission factor for an electricity system, version 5.0.0" as 3-year generation weighted average using data for the years 2012-2013, 2013-2014 & 2014-2015. The data are obtained from "CO ₂ Baseline Database for Indian Power Sector" version 11.0, published by Central Electricity Authority, Ministry of Power, Government of India.
Purpose of data	For calculation of baseline emission
Additional comments	This parameter is fixed ex-ante for the entire crediting period.

Data/parameter:	$EF_{grid,BM,y}$
Unit	tCO ₂ e/MWh
Description	Build Margin CO ₂ Emission Factor in year y
Source of data	Central Electricity Authority: "CO ₂ Emission Database CEA CO ₂ Baseline database Version 11" ¹³

¹² https://cea.nic.in/wp-content/uploads/baseline/2020/07/user_guide_ver11.pdf

¹³ https://cea.nic.in/wp-content/uploads/baseline/2020/07/user_guide_ver11.pdf

Value(s) applied)	0.9285
Choice of data or measurement methods and procedures	Calculated as per "Tool to calculate the emission factor for an electricity system, version 5.0.0". The data are obtained from "CO ₂ Baseline Database for Indian Power Sector" version 11.0, published by Central Electricity Authority, Ministry of Power, Government of India.
Purpose of data	For calculation of baseline emission
Additional comments	This parameter is fixed ex-ante for the entire crediting period.

Data/parameter:	EF _{grid CM,y}
Unit	tCO ₂ e/MWh
Description	Combined Margin CO ₂ Emission Factor in year y
Source of data	Central Electricity Authority: "CO ₂ Emission Database CEA CO ₂ Baseline database Version 11 ¹⁴ "
Value(s) applied)	0.9777
Choice of data or measurement methods and procedures	Calculated as per "Tool to calculate the emission factor for an electricity system, version 5.0.0". The data are obtained from "CO ₂ Baseline Database for Indian Power Sector" version 11.0, published by Central Electricity Authority, Ministry of Power, Government of India.
Purpose of data	For calculation of baseline emission
Additional comments	This parameter is fixed ex-ante for the entire crediting period.

D.2 Data and parameters monitored

Relevant SDG Indicator 7.2: Affordable and Clean Energy

Data / Parameter	EG _{facility, y}
Unit	MWh

¹⁴ https://cea.nic.in/wp-content/uploads/baseline/2020/07/user_guide_ver11.pdf

Description	Quantity of net electricity generation supplied by the project plant/unit to the grid in year y (MWh)								
Source of data	Monthly Meter Reading Reports (separately for each individual 10 MW(Project-I and Project-II))								
Value(s) applied	<p>48,605.32 MWh</p> <p>Monitoring period: 01/01/2023 to 29/03/2024¹⁵</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">Vintage</th> <th style="text-align: right;">Net Generation (MWh)</th> </tr> </thead> <tbody> <tr> <td>01/01/2023 to 31/12/2023</td> <td style="text-align: right;">38,923.20</td> </tr> <tr> <td>01/01/2024 to 29/03/2024</td> <td style="text-align: right;">9,682.12</td> </tr> <tr> <td>Total</td> <td style="text-align: right;">48,605.32</td> </tr> </tbody> </table>	Vintage	Net Generation (MWh)	01/01/2023 to 31/12/2023	38,923.20	01/01/2024 to 29/03/2024	9,682.12	Total	48,605.32
Vintage	Net Generation (MWh)								
01/01/2023 to 31/12/2023	38,923.20								
01/01/2024 to 29/03/2024	9,682.12								
Total	48,605.32								
Measurement methods and procedures	<p>Data type: Measured</p> <p>Monitoring equipment: Energy Meters of accuracy class 0.2s</p> <p>Recording Frequency: Continuous monitoring and Monthly recording from Energy Meters, Summarized Annually.</p> <p>Archiving Policy: Paper &/or Electronic</p> <p>Calibration frequency: Once in 5 years as per CEA guidelines¹⁶</p> <p>Electricity exported/imported to the grid is in kWh. However, for the calculation purpose electricity exported is converted in MWh.</p> <p>The Net electricity supplied to the grid by the project activity will be calculated as a difference of electricity exported to the grid, electricity imported from the grid obtained from Monthly Meter reading reports provided by SEB as per below equation:</p> <p>$EG_{\text{facility},y} = EG_{\text{Export}} - EG_{\text{import}}$</p> <p>Cross checking:</p>								

¹⁵ As the current monitoring period spans from 01/01/2023 to 29/03/2024, and JMR is prepared for complete month Hence, for March 2024 the apportioning is applied using the formula mentioned in the section C.

¹⁶ https://cea.nic.in/wp-content/uploads/2020/04/review_regulation.pdf

	<p>Quantity of net electricity supplied to the grid will be cross checked from the invoices/monthly bill raised by the Project Participant to NTPC.</p> <p>As per the registered PDD, calibration of meters is under the control of State Utility and frequency of calibration is not within the control of PP. However, as the PDD the PP shall ensure at least once in five-year calibration as per the CEA guidelines. During the monitoring period, the meters have been calibrated and there has been no error or fault in the meters identified during the latest calibration as well.</p> <p>Below are the details of meter numbers and calibration dates are discussed in appendix 1 of the MR.</p> <p>*All the meters are of "Secure Make: with 0.2s Accuracy Class".</p>
Monitoring frequency	<p>Measuring Frequency: Continuous</p> <p>Frequency of Recording: Monthly</p>
QA/QC procedures	<p>Calibration of all the meters will be undertaken once in 5 years as per CEA guidelines and faulty meter will be duly replaced immediately. The meters will be of accuracy class 0.2s</p>
Purpose of data	<p>The Data/Parameter is required to calculate the baseline emission</p>
Additional comment	<p>Data will be archived electronically for a period of 2 years beyond the end of the crediting period.</p>

Relevant SDG Indicator 8.5: Decent Work and Economic Growth

Data / Parameter	<p>Quantitative employment and Income generation</p>
Unit	<ul style="list-style-type: none"> • Quantitative employment - Number (employees) • Income generation- Rupees (INR) <p>Equal pay for work of equal value for both men and women - Rupees (INR)</p>
Description	<p>No. of staff employed in the project activity and cumulative income provided to them on annual basis.</p>
Source of data	<p>Employee rolls, pay-slips, attendance registers, vouchers, Gate entry records etc.</p>

Value(s) applied	<p>As per the requirements for plant operations. The project activity generates employment both directly and indirectly for skilled as well as local unskilled workers on contract basis.</p> <p>1.The total number of employments are 34. Out of which 6 are non-local and rest are local.</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2" style="text-align: left;">Employee bifurcation based on nature of job</th> </tr> </thead> <tbody> <tr> <td style="width: 70%;">Permanent</td> <td style="text-align: center;">06</td> </tr> <tr> <td>Temporary</td> <td style="text-align: center;">28</td> </tr> <tr> <th colspan="2" style="text-align: left;">Employee bifurcation based on skill level</th> </tr> <tr> <td>Skilled</td> <td style="text-align: center;">06</td> </tr> <tr> <td>Unskilled</td> <td style="text-align: center;">28</td> </tr> <tr> <th colspan="2" style="text-align: left;">Employee bifurcation based on Gender</th> </tr> <tr> <td>Male</td> <td style="text-align: center;">34</td> </tr> <tr> <td>Female</td> <td style="text-align: center;">00</td> </tr> </tbody> </table> <p>2.The income generation is 3,222,610 INR for the current monitoring period.</p>	Employee bifurcation based on nature of job		Permanent	06	Temporary	28	Employee bifurcation based on skill level		Skilled	06	Unskilled	28	Employee bifurcation based on Gender		Male	34	Female	00
Employee bifurcation based on nature of job																			
Permanent	06																		
Temporary	28																		
Employee bifurcation based on skill level																			
Skilled	06																		
Unskilled	28																		
Employee bifurcation based on Gender																			
Male	34																		
Female	00																		
Measurement methods and procedures	Employee rolls, pay-slips, attendance registers, vouchers, Gate entry records are maintained in the site																		
Monitoring frequency	Annually																		
QA/QC procedures	-																		
Purpose of data	To monitor the contribution to SDG 8 (Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all)																		
Additional comment	The employment rolls, pay slips, attendance registers will be archived 2 years beyond the end of the crediting period.																		

Data / Parameter	Quality of employment
Unit	<ul style="list-style-type: none"> • Number of staffs trained
Description	Without the Project, local people have no such opportunities to be trained on the technology and the monitoring of the plant operation, and the emergency and safety procedures
Source of data	Training records for all the employees
Value(s) applied	There is 12 trainings carried out in this monitoring period.

	<table border="1"> <thead> <tr> <th>Vintage</th> <th>No. of Trainings</th> </tr> </thead> <tbody> <tr> <td>01/01/2023 to 31/12/2023</td> <td>9</td> </tr> <tr> <td>01/01/2024 to 29/03/2024</td> <td>3</td> </tr> <tr> <td>Total</td> <td>12</td> </tr> </tbody> </table>	Vintage	No. of Trainings	01/01/2023 to 31/12/2023	9	01/01/2024 to 29/03/2024	3	Total	12
Vintage	No. of Trainings								
01/01/2023 to 31/12/2023	9								
01/01/2024 to 29/03/2024	3								
Total	12								
Measurement methods and procedures	List of training programmes conducted and the number of beneficiaries.								
Monitoring frequency	Annually								
QA/QC procedures	-								
Purpose of data	To monitor the contribution to SDG 8 (Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all)								
Additional comment	-								

Relevant SDG Indicator 13.2: Integrate climate change measures into national policies, strategies and planning

Data / Parameter	Air quality				
Unit	CO ₂ emission reduction and reduction in dust generation				
Description	<p>In order to reduce dust emissions during the construction phase, the following dust suppression measures stipulated and implemented:</p> <ul style="list-style-type: none"> • Spraying water and covering material trucks’ body to minimize dust; • Reuse of water for sprinkling of unpaved roads. • Imposition of speed controls for vehicles and unpaved site roads; 				
Source of data	Calculated as per “Tool to calculate the emission factor for an electricity system,“. The data are obtained from “CO ₂ Baseline Database for Indian Power Sector” version 11.0 ¹⁷ , published by the Central Electricity Authority, Ministry of Power, Government of India.				
Value(s) applied	47,521 tCO ₂ emission reductions per annum				
	<table border="1"> <thead> <tr> <th>Vintage</th> <th>Emission Reduction (tCO₂e)</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> </tr> </tbody> </table>	Vintage	Emission Reduction (tCO ₂ e)		
Vintage	Emission Reduction (tCO ₂ e)				

¹⁷ https://cea.nic.in/wp-content/uploads/baseline/2020/07/user_guide_ver11.pdf

	01/01/2023 to 31/12/2023	38,055
	01/01/2024 to 29/03/2024	9,466
	Total	47,521
	<p>The applied OM & BM for the project are as following: Operating Margin: 0.9941 tCO₂/MWh Build Margin: 0.9285 tCO₂/MWh</p> <p>The applied Combined margin for the project activity is 0.9777 tCO₂/MWh. This high emission factor signifies the fact that the electricity being fed in the Indian grid (earlier NEWNE) is highly carbon intensive. Every MWh of electricity generated by the project activity prevents further emissions.</p> <p>Dust generation is controlled through strict practice of control measures at site. The project makes positive impact on this parameter. It results in emission reductions hence is helping in climate change mitigation.</p>	
Measurement methods and procedures	<p>The net electricity supplied by the Project are continuously measured by electricity meters. It is been monitored by the Project owner and cross checked with records for sold electricity.</p>	
Measuring/reading / recording frequency:	<p>Once in every monitoring period</p>	
QA/QC procedures	<p>In order to reduce dust emissions during the construction phase, the following dust suppression measures were stipulated and implemented:</p> <ul style="list-style-type: none"> • Spraying water and covering material trucks’ body to minimize dust; • Reuse of water for sprinkling of unpaved roads. • Imposition of speed controls for vehicles and unpaved site roads; <p>Project logbook, O&M policy and interview with O&M team. The interview with the O&M team revealed that the project operation has minimalistic ground activities which does not result in any dust emissions.</p>	
Purpose of data	<p>Baseline situation of parameter According to latest CEA official data CO₂ emissions due to electricity generation in India is 0.9777 tCO₂/GWh.</p>	

	There was no project related activity and hence no resultant dust due to construction or project’s vehicle movements.
Additional comment	-

D.3. Comparison of monitored parameters with last monitoring period

Data/Parameter	Value obtained in this monitoring period	Value obtained last monitoring period
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NA

NA

As per monitoring template guidelines, this section is not applicable for non- Community Service Activities, hence not applicable.

D.4. Implementation of sampling plan

No sampling process is involved, hence not applicable. The details of sampling any of carried out during the course of verification will be included.

SECTION E. CALCULATION OF SDG IMPACTS

E.1. Calculation of baseline value or estimation of baseline situation of each SDG Impact

SDG 7: Affordable and Clean Energy

The monitoring parameter for the SDG 7 is Quantity of net electricity supplied to the grid during the year y. Since baseline and pre-project scenario are same, in the baseline condition no renewable electricity will be supplied to grid from the project location. Hence, the baseline value is zero.

Vintage Period	Baseline Value
	Quantity of net electricity supplied to the grid (MWh)
01/01/2023 to 31/12/2023	0
01/01/2024 to 29/03/2024	0
Total	0

SDG 8: Decent Work and Economic Growth

The monitoring parameter for the SDG 8 are Number of trainings provided to employees & O&M staff, income generation and Number of O&M staffs involved in the project. Since baseline and pre-project scenario are same, in the baseline condition these values are zero.

Vintage Period	Baseline Value
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	Number of trainings (Nos)	Income generation (Lakh INR)	Number of employees (Nos)
01/01/2023 to 31/12/2023	0	0	0
01/01/2024 to 29/03/2024	0	0	0
Total	0	0	0

SDG 13: Climate Actions

The monitoring parameter for the SDG 13 is GHG emission reduction. Baseline Emissions for the amount of electricity supplied by project activity, BE_y is calculated as

$$BE_y = EG_{\text{facility},y} * EF_{\text{grid,CM},y}$$

$$BE_y = 48,605.32 * 0.9777$$

$$BE_y = 47,521 \text{ tCO}_2\text{e (Rounded down)}$$

Baseline emissions include only CO₂ emissions from electricity generation in fossil fuel fired power plants that are displaced due to the project activity. The methodology assumes that all project electricity generation above baseline levels would have been generated by existing grid- connected power plants and the addition of new grid-connected power plants. The baseline emissions are to be calculated as follows:

$$BE_y = EG_{P,y} \times EF_{\text{grid,CM},y}$$

Where,

BE_y - Baseline emissions in year y, (tCO₂e/yr)

EG_{P,y} - Quantity of net electricity generation that is produced and fed into the grid as a result of the implementation of the project activity in year y (MWh/yr)

EF_{grid,CM,y} - Combined margin CO₂ emission factor for grid connected power generation in year y

Calculation of EG_{P,y}

The calculation of EG_{P,y} is different for

- a) Greenfield plants,
- b) Retrofits and replacements, and
- c) Capacity additions

The project activity is the installation of solar projects, and it is a green field project. So the formula in option (a) i.e., greenfield plants is used to calculate the value of $EG_{PJ,y}$. In accordance with para 41 of the applied methodology:

$$EG_{PJ,y} = EG_{facility,y}$$

Where:

$EG_{PJ,y}$ = Quantity of net electricity generation that is produced and fed into the grid as a result of the implementation of the CDM project activity in year y (MWh/yr).

$EG_{facility,y}$ = Quantity of net electricity generation supplied by the project plant/unit to the grid in year y (MWh/yr).

E.2. Calculation of project value or estimation of project situation of each SDG Impact

SDG 7: Affordable and Clean Energy

The monitoring parameter for the SDG 7 is Quantity of net electricity supplied to the grid during the year y. In the project situation, the project supplied 48,605.32 MWh electricity during the monitoring period. This can be cross checked from energy meters JMR & Invoices.

During Monitoring period - 01/01/2023 to 29/03/2024

Quantity of net electricity supplied to the grid (MWh) = 48,605.32

Vintage Period	Project Value
	Quantity of net electricity supplied to the grid (MWh)
01/01/2023 to 31/12/2023	38,923.20
01/01/2024 to 29/03/2024	9,682.12
Total	48,605.32

SDG 8: Decent Work and Economic Growth

The monitoring parameter for the SDG 8 are Number of trainings provided to employees O&M staff & Number of employees involved in the project. During the project scenario, the following is achieved:

During Monitoring period - 01/04/2023 to 29/03/2024

Quality of Employment – 12 trainings

Quantitative employment and income generation - 34 employees & INR 3,222,610

These can be crosschecked from the training records, O&M contract & employment records.

Vintage	Project Value		
	Number of trainings (Nos)	Income generation (INR)	Number of employees (Nos)
01/01/2023 to 31/12/2023	09	2,552,563.13	34
01/01/2024 to 29/03/2024	03	670,047.82	34
Total	12	3,222,610.00	34

SDG 13: Climate Action

The monitoring parameter for the SDG 13 is Quantity of emission reduction during the year y. In the project situation, the project reduced 47,521 tCO₂e during the current monitoring period. This parameter is calculated and no such QA/ QC is required.

During Monitoring period - 01/04/2023 to 29/03/2024

Quantity of emission reduction – 47,521 tCO₂e

Vintage	Project Value		
	Net generation (MWh)	Grid Emission Factor (tCO ₂ /MWh)	Emission Reduction (tCO ₂)
2023	38,923.20	0.9777	38,055
2024	9,682.12	0.9777	9,466
Total	48,605.32	0.9777	47,521

As per the approved consolidated Methodology ACM0002 (Version 17.0):

“For most renewable energy power generation project activities, PE_y = 0. However, some project activities may involve project emissions that can be significant. These emissions shall be accounted as project emissions by using the following equation:

$$PE_y = PE_{FF,y} + PE_{GP,y} + PE_{HP,y}$$

Where:

PE_y - Project emissions in year y (t CO₂e/yr)

PE_{FF,y} - Project emissions from fossil fuel consumption in year y (t CO₂/yr)

PE_{GP,y} - Project emissions from the operation of dry, flash steam or binary geothermal power plants in year y (t CO₂e/yr)

PE_{HP,y} - Project emissions from water reservoirs of hydro power plants in year y (t CO₂e/yr)”

As the project activity is the installation of a new grid-connected Solar power plant/unit and does not involve any project emissions from fossil fuel, operation of dry, flash steam or binary geothermal power plants, and from water reservoirs of hydro power plants. Therefore PE_{FF,y}, PE_{GP,y}, PE_{HP,y} is equal to zero and thus, PE_y = 0.

Vintage	Project Emission (tCO ₂ e)
01/01/2023 to 31/12/2023	0
01/01/2024 to 29/03/2024	0
Total	0

E.3. Calculation of leakage

As per applied methodology ACM0002, version 17 Leakage emissions are not considered for the project activity thus, LE_y = 0.

Vintage	Leakage Emission (tCO ₂ e)
01/01/2023 to 31/12/2023	0
01/01/2024 to 29/03/2024	0
Total	0

E.4. Calculation of net benefits or direct calculation for each SDG Impact

SDG	SDG Impact	Baseline estimate	Project estimate	Net benefit
13	Climate Action (mandatory)	47,521 tCO ₂ e	0	47,521 tCO ₂ e
7	Ensure access to affordable, reliable, sustainable and modern energy for all.	0	48,605.32 MWh	48,605.32 MWh
8	Decent Work and Economic Growth	0	12 Trainings INR 3,222,610 34 Employees	12 Trainings INR 3,222,610 34 Employees

E.5. Comparison of actual SDG Impacts with estimates in approved PDD

SDG	Values estimated in ex ante calculation of approved PDD for this monitoring period	Actual values ¹⁸ achieved during this monitoring period
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¹⁸ Whenever emission reductions are capped, both the original and capped values used for calculations must be transparently reported. Use brackets to denote original values.

	35,678 MWh/Year (365 days)	
7	44,377.57 MWh for the Monitoring period (454 days)	48,605.32 MWh
	1 Trainings (365 days)	
	2 training for the current monitoring (454 days)	12 Trainings
8	37 employees (365 days)	INR 3,222,610
	37 employees for the current monitoring (454 days)	34 employees
	34,882 tCO ₂ /Year (365 days)	
13	43,387 tCO ₂ for the monitoring period (454 days)	47,521 tCO ₂

E.5.1. Explanation of calculation of value estimated ex ante calculation of approved PDD for this monitoring period

SDG 7: Affordable and Clean Energy

The annual estimated power generation for the project activity is 35,678 MWh as per PDD, thus considering number of days covered during current monitoring period to be 454, then the estimated power generation is 44,377.57 MWh and the actual power generation is 48,605.32 MWh.

$$= 35,678 * 454 (days) / 365$$

$$=44,377.57 \text{ MWh}$$

SDG 8: Decent Work and Economic Growth

The project leads to employment opportunities which was not possible in the baseline scenario. The annual estimation regarding SDG 8 the project activity is 01 training and giving employment to 37 persons, thus considering number of days covered during current monitoring period to be 454 days. Whereas in actual the project provides employment to 34 persons. Also, project activity improves the quality of employment by giving training to employee. Thus, 12 trainings are conducted by the project activity throughout the monitoring period. The income generation is INR 3,222,610.

SDG 13: Climate Action

The annual estimated emission reduction for the project activity is 34,882 tCO₂e, thus considering number of days covered during current monitoring period to be 454, then

the estimated emission reduction is 43,387 tCO₂e and the actual emission reduction contributing towards SDG 13 is 47,521 tCO₂e.

$$= 34,882 * 454 \text{ (days)} / 365$$

$$= 43,387 \text{ tCO}_2\text{e (Rounded down)}$$

The below comparison of SDG 7, SDG 8 and SDG 13 for the monitoring period of 01/01/2023 to 29/03/2024 is as per follows:

SDG	Parameter	Annual Average Estimation as per PDD	Estimation for the monitoring period	Actual Achieved during the monitoring period	Difference
7	Renewable electricity generation (MWh)	35,678	44,377.57	48,605.32	9.53%
8	Number of Trainings Conducted	1	2	12	500%
	Income generation (INR)	NA	NA	3,222,610	NA
	Number of Employment	37	37	34	-8.11%
13	Emission Reduction (tCO ₂ e)	34,882	43,387	47,521	9.53%

E.6. Remarks on increase in achieved SDG Impacts from estimated value in approved PDD

The emission reductions as per the registered PDD for the current monitoring period is estimated to be 43,387 tCO₂e whereas during the current monitoring period the emission reductions claimed are 47,521 tCO₂e, which is approximately 9.53% higher than the estimated emission reductions for the same monitoring period. The generation is subject to climate conditions which are beyond the control of the Project Proponent. The current monitoring period is 01/01/2023 to 29/03/2024. Moreover, the difference is due to the variation in the Solar radiation’s availability during the current monitoring period, which is a natural uncontrolled phenomenon and may vary.

Hence the actual emission reductions are 9.53% higher as compared to the estimated emission reductions and even the generation is higher the IRR is not crossing the benchmark value as it is under the sensitivity and the project is still additional.

SECTION F. SAFEGUARDS REPORTING

Safeguarding Principle 4.3.4: Release of pollutants

Data/parameter	Air Quality
Source of data	Calculated as per "Tool to calculate the emission factor for an electricity system,". The data are obtained from "CO ₂ Baseline Database for Indian Power Sector" version 11.0 ¹⁹ , published by the Central Electricity Authority, Ministry of Power, Government of India.
Measurement methods and procedures	The net electricity supplied by the Project are continuously measured by electricity meters. It is been monitored by the Project owner and cross checked with records for sold electricity.
Monitoring frequency	Once in monitoring period
Additional comments	-

SECTION G. STAKEHOLDER INPUTS AND LEGAL DISPUTES

G.1. List all Inputs and Grievances which have been received via the Continuous Input and Grievance Mechanism together with their respective responses/mitigations.

As a part of continuous feedback from stakeholders, the grievances register is placed at site and is being continuously monitored and addressed through the grievances cell on regular basis and maintained in a register at site office. A copy of the grievance Register has been provided separately. There has been no grievance received from any stakeholders during the current monitoring period.

G.2. Report on any stakeholder mitigations that were agreed to be monitored.

There has been no stakeholder mitigation that were agreed to be monitored in this verification period.

G.3. Provide details of any legal contest that has arisen with the project during the monitoring period

No, there has been no legal contest that has arisen with the project during the monitoring period.

¹⁹ https://cea.nic.in/wp-content/uploads/baseline/2020/07/user_guide_ver11.pdf

Appendix I- Details of meters

The total capacity of the project activity is 20 MW and the project activity involves installation of 10 MW_{AC} (Project-I) & 10 MW_{AC} (Project-II), totaling to 20 MW_{AC} solar power project. Project-I has one main meter and check meter at plant side and one main and check meter at GSS side. Similarly, project-II also has one main and check meter at plant side and one main and check meter at GSS end.

	Details	Make	Serial No.	Accuracy class	Calibration Date	Calibration validity ²⁰
132 KV GSS Billing Meter (Project-I)	Main Meter (Plant End)	Secure	RJB90188	0.2 s	02/06/2019	01/06/2024
	Check Meter (Plant End)	Secure	RJB90189	0.2 s	02/06/2019	01/06/2024
	Main Meter (GSS End)	Secure	RJB90190	0.2 s	02/06/2019	01/06/2024
	Check Meter (GSS End)	Secure	RJB90191	0.2 s	02/06/2019	01/06/2024
132 KV GSS Billing Meter (Project-II)	Main Meter (Plant End)	Secure	RJB90193	0.2 s	02/06/2019	01/06/2024
	Check Meter (Plant End)	Secure	RJB90194	0.2 s	02/06/2019	01/06/2024
	Main Meter (GSS End)	Secure	RJB90195	0.2 s	02/06/2019	01/06/2024
	Check Meter (GSS End)	Secure	RJB90196	0.2 s	02/06/2019	01/06/2024

APPENDIX 2: Training Details

S.No.	Date	Topics	Number of participants
1	05/01/2023	Inverter voltage value and cable check	5
2	10/02/2023	Use of Fire Extinguisher	5
3	02/03/2023	Earthing testing	5
4	06/05/2023	Trouble shoot method for HT panel	6

²⁰ As per registered PDD & CEA guideline the calibration frequency is once in 5 years however DISCOM is carrying out calibration once in a year which is not under the control of PP.

5	21/06/2023	Battery bank voltage checking	6
6	14/07/2023	Module testing	5
7	12/09/2023	AC&DC cable tightness check	5
8	24/10/2023	CT & PT testing	5
9	03/11/2023	LT&HT cable tightness check transformer	5
10	01/01/2024	Oil BDV value check transformer	6
11	01/02/2024	SCB maintenance	6
12	27/03/2024	VD4 Breaker 110V Moter check	6
Total trainings		12	

Therefore, the total number of trainings conducted in the current monitoring period are 12.

Revision History

Version	Date	Remarks
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1.1	14 October 2020	Hyperlinked section summary to enable quick access to key sections Improved clarity on Key Project Information Section for POA monitoring Forward action request section Improved Clarity on SDG contribution/SDG Impact term used throughout Clarity on safeguard reporting Clarity on design changes Leakage section added for VER/CER projects Addition of Comparison of monitored parameters with last monitoring period Provision of an accompanying Guide to help the user understand detailed rules and requirements
1.0	10 July 2017	Initial adoption
