

TEMPLATE

MONITORING REPORT

PUBLICATION DATE **14.10.2020**

VERSION v. **1.1**

RELATED SUPPORT - **TEMPLATE GUIDE Monitoring Report v. 1.1**

This document contains the following Sections

Key Project Information

0 - Description of project

0 - Implementation of project

0 - Description of monitoring system applied by the project

0 - Data and parameters

0 - Calculation of SDG Impacts

0 - Safeguards Reporting

0 - Stakeholder inputs and legal disputes

KEY PROJECT INFORMATION

Key Project Information

GS ID (s) of Project (s)	5519
Title of the project (s) covered by monitoring report	70 MW Bhadla Solar power plant by Fortum Finnsurya Energy Pvt Ltd (EKIESL-CDM-APRIL 16-01)
Version number of the PDD/VPA-DD (s) applicable to this monitoring report	04
Version number of the monitoring report	05
Completion date of the monitoring report	04/09/2023
Date of project design certification	03/01/2018
Date of Last Annual Report	26/07/2022
Monitoring period number	05
Duration of this monitoring period	01/07/2021 to 05/11/2022 (Inclusive both days)
Project Representative	Fortum FinnSurya Energy Private Limited
Host Country	India
Activity Requirements applied	☐ Community Services Activities ☒ Renewable Energy Activities ☐ Land Use and Forestry Activities/Risks & Capacities ☐ N/A
Methodology (ies) applied and version number	ACM0002: Grid-connected electricity generation from renewable sources - Version 17.0
Product Requirements applied	☒ GHG Emissions Reduction & Sequestration ☐ Renewable Energy Label ☐ N/A

Table 1 - Sustainable Development Contributions Achieved

Sustainable Development Goals Targeted	SDG Impact	Amount Achieved	Units/ Products
SDG 7	Affordable and Clean Energy: Ensure access to affordable, reliable, sustainable, and modern energy for all	198,251	MWh
SDG 8	Decent Work and Economic Growth: Promote inclusive and sustainable economic growth, employment, and decent work for all	38	Number of employees
SDG 8	Decent Work and Economic Growth: substantially reduce the proportion of youth not in employment, education, or training	27	Number of Trainings
SDG 8	Decent Work and Economic Growth: substantially reduce the proportion of youth not in employment, education, or training	The income to all the unskilled workers is made on day-to-day basis better than the minimum wage requirements ¹ : 397 INR	INR (Income generation)
SDG 13	Take urgent action to combat climate change and its impacts	193,829	tCO ₂ e (GSVERs)

Table 2 – Product Vintages

		Amount Achieved		
Start Dates	End Dates	SDG 7: Affordable and Clean Energy (MWh)	SDG 8: Decent Work and Economic Growth	SDG 13: Climate Action (GSVERs) tCO ₂ e

¹ <https://labour.rajasthan.gov.in/notification.aspx>

As per minimum wages notification, 2021 by Department of Labour Rajasthan dated 30/07/2021, all the unskilled workers under schedule – I, s. no. 24 are required to be paid minimum 252 INR per day or 6552 INR per month in Rajasthan state.

01/07/2021	31/12/2021	70,758	38 people employed+ 06 training conducted+ The income to all the unskilled workers is made on day-to-day basis better than the minimum wage requirements: 397 INR	69,180
01/01/2022	05/11/2022	127,493	38 people employed+ 21 training conducted+ The income to all the unskilled workers is made on day-to-day basis better than the minimum wage requirements: 397 INR	124,649
Total		198,251	38 people employed+ 27 training conducted+ The income to all the unskilled workers is made on day-to-day basis better than the minimum wage requirements: 397 INR	193,829

SECTION A. DESCRIPTION OF PROJECT

A.1. General description of project

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The main purpose of this project activity is to generate clean form of electricity through renewable solar energy source. Fortum FinnSurya Energy Pvt. Ltd. is the promoter of the implemented project activity. The project activity involves installation of 70 MW (AC) (87.5 MWp) solar power project at Bhadla, Jodhpur, Rajasthan. The annual average of estimated electricity generation and estimated emission reduction over 7 years of crediting period will be 122,640 MWh/year and 119,384 tCO₂e per year.

The project will replace anthropogenic emissions of greenhouse gases (GHG's) by displacing equivalent amount of electricity from the generation-mix of power plants connected to the Indian grid, which is mainly dominated by thermal/fossil fuel-based power plant. The project is CDM registered project ID: 10403²

During the current monitoring period, the net GHG emission reductions by the project activity is 193,829 tCO₂e. The contribution to SDGs for current monitoring period is as follows:

SDG 13: Climate Action-

The emission reductions achieved from the project activity for the current monitoring period are 193,829 tCO₂e.

SDG 7: Affordable and Clean Energy-

The electricity generated from the project activity for the current monitoring period is 198,251 MWh.

SDG 8: Decent Work and Economic Growth-

There are 38 people employees for the project and a total of 27 trainings provided during current monitoring period. The income to all the unskilled workers is made on day-to-day basis better than the minimum wage requirements: 397 INR.

² <https://cdm.unfccc.int/Projects/DB/Plus1506003422.59/view>

A.2. Location of project

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Latitude : 27° 28' 7.00" North

Longitude : 71° 58' 17.00" East

District : Jodhpur

Village : Bhadla

State : Rajasthan

Country : India



The location of the project activity as visible in the Google maps is shown below:



A.3. Reference of applied methodology

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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, EB 89, Annex 1)³

ACM0002 draws upon the following tools which have been used in the PDD:

- Methodological Tool: Tool to calculate the emission factor for an electricity system - Version 05.0(EB 87, Annex 09)⁴
- Methodological Tool: Tool for the demonstration and assessment of additionality - Version 07.0, EB 70 Annex 8⁵

A.4. Crediting period of project

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Start Date of CP: 06/11/2017

End Date of CP: 05/11/2022

Total Length of CP: 15 Years Renewable twice (5 years + 5years + 5 years)⁶

³<https://cdm.unfccc.int/methodologies/DB/HF3LP6O41YY0JIP1DK6ZRJO9RSCX3S>

⁴<https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-07-v5.0.pdf>

⁵<https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-01-v7.0.0.pdf>

⁶ As per section 6.5.1 of GHG Emissions Reduction & Sequestration Product Requirements version 2.1 "Transition project, PoA/CPAs shall follow GS4GG certification cycle for crediting period renewal (e.g. 5 years) in order to issue or convert issued emission reductions to GSVERs under GS4GG."

SECTION B. IMPLEMENTATION OF PROJECT

B.1. Description of implemented project

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The project activity involves installation of 70 MW (AC) (87.5 MWp) solar power project at Bhadla, Jodhpur, Rajasthan. The annual average of estimated electricity generation and estimated emission reduction over 7 years of crediting period will be 122,640 MWh/year and 119,384 tCO₂e per year.

Brief description of the installed technology and equipment.

Technical detail of the equipment	Remark
Technology	Solar PV Module
Solar photovoltaic module	First solar series 4TM PV Module
No of Modules	112.5Wp: - 88800, 115Wp: - 587000, 117.5Wp: - 85200
Make	First Solar
Capacity	112.5Wp, 115Wp, 117.5Wp
No of inverters	70
Make	ABB
Capacity	1000KVA
No. of transformers	18 (ITD) + 2 (PT)
Technical & Operational Lifetime	25 years

Relevant dates for the project activity:

31/03/2017 is the date of commissioning of the project activity. The project is commissioned on 31/03/2017 date and supplying generated electricity to INDIAN grid. There were minor breakdowns that have occurred in this monitoring period. Although, no such events have happened during the reported monitoring period which can alter the applicability of the applied methodology.

B.1.1 Forward Action Requests

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FAR from Last Performance Review:

FAR#1: The VVB shall verify the physical implementation of Solar PV project, monitoring system and implement monitoring plan.

Response:

This FAR has been closed at the time of Design Certification Renewal, a physical site visit was conducted on 27/09/2022. Final Verification Report for design renewal has been submitted to the assessment team for review.

FAR # 2: VVB shall conduct in person stakeholder interviews to confirm the grievances and SDG benefits form the project activity.

Response:

At the time of Design Certification Renewal, a physical site visit was conducted on 27/09/2022 by the VVB. Onsite visit and interview with local stakeholder and employee engage in project activity was done by the assessment team. PP is maintaining a Grievances register at project site, copies of grievances register is submitted to assessment team.

FAR from Transition Review:

FAR # 1: The crediting period start date for the transitioned project will be 06/11/2017. The length of the 1st crediting period will be 5 years which can be renewed twice.

Response:

The crediting period start date is fixed as 06/11/2017 and end date of first CP is 05/11/2022. Project has completed Design Certification Renewal for 2nd CP i.e. from 06/11/2022 to 05/11/2027 on 17/03/2023.

B.2. Post-Design Certification changes

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Not Applicable

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

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Not Applicable

B.2.2. Corrections

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Total installed DC capacity of the project is 87.5 MWp since commissioning of the project. There has been a typographical error while mentioning the DC capacity in the PDD and the legacy error has been continued in subsequent verifications. However,

there is no change in number modules and their capacity. Also, the capacity has also been same i.e. 70 MW from the beginning of the project, which was used to demonstrate the additionality of the project.

PP has now corrected the legacy error and revised the information pertaining to DC capacity as 87.5 MWp under section A.1 and B.1 of the monitoring report. This correction in information does not affect the project design and monitoring plan as well as the additionality of the project.

B.2.3. Changes to start date of crediting period

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Not Applicable

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

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Not Applicable

B.2.5. Changes to project design of approved project

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Not Applicable

SECTION C. DESCRIPTION OF MONITORING SYSTEM APPLIED BY THE PROJECT

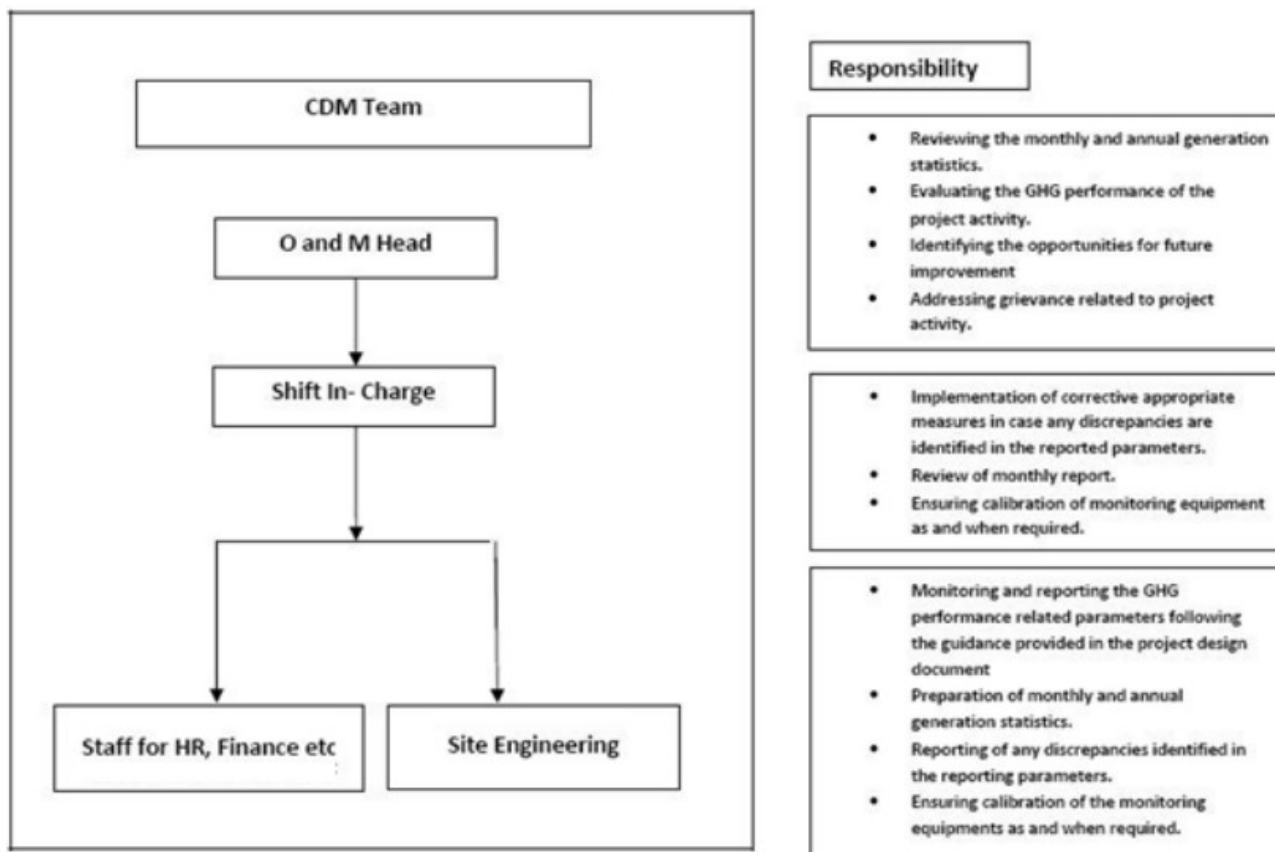
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The monitoring plan is developed in accordance with the modalities and procedures for GS project activities and is proposed for grid-connected solar power project being implemented in Rajasthan, India. The monitoring plan, which is implemented by the project participant describes the monitoring organization, parameters to be monitored, monitoring practices, quality assurance, quality control procedures, data storage and archiving.

Monitoring data: The parameters monitored ex-post is the net electricity supplied to the grid ($EG_{PJ,y}$) in the year y .

Measurement Method: The parameter $EG_{PJ,y}$ will be measured by a main meter installed at 220kV pooling substation (GSS – II) at Bhadla Village. The Check meter and at substation and a Standby meter at plant end are installed in case the main meter fails to work. The on-grid electricity is monitored continuously and recorded monthly. The meters are bi- directional with an accuracy class of 0.2 s. The measurement results are cross-checked with records for sold electricity from the invoices. All data collected as part of the monitoring are archived electronically and kept at least for 2 years after the end of the last crediting period. All meters are calibrated once every five years which is in line with the Central Electricity Authority (Installation & Operation Meters) Regulations, 2006 that requires calibration of meters once every five years.

The authority and responsibility for registration, monitoring, measurement, reporting and reviewing of the data rests with the project participant. PP proposed the following structure for data monitoring, collection, data archiving and calibration of equipment's for this project activity. The team comprises of the following members:



Data Measurement

The export and import energy are measured continuously using above mentioned Main and Check meters located at the substation. Readings of meters are taken on monthly basis by authorized officer of SEB in the presence of PP or representative of PP.

Based on the Meter Reading Statement to Fortum FinnSurya Energy Pvt. Ltd, invoices are raised. These invoices are used to cross checking the meter readings taken for the respective project activity.

In case of billing cycle and monitoring period cycle does not match, then daily generation data is used to determine net electricity export for particular period.

Data collection and archiving

Readings from meters is collected in the presence of the plant in-charge. Export and Import data are recorded and stored in logs as well as in electronic form on a daily basis. The records are checked periodically by the Plant Manager and discussed thoroughly with the plant supervisor. The period of storage of the monitored data will be 2 years after the end of crediting period or till the last issuance of CERs for the project activity whichever occurs later.

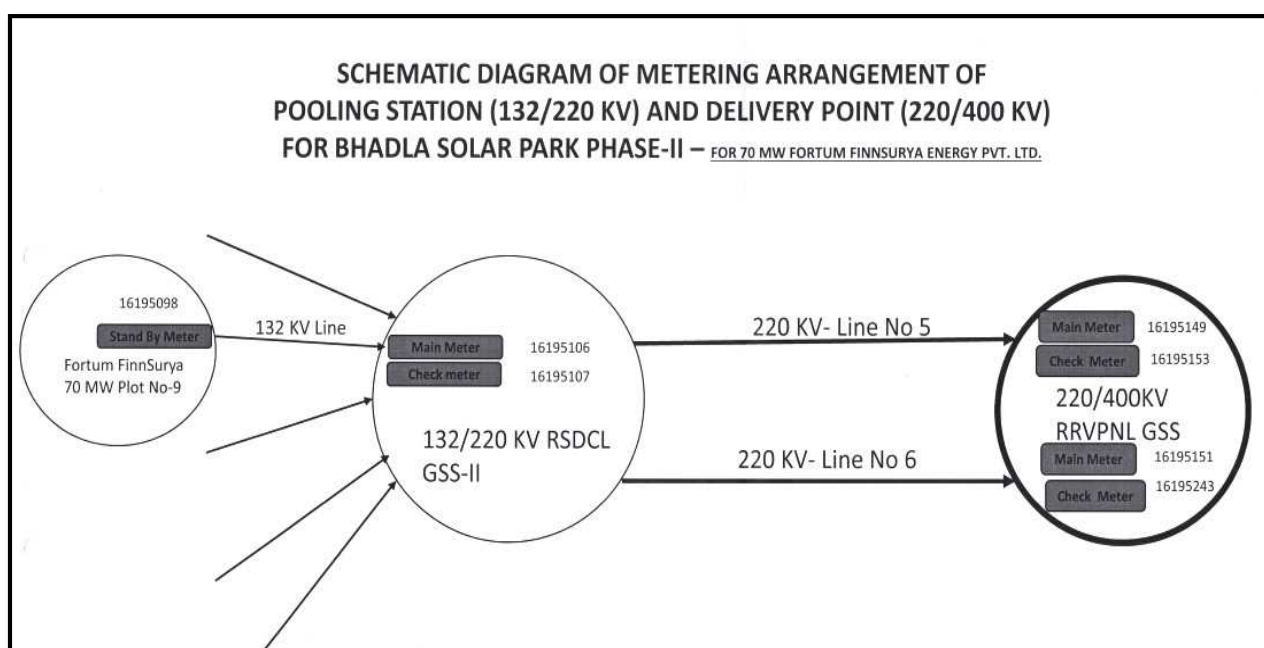
Emergency preparedness

The project activity will 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.

Personnel training

In order to ensure the proper functioning of the project activity and a properly monitoring of emission reductions, the staff has been trained. The plant helpers have been trained in equipment operation, data recording, reports writing, operation and maintenance and emergency procedures in compliance with the monitoring plan.

The billing meters (main and check meters) are installed at 132/220 KV RSDCL GSS – II pooling station. Schematic Diagram of metering arrangement of pooling station (132/220 KV) and delivery point (220/400 KV) for Bhadla Solar Phase II for 70 MW Fortum Finnsurya Energy Pvt. Ltd.



Calibration Details:

The calibration details of meters involved in the project activity is as below:

Meter Number	Meter Type	Accuracy Class	Date of calibration	Due Date
16195106	Main Meter	0.2s	01/03/2021	28/02/2026
16195107	Check meter	0.2s	01/03/2021	28/02/2026

16195098	Standby meter	0.2s	01/03/2021	28/02/2026
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The frequency of calibration is once in 5 years as per section B.7.1 of the registered GS PDD version 04.⁷

SECTION D. DATA AND PARAMETERS

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

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Relevant SDG Indicator	SDG 13 (Indicators 13.2.1)
Data/parameter	$EF_{grid, BM, y}$
Unit	tCO ₂ e/MWh
Description	Build Margin CO ₂ emission factor in year y
Source of data	Calculated from CEA database, Version 11, April 2016
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 05.0" as 3-year generation weighted average using data for the years 2012-13, 2013-14, & 2014-15. The data are obtained from "CO ₂ Baseline Database for Indian Power Sector" version 11, published by the Central Electricity Authority, Ministry of Power, Government of India.
Purpose of data	For the calculation of the Baseline Emission
Additional comment	This parameter is fixed ex-ante for the entire crediting period.

Relevant SDG Indicator	SDG 13 (Indicators 13.2.1)
Data/parameter	$EF_{grid, OM, y}$
Unit	tCO ₂ e/MWh
Description	Operating Margin CO ₂ emission factor for NEWNE grid (Now Indian Grid)

⁷ https://cea.nic.in/old/reports/regulation/CEA_metering_regulation_amendment_2019.pdf

Source of data	Calculated from CEA database, Version 11, April 2016 ⁸
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 05.0" as 3-year generation weighted average using data for the years 2012- 13, 2013-14, & 2014-15. The data are obtained from "CO2 Baseline Database for Indian Power Sector" version 11, published by the Central Electricity Authority, Ministry of Power, Government of India.
Purpose of data	For the calculation of the Baseline Emission
Additional comment	This parameter is fixed ex-ante for the entire crediting period.

Relevant SDG Indicator	SDG 13 (Indicators 13.2.1)
Data/parameter	EF _{grid, CM, y}
Unit	tCO ₂ e/MWh
Description	Combined Margin CO ₂ emission factor in year y
Source of data	Calculated from CEA database, Version 11, April 2016 ⁹
Value(s) applied	0.9777
Choice of data or Measurement methods and procedures	The combined margin emissions factor is calculated as follows: $EF_{grid, CM, y} = EF_{grid, OM, y} * W_{OM} + EF_{grid, BM, y} * W_{BM}$ Where: EF_{grid, BM, y}= Build margin CO₂ emission factor in year y (tCO₂e/MWh) EF_{grid, OM, y}= Operating margin CO₂ emission factor in year y (tCO₂e/MWh) W_{OM} = Weighting of operating margin emissions factor (%) = 75% W_{BM}= Weighting of build margin emissions factor (%) =25%
Purpose of data	For the calculation of the Baseline Emission

⁸ https://cea.nic.in/wp-content/uploads/baseline/2020/07/user_guide_ver11.pdf

⁹ https://cea.nic.in/wp-content/uploads/baseline/2020/07/user_guide_ver11.pdf

Additional comment

This parameter is fixed ex-ante for the entire crediting period.

D.2 Data and parameters monitored

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Relevant SDG Indicator	SDG 13 Climate Action						
Data/parameter	ER _y						
Unit	tCO ₂ e/year						
Description	Emission reductions achieved per year						
Source of data	Summarized in ER sheet of "GS_5519_ER Sheet". Calculated as per the registered PDD and as per methodology.						
Value(s) applied	<table border="1"> <thead> <tr> <th>Monitoring Period (Vintage)</th><th>Values (GSVERs)</th></tr> </thead> <tbody> <tr> <td>01/07/2021 to 31/12/2021</td><td>69,180</td></tr> <tr> <td>01/01/2022 to 05/11/2022</td><td>124,649</td></tr> </tbody> </table>	Monitoring Period (Vintage)	Values (GSVERs)	01/07/2021 to 31/12/2021	69,180	01/01/2022 to 05/11/2022	124,649
Monitoring Period (Vintage)	Values (GSVERs)						
01/07/2021 to 31/12/2021	69,180						
01/01/2022 to 05/11/2022	124,649						
Measurement methods and procedures	The baseline emissions are the product of electrical energy baseline EG _{PJ,y} expressed in MWh of electricity produced by the renewable generating unit multiplied by an emission factor.						
Monitoring frequency	As per monitoring period						
QA/QC procedures	Not Applicable						
Purpose of data	Calculation of emission reduction						
Additional comment	Data will be archived in paper & electronic form for two years after the end of crediting period or of the last issuance of GS-VERs for this project activity, whichever occurs later.						

Relevant SDG Indicator	SDG 7: Affordable and Clean Energy						
Data/parameter	EG _{PJy}						
Unit	MWh/y						
Description	Quantity of net electricity generation supplied by the project plant/unit to the grid in year y in MWh						
Source of data	Monthly joint meter reading reports (70MW)						
Value(s) applied	<table border="1"> <thead> <tr> <th>Monitoring Period (Vintage)</th><th>Values (MWh)</th></tr> </thead> <tbody> <tr> <td>01/07/2021 to 31/12/2021</td><td>70,758</td></tr> <tr> <td>01/01/2022 to 05/11/2022</td><td>127,493</td></tr> </tbody> </table>	Monitoring Period (Vintage)	Values (MWh)	01/07/2021 to 31/12/2021	70,758	01/01/2022 to 05/11/2022	127,493
Monitoring Period (Vintage)	Values (MWh)						
01/07/2021 to 31/12/2021	70,758						
01/01/2022 to 05/11/2022	127,493						

	Total	198,251																												
Measurement methods and procedures	Plant end dedicated metering: The electricity exported / supplied by the plant is first metered by plant end dedicated meter. This can be considered as stand by meter. Common metering at the substation: All the plants (including the project activity solar plant and other investors solar plant) are further connected to a common metering point at Pooling substation 132/220 KV GSS II and further electricity is transferred to 220/400 KV RRVPNL substation. The common metering point consists of both main & check meters (ABT Meters) having accuracy class of 0.2s. The export/import losses between these two substations are apportioned based on pooling substation readings. The difference of final apportioned value of export and import is used for monthly values of net electricity supplied to the grid by the project activity and same value will be considered for ER calculations. The details of energy meters are as follows: <table><tr><th>Meter</th><th>Serial Number</th><th>Type</th><th>Make</th><th>Model</th><th>Accuracy Class</th><th>Date of calibration</th></tr><tr><td>Main Meter</td><td>16195106</td><td>3phase 4wire</td><td>L&T</td><td>ER300P</td><td>0.2s</td><td>01/03/2021</td></tr><tr><td>Check meter</td><td>16195107</td><td>3phase 4wire</td><td>L&T</td><td>ER300P</td><td>0.2s</td><td>01/03/2021</td></tr><tr><td>Standby meter</td><td>16195098</td><td>3phase 4wire</td><td>L&T</td><td>ER300P</td><td>0.2s</td><td>01/03/2021</td></tr></table>		Meter	Serial Number	Type	Make	Model	Accuracy Class	Date of calibration	Main Meter	16195106	3phase 4wire	L&T	ER300P	0.2s	01/03/2021	Check meter	16195107	3phase 4wire	L&T	ER300P	0.2s	01/03/2021	Standby meter	16195098	3phase 4wire	L&T	ER300P	0.2s	01/03/2021
Meter	Serial Number	Type	Make	Model	Accuracy Class	Date of calibration																								
Main Meter	16195106	3phase 4wire	L&T	ER300P	0.2s	01/03/2021																								
Check meter	16195107	3phase 4wire	L&T	ER300P	0.2s	01/03/2021																								
Standby meter	16195098	3phase 4wire	L&T	ER300P	0.2s	01/03/2021																								
Monitoring frequency	Continuous measurement & monthly recording.																													
QA/QC procedures	The meters are approved, tested & sealed by the State Utility. The meters are in the custody of the State Utility. The frequency of calibration is once in 5 years. The monthly electricity supplied/exported by the project activity in the JMR report is cross checked with the monthly invoices of sale. In the absence or delay in the meter calibration appropriate Guidelines will be applied appropriately to confirm the conservativeness of																													

	metering. The metering arrangement, accuracy class of meters, calibration frequency and apportioning approach is under control of state electricity board and PP do not have any control on it. PP is getting value of net electricity supplied to grid and the same is considered the monitoring parameter.
Purpose of data	Calculation of baseline emissions
Additional comment	Data will be archived in paper & electronic form for two years after the end of crediting period or of the last issuance of GS-VERs for this project activity, whichever occurs later.

Relevant SDG Indicator	SDG 8: Decent Work and Economic Growth																			
Data/parameter	Quantitative employment and income generation																			
Unit	Number																			
Description	Number of people employed directly due to the project activity. Number of men and number of women employed by the project activity. Type of job like temporary/permanent or skilled/unskilled, etc also monitored and it is ensured that peoples will get equal payment for equal work.																			
Source of data	Plant records / Letter from O&M contractor for employment generation/ DOE interview with employees, local stakeholders etc																			
Value(s) applied	<table><tr><th>Monitoring Period (Vintage)</th><th>Total</th><th>Skilled</th><th>Semi-skilled</th><th>Unskilled</th></tr><tr><td>01/07/2021 to 31/12/2021</td><td>38</td><td>19</td><td>14</td><td>5</td></tr><tr><td>01/01/2022 to 05/11/2022</td><td>38</td><td>19</td><td>14</td><td>5</td></tr></table> Above number of jobs are permanent and full time in nature. Additional short-term services create temporary jobs. Females are not employed at the site until now. Females are employed at the Head and corporates offices. The income to all the unskilled workers is made on day-to-day basis better than the minimum wage requirements. As per minimum wages notification, 2021 by Department of Labour Rajasthan dated 30/07/2021 (https://labour.rajabasthan.gov.in/notification.aspx), all the unskilled workers under schedule – I, S. No. 24 are required to be paid minimum 252 INR per day or 6552					Monitoring Period (Vintage)	Total	Skilled	Semi-skilled	Unskilled	01/07/2021 to 31/12/2021	38	19	14	5	01/01/2022 to 05/11/2022	38	19	14	5
Monitoring Period (Vintage)	Total	Skilled	Semi-skilled	Unskilled																
01/07/2021 to 31/12/2021	38	19	14	5																
01/01/2022 to 05/11/2022	38	19	14	5																

	INR per month in Rajasthan state. However, the unskilled workers employed on the project are being paid 397 INR per day.
Measurement methods and procedures	The total number of persons working in the plant would be calculated based on the daily log available at site. This parameter also monitors number of men/women employed by the project activity. The project activity ensures that "equal pay for work of equal value" for both men and women and there is not any discrimination against women. "The employment covers number of men and number of women employed by the project activity. The job is of type temporary/permanent or skilled/unskilled, etc. Also, it is ensured that peoples will get equal payment for equal work. The payment will be based on work and no any gender inequality for payment for work of equal value. The employment generated refers to overall jobs created during project implementation and during project Operation and Maintenance. This is primary and direct effect on employment generated due to project activity. The effect of employment generation is not 'one off' or an effect generated in design, construction, distribution or start-up or decommissioning of the Project.
Monitoring frequency	Monthly monitoring and annual compilation
QA/QC procedures	The number of persons employed would be mentioned in the plant register, which can be crossed checked with attendance register.
Purpose of data	To Monitor the SDG 8 Indicator
Additional comment	-

Relevant SDG Indicator	SDG 8: Decent Work and Economic Growth		
Data/parameter	Quality of Employment		
Unit	Number		
Description	Training of staff		
Source of data	The training records for all the employees/Letter from O&M contractor for employment generation/ DOE interview with employees, local stakeholders etc		
Value(s) applied	27 trainings <table border="1"> <tr> <td>Monitoring Period (Vintage)</td><td>Trainings</td></tr> </table>	Monitoring Period (Vintage)	Trainings
Monitoring Period (Vintage)	Trainings		

	01/07/2021 to 31/12/2021	06
	01/01/2022 to 05/11/2022	21
	Total	27
Measurement methods and procedures	Together with the technology supplier, the Project organize training for the staff on the technology and the monitoring of the plant operation, and the emergency and safety procedures.	
Monitoring frequency	Annually	
QA/QC procedures	The training records for all the employees	
Purpose of data	To Monitor the SDG 8 Indicator	
Additional comment	-	

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

Not applicable for non- Community Service Activities

D.4. Implementation of sampling plan

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Sampling is not required.

SECTION E. CALCULATION OF SDG IMPACTS

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

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SDG 13 Climate Action:

As per equation 11 under section 5.5, para 44 of the applied methodology ACM0002 version 17.0, the baseline emissions are to be calculated as follows:

$$BE_y = EG_{PJ, y} * EF_{grid, CM, y}$$

Where,

BE_y = Baseline emissions in year y (tCO₂/yr)

$EG_{PJ, y}$ = 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 calculated using the latest version of the "Tool to calculate the emission factor for an electricity system" (tCO₂/MWh).
= 0.9777 tCO₂/MWh

Hence,

$$\begin{aligned} BE_y &= 198,251 * 0.9777 \\ &= 193,829 \text{ (Round down value)} \end{aligned}$$

Vintage	EG _{PJ, y} (MWh)	BE _y (tCO ₂ e)
01/07/2021 to 31/12/2021	70,758	69,180
01/01/2022 to 05/11/2022	127,493	124,649
Total	198,251	193,829

As per equation 17 under section 5.7, para 58 of the applied methodology ACM0002 version 17.0, Emission reductions are calculated as follows:

$$ER_y = BE_y - PE_y - LE_y$$

Where,

ER_y = Emission reductions in year y (tCO₂e/y)

BE_y = Baseline emissions in year y (tCO₂/y)

PE_y = Project emissions in year y (tCO₂e/y)

LE_y = Leakage emissions in year y (t CO₂e/y)

As per section 5.4, para 36 of the applied methodology ACM0002 version 17.0,

For most renewable energy power generation project activities, $PE_y = 0$

As per section 5.6 of the applied methodology ACM0002 version 17.0, No leakage emissions are applicable. $LE_y = 0$

Hence, $ER_y = BE_y$

Therefore, $ER_y = 193,829 \text{ tCO}_2\text{e}$

SDG 7: Affordable and Clean Energy

The value for affordable and clean energy is the summation of monthly net electricity supplied to the grid. The values are sourced from Monthly Joint Meter Reading records. The summation for current monitoring period is 198,251 MWh. Calculation for the same can be referred from the Emission Reductions sheet.

SDG 8: Decent Work and Economic Growth

The values for Decent work and economic growth are sourced from HR records/ Letter from O&M contractor and training records. 27 training conducted during current monitoring and 38 people are employed currently at the site. The income to all the unskilled workers is made on day-to-day basis better than the minimum wage requirements: 397 INR.

Further, the project participant ensures the proper health & safety trainings, environment policy to be followed during operation. The training documents are submitted to the DOE.

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

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The following SDGs will be impacted every year.

SDG 7: Ensure access to affordable, reliable, sustainable and modern energy for all	<u>Method:</u> Monitored through energy meter. <u>Frequency:</u> Monthly <u>QA/QC procedures:</u> Net electricity supplied to the grid by the project activity will be crosschecked with invoices submitted to EB. The meter(s) shall be calibrated on a regular basis. <u>Purpose:</u> To measure the electricity produced and supplied to the grid SDG. <u>Value:</u> 198,251 MWh
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SDG 8: Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all	<u>Method:</u> Ongoing data collection and storage under HSE records & HR Records. <u>Frequency:</u> Annually <u>Purpose:</u> To identify and record the number of trainings provided to the employees as well as employment generated due to project activity. <u>Value:</u> 38 number of employees and 27 number of trainings. The income to all the unskilled workers is made on day-to-day basis better than the minimum wage requirements: 397 INR.
SDG 13: Take urgent action to combat climate change and its impacts	<u>Method:</u> Monitored through energy meter. Net electricity is multiplied with the emission factor to obtain emission reduction. Emission factor is calculated using Tool to calculate the emission factor for an electricity system,". The data is obtained from "CO₂ Baseline Database for Indian Power Sector" version 11.0, published by the Central Electricity Authority, Ministry of Power, and Government of India. <u>Purpose:</u> To calculate emissions avoided due to the project activity <u>Calculations:</u> As per equation 11 under section 5.5, para 44 of the applied methodology ACM0002 version 17.0, the baseline emissions are to be calculated as follows: $BE_y = EG_{PJ,y} * EF_{grid, CM,y}$ Where, $BE_y = \text{Baseline emissions in year } y \text{ (tCO}_2\text{/yr)}$ $EG_{PJ,y} = \text{Quantity of net electricity generation that is produced and fed into the grid as a result of the implementation of the project activity in year } y \text{ (MWh/yr)}$ $EF_{grid,CM,y} = \text{Combined margin CO}_2 \text{ emission factor for grid connected power generation in year } y \text{ calculated using the latest version of the "Tool to calculate}$

	the emission factor for an electricity system” (tCO₂/MWh). $= 0.9777 \text{ tCO}_2/\text{MWh}$ Hence, $\text{BE}_y = 198,251 * 0.9777$ $= 193,829 \text{ (Round down value)}$ As per equation 17 under section 5.7, para 58 of the applied methodology ACM0002 version 17.0, Emission reductions are calculated as follows: $\text{ER}_y = \text{BE}_y - \text{PE}_y - \text{LE}_y$ Where, ER_y = Emission reductions in year y (tCO₂e/y) BE_y = Baseline emissions in year y (tCO₂/y) PE_y = Project emissions in year y (tCO₂e/y) LE_y = Leakage emissions in year y (t CO₂e/y) As per the approved consolidated Methodology ACM0002 (Version 17.0, EB 89, Annex 1) para 36: “For most renewable energy power generation project activities, $\text{PE}_y = 0$. However, some project activities may involve project emissions that can be significant. These emissions shall be accounted for as project emissions by using the following equation: $\text{PE}_y = \text{PE}_{\text{FF},y} + \text{PE}_{\text{GP},y} + \text{PE}_{\text{HP},y}$ Where: PE_y = Project emissions in year y (t CO₂e/yr) $\text{PE}_{\text{FF},y}$ = Project emissions from fossil fuel consumption in year y (t CO₂/yr) $\text{PE}_{\text{GP},y}$ = Project emissions from the operation of dry, flash steam or binary geothermal power plants in year y (t CO₂e/yr) $\text{PE}_{\text{HP},y}$ = Project emissions from water reservoirs of hydro power plants in year y (t CO₂e/yr)” For most renewable energy power generation project activities, $\text{PE}_y = 0$
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	As per section 5.6 of the applied methodology ACM0002 version 17.0, No leakage emissions are applicable. $LE_y = 0$ Hence, $ER_y = BE_y$ Therefore, $ER_y = 193,829 \text{ tCO}_2\text{e}$
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E.3. Calculation of leakage

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As per section 5.6 of the applied methodology ACM0002 version 17.0, "No other leakage emissions are considered. The emissions potentially arising due to activities such as power plant construction and upstream emissions from fossil fuel use (e.g. extraction, processing, transport etc.) are neglected." Hence, No leakage emissions are applicable.

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	0 tCO ₂ e	193,829 tCO ₂ e	193,829 tCO ₂ e
7	Affordable and Clean Energy	0	198,251 MWh	198,251 MWh
8	Decent Work and Economic Growth	0	Total 38 people employed, 27 training conducted and The income to all the unskilled workers is made on day-to-day basis better than the minimum wage requirements: 397 INR.	Total 38 people employed, 27 training conducted and The income to all the unskilled workers is made on day-to-day basis better than the minimum wage requirements: 397 INR.

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 achieved during this monitoring period
7	122,640 MWh/Year (365 days) 165,648 MWh for the Monitoring period (493 days)	198,251 MWh
8	1 training/year 10 Employees	27 Trainings 38 Employees The income to all the unskilled workers is made on day-to-day basis better than

	The income to all the unskilled workers is made on the minimum wage requirements ¹¹ : 397 day-to-day basis better than the minimum wage INR. requirements: 357 INR. ¹⁰	
13	119,384 tCO ₂ /Year (365 days) 161,250 tCO ₂ for the monitoring period (493 days)	193,829 tCO ₂ e

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

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SDG 13 Climate Action

As per GS PDD, 119,384 tCO₂e is the amount of GS VER generated annually. The total number of days in this monitoring period is 493. Therefore, following unitary method, the estimated emission reduction to be achieved from the project activity for the current monitoring period is:

$$= (119,384 / 365) * 493$$

$$= 161,250 \text{ tCO}_2\text{e}$$

SDG 7: Affordable and Clean Energy

As per GS PDD, 122,640 MWh is the estimated amount of electricity generated annually. The total number of days in this monitoring period is 493. Therefore, following unitary method, the electricity generated from the project activity for the current monitoring period is:

$$= (122,640 / 365) * 493$$

$$= 165,648 \text{ MWh}$$

SDG 8: Decent Work and Economic Growth

¹⁰ As per registered PDD version 4 dated 04/04/2022.

¹¹ <https://labour.rajasthan.gov.in/notification.aspx>

As per minimum wages notification, 2021 by Department of Labour Rajasthan dated 30/07/2021, all the unskilled workers under schedule – I, s. no. 24 are required to be paid minimum 252 INR per day or 6552 INR per month in Rajasthan state.

Annual estimate has been considered for SDG i.e., 10 persons employment and minimum 1 training. The income to all the unskilled workers is made on day-to-day basis better than the minimum wage requirements: 357 INR.

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

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SDG 7 and SDG 13:

The actual emission reductions achieved during the current monitoring period are 20.2% higher than the estimated ERs for the same period i.e. there is an increase in ex-post emission reductions. The variable due to which the emission reduction is increasing is higher Plant Load Factor (PLF). Based on the estimated Plant Load Factor (PLF) as per the Project Design Document (PDD), the expected PLF was 20%. However, during the monitoring period, the actual PLF achieved was 23.94%. This indicates an increase in PLF of 19.68%. According to the registered PDD, there is a breaching value of Sensitivity set at 23.94% increase in PLF. Since the increase in PLF is below this breaching value and the higher generation observed, which is attributed to more sunshine hours and irradiance. Therefore, the higher generation was influenced by factors beyond the control of the project participant.

As per section 2.1.5 of the Assessment Approach for reporting higher Ex-Post Emission Reductions, the impact on investment analysis was assessed by putting the actual PLF i.e., 23.94% and the investment analysis still holds valid with change in variable value. In the IRR sheet P&L Statement tab, the actual PLF 23.94% is kept and found that the IRR is not breaching the benchmark. The GS approved IRR is 5.00% whereas after revising the PLF value it comes as 13.26% which is below the benchmark (15.68%).

Please be informed that being the site in sand dune area, the distortion rate of the panel is very high, and it is highly unrealistic to have this much PLF value in further monitoring periods.

SECTION F. SAFEGUARDS REPORTING

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No safeguarding principles were added to the monitoring plan in the registered PDD. Therefore, the relative success and failures, or improvements to proposed mitigation measures is not applicable.

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.

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As a part of continuous feedback from stakeholders, the grievances register is being 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. During the monitoring period no grievances have been received, the comments received are satisfactory and appreciating in nature. The scan copies have been provided to the VVB.

S. No.	Date of Complaint	Topic	Date of resolution	Remark from PP
-	-	-	-	-

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

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Not Applicable as there were no negative feedback logged during the monitoring period.

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

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Not Applicable as there were no legal contest that has arisen with the project during the monitoring period

Revision History

Version	Date	Remarks
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