BUNDLED SOLAR POWER PROJECT BY D.J. MALPANI AND GIRIRAJ ENTERPRISES

Document Prepared By EKI Energy Services Limited

Project Title	Bundled Solar Power Project by D.J. Malpani and Giriraj Enterprises
Version	02
Report ID	1670
Date of Issue	17-May-2019
Project ID	1670
Monitoring Period	26-March-2018 to 25-March-2019 (inclusive of both days)
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1 PROJECT DETAILS

1.1 Summary Description of the Implementation Status of the Project

The purpose of the bundled project activity is to generate power using renewable energy source (solar energy) and sell the power generated to the state grid. The project activity generates electricity using solar energy. The generated electricity is exported to the regional grid system which is under the purview of the INDIAN electricity grid of India.

The project activity support development of renewable energy generation plants based on Solar PV technology in India and delivering electricity to the grid.

The project activity is a voluntary action being undertaken project investors. Since, the solar power is Green House Gas (GHG) emissions free, the power generated, replaces anthropogenic emissions of greenhouse gases estimated to be approximately 93,022 tCO_2e per year, thereon displacing 95,145 MWh/year 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 total installed capacity of the current project activity is 56.25 MW; which involves operation of solar power plants in the states of Tamil Nadu and Telangana in India. The project is promoted by following project investors which are as follows:

Project Investors	Project Type	Project Capacity in AC	Date of Commissioning	Project Location	State
M/s. D. J. Malpani	Solar	16.25 MW	31-03-2015	Village- Hoti Tehsil- Zaheerabad Mandal, District- Medak	Telangana
Giriraj Enterprises	Solar	40 MW	23-09-2015	Village- Sengottai, Tehsil- Virudhunagar, District- Virudhunagar	Tamil Nadu

The bundled project activity is a new facility (Greenfield) and the purpose of the bundled project activity is to generate energy electricity by the utilization of renewable solar PV technology and further selling the generated energy to the Indian Grid. In this process there is no consumption of any fossil fuel and hence the project does not lead to any greenhouse gas emissions. Thus, electricity would be generated through sustainable means without causing any negative impact on the environment.

In the Pre- project scenario the entire electricity, delivered to the grid by the bundled project activity, would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources.

For current monitoring period 26-March-2018 to 25-March-2019 (inclusive of both days), the total GHG emission reductions achieved are 100,718 tCO_2.

Also the project underwent continued operation except scheduled maintenance and breakdowns. The major breakdown details have been mentioned in Appendix 2 of the Monitoring Report.

1.2 Sectoral Scope and Project Type

The project activity falls under the following Sectoral scope and Project Type:

Sectoral Scope: 01 - Energy industries (renewable / non-renewable sources)
Project Type: I - Renewable Energy Projects
Methodology: ACM0002: Grid-connected electricity generation from renewable sources - Version 17.0[1]

The project activity is not a grouped project activity.

1.3 Project Proponent

Organization name	**M/s. D.J. Malpani**
Contact person	Mr. Prafulla Khinvasara
Title	CEO- Renewable Power Projects
Address	Malpani House, New Nagar Road, Tal- Sangamner, Dist – Ahmednagar, Maharashta, India
Telephone	-
Email	-

Organization name	**Giriraj Enterprises**
Contact person	Mr. Prafulla Khinvasara
Title	CEO- Renewable Power Projects
Address	Malpani House, New Nagar Road, Tal- Sangamner, Dist – Ahmednagar, Maharashta, India
Telephone	-
Email	-

1.4 Other Entities Involved in the Project

Organization name	**EKI Energy Services Limited**
Role in the project	Project Consultant
Contact person	Mr. Manish Dabkara
Title	MD & CEO
Address	Office No. 201, EnKing Embassy, Plot No. 48, Scheme No. 78, Part II, Vijay Nagar INDORE – 452010, India.
Telephone	+91-731-4289086
Email	manish@enkingint.org

[1] http://cdm.unfccc.int/methodologies/DB/8W400U6E7LFHHYH2C4JR1RJWWO4PVN

1.5 Project Start Date

The first project activity of the bundled project under consideration was commissioned and power generation started on 31-March-2015 at Hoti, Zaheerabad Mandal in District Medak, in the state of Telangana in India. Hence the project start date is defined as follows:

Project Start Date: 31-Mar-2015

The project start date is the date on which first Solar PV plant was commissioned under the bundled project activity.

Project Owner	Capacity	DOC	Village	Taluka	District	State
M/s. D. J. Malpani	16.25 MW	31-03 2015	Hoti	Zaheerabad Mandal	Medak	Telangana
Giriraj Enterprises	40 MW	23-09 2015	Sengottai	Virudhunagar	Virudhunagar	Tamilnadu

1.6 Project Crediting Period

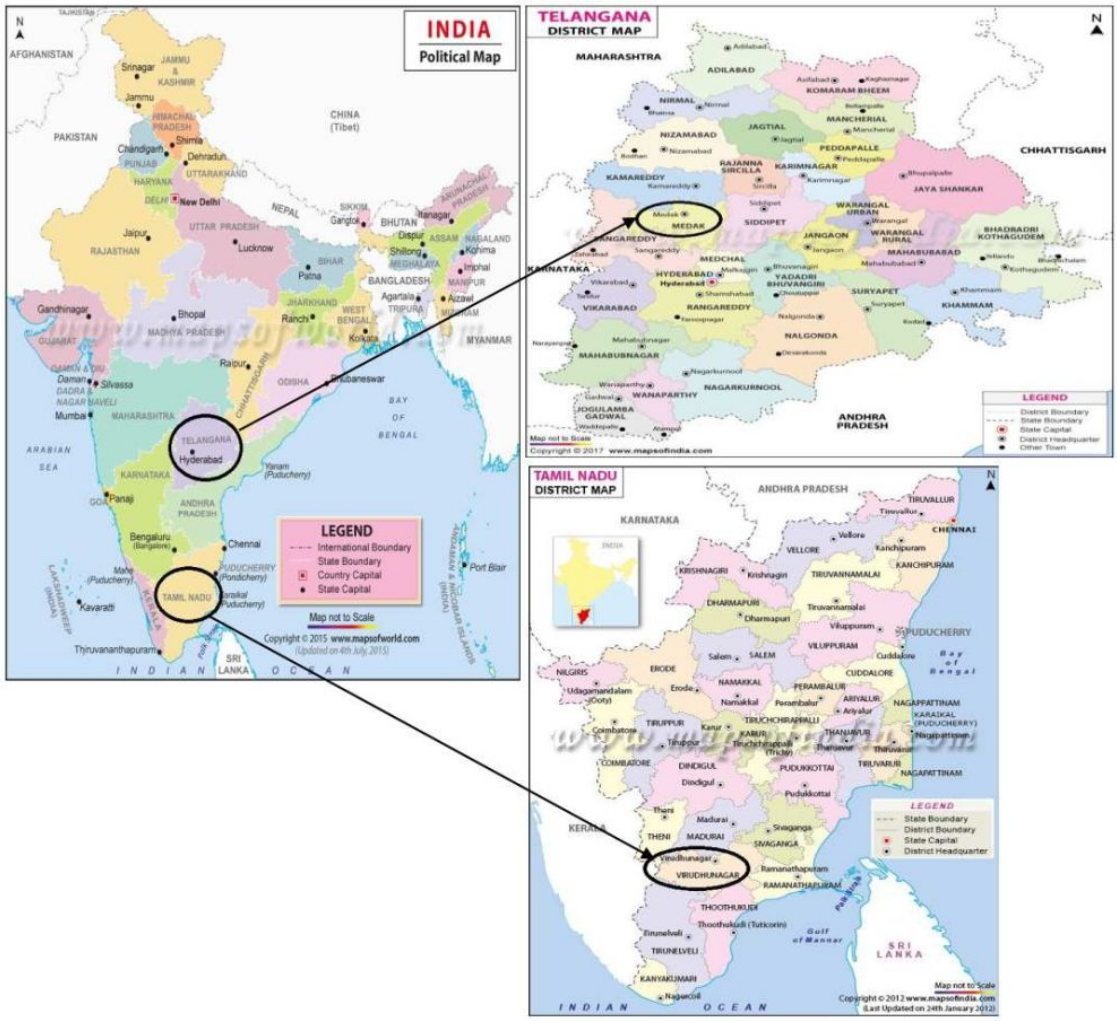
Crediting Period Start date: 31-Mar-2015

Crediting Period End date: 30-Mar-2025

The project activity adopts renewable crediting period of 10 years period which can be renewed for maximum 2 times.

1.7 Project Location

The location of the project activity has been highlighted in the map shown below



The details of the Geo-Coordinates of the project location is given below

Project Owner	Village	Taluka	District	State	Latitude (D° M' Sec")	Longitude (D° M' Sec")
M/s. D. J. Malpani	Hoti	Zaheerabad Mandal	Medak	Telangana	17°39'21.08" N	77°33'24.55" E
Giriraj Enterprises	Sengottai	Virudhunagar	Virudhu nagar	Tamil Nadu	9°38'8.03" N	77°33'24.55" E

1.8 Title and Reference of Methodology

Sectoral Scope: 01

Methodology: ACM0002: Grid-connected electricity generation from renewable sources- Version 17.0[2]

[2] https://cdm.unfccc.int/methodologies/DB/8W400U6E7LFHHYH2C4JR1RJWWO4PVN

The project activity also takes reference from following Tools from the tools prescribed by applied methodology:

1. Tool for the demonstration and assessment of additionality- Version 07.0, EB 70, Annex 8[3]
2. Tool to calculate the emission factor for an electricity system- Version 05.0, EB 87, Annex 09[4]

1.9 Other Programs

The Project is not registered in other GHG programs. For current monitoring period, there is no any claim of GHG emission reductions with other GHG program.

The project activity has not been registered under the REC mechanism and hence, the PP is not claiming any REC benefits during the current monitoring period. The same can be verified with REC accreditation body of India[5].

1.10 Sustainable Development

Contribution to sustainable development:

Ministry of Environment and Forests, has stipulated economic, social, environment and technological well-being as the four indicators of sustainable development. The project contributes to sustainable development using the following ways.

- **Social well-being:** The project would help in generating employment opportunities during the construction and operation phases. The project activity will lead to development in infrastructure in the region like development of roads and also may promote business with improved power generation.

- **Economic well-being:** The project is a clean technology investment in the region, which would not have been taken place in the absence of the VCS benefits the project activity will also help to reduce the demand supply gap in the state.

  The project activity will generate power using zero emissions solar based power generation which helps to reduce GHG emissions and specific pollutants like SOx, NOx, and SPM associated with the conventional thermal power generation facilities.

- **Technological well-being:** The successful operation of project activity would lead to promotion of solar based power generation and would encourage other entrepreneurs to participate in similar projects.

- **Environmental well-being:** Solar being a renewable source of energy, it reduces the dependence on fossil fuels and conserves natural resources which are on the verge of

[3] https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-01-v7.0.0.pdf
[4] https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-07-v5.0.pdf
[5] https://recregistryindia.nic.in/index.php/publics/registered_regens

depletion. Due to its zero emission the project activity also helps in avoiding significant amount of GHG emissions.

2 IMPLEMENTATION STATUS

2.1 Implementation Status of the Project Activity

The project activity involves installation of Solar Power Projects in different states of India i.e. Tamil Nadu and Telengana. The total installed capacity of the project is 56.25 MW.

The bundled project activity is a new facility (Greenfield) and the electricity generated by the Project is exported to the INDIAN GRID electricity grid. The Project therefore displaces an equivalent amount of electricity which would have otherwise been generated by fossil fuel dominant electricity grid. The Project Proponents have planned to avail the VCS benefits for the Project.

In the Pre- project scenario the entire electricity, delivered to the grid by the project activity, would have otherwise been generated by the operation of grid-connected power plants which is mainly dominated by fossil fuels or by the addition of new generation sources.

The project results in replacing anthropogenic emissions of greenhouse gases (GHG's) estimated to be approximately 93,022 tCO_2e per year, thereon displacing 95,145 MWh/year amount of electricity from the gird.

Solar Power Project Technology Details –

The bundled project activity harness solar energy through installation of PV with installed capacity of 56.25 MW. Solar energy is a pollution-free, infinitely sustainable form of energy. It does not use fossil fuel. It does not produce greenhouse gases, and it does not produce toxic or radioactive waste. Therefore the technology used for the project activity, is environmentally safe and sound.

The proposed bundled project activity generates power using solar energy, which is a renewable source of energy. The solar PV system mainly consists of PV modules, module mounting structures, junction boxes, Inverters, regulators, monitoring devices etc. The solar PV cells convert solar radiation into DC current. The solar panels are installed in arrays. The modules in the each array are connected in parallel and/or series in order to get the preferred current & voltage which match with the rated input parameters of the inverter. The Inverter connected in each array converts the DC current to AC current. The electricity collected from all the inverters is stepped up to 11 kV through a 415V/11kV transformer. The 11 kV electricity is further stepped up to 66 kV and then supplied to Indian grid. The operational life time of the project activity is 25 years. The commissioning of the project activity has been completed and details are mentioned in section 1.5.

There is no technology transfer involved in this project activity.

The technical Specifications for 16.25 MW project activity is as below:

CSUN 255-60P- Polycrystalline Solar PV modules

Capacity DC – 17.92854 (70308 No of Nodules, 255 Watt capacity)

Inverter – ABB make, PVS800-57-1000KW-C

The technical Specifications for 40 MW project activity is as below:

Canadian Solar PV Modules, 315 Wp (CS6X-315P),

Capacity DC – 49.565280 (Total Modules (87024 + 72864 = 159,888) of 315 Watt capacity)

AC output capacity – 40 MW

Feeder connectivity details of the solar plant is given in the table below

Site	State	Capacity	Feeder Location Details
Virudhunagar Site	Tamil Nadu	40 MW	Virudhunagar Feeder
Zaheerabad Site	Telangana	16.25 MW	Zaheerabad Feeder

2.2 Deviations

2.2.1 Methodology Deviations

Not Applicable.

2.2.2 Project Description Deviations

Not Applicable

2.3 Grouped Project

Not Applicable

2.4 Safeguards

2.4.1 No Net Harm

The project activity has no significant impact on the environment. Solar PV projects are not included in the Schedule I of the EIA notification S.O.1533 (E) dated 14th September 2006[6] and thus an EIA is not required. Ministry of Environment & forests vide their OM J-11013/41/2006 - IA II (I) dated 13th May 2011[7] has re-affirmed this and exempted Solar PV power plants from EIA and EC requirement.

2.4.2 Local Stakeholder Consultation

The details of the Stakeholder Meetings are as follows:

Name of Investor	Capacity	Project Location			Date of Invitation	Date of Meeting
		Village	District	State		
M/s. D. J. Malpani	16.25 MW	Hoti	Medak	Telangana	06/09/2014	15/09/2014
Giriraj Enterprises	40 MW	Sengottai	Virudhunagar	Tamil Nadu	09/03/2015	16/03/2015

[6] http://envfor.nic.in/legis/eia/so1533.pdf
[7] http://moef.nic.in/downloads/public-information/OM-SolarPV.pdf

In the introductory speech, the representatives of Giriraj Enterprises and D. J. Malpani (Project Investors), welcomed the gathering and given a brief about the climate mitigation project activity. Subsequent to the introductory speech, stakeholders were explained about the electricity generation from solar project is an environmental friendly power generation technology contributing to reduction in GHG emissions. They were also explained about the benefits of the solar power projects like, increasing energy availability and improving quality of power and its assistance to the local population by providing employment opportunities to both skilled & unskilled labours.

The Minutes of meeting with commenting sheet from LSH, invitation letter receipt copy are submitted to the DOE.

Meeting started with opening speech by representative of project participant. He introduced all guests on dais. The representative of project participant explained Technical aspects of project to stakeholders. He also explained about social, environmental & economical benefits of the project. He also elaborated about carbon mechanism & its requirement for the current project. After the detailed discussions, the session was open for questions from stakeholders.

Most of the questions were related to employment opportunities, economic development, benefits from project to villagers and other development activities. The question raised by the villagers are summarised below:

Q: Will there be free supply of power to the local people?

A: The generated power will be fed in the grid. Project promoter can't supply directly power to the local people. They have to get authorized connection from Govt. body. But due to the project activity the supply of power in the area will increase.

Q: Will there be employment generation due to the project activity for youth from the adjoining areas?

A: Responding about the increased possibilities for employment of local youth due to the project activity, it was pointed out that preference would be given for locals in the employment opportunities.

Q: Will it impact the Rainfall pattern in the nearby area?

A: No, it will not impact the rainfall pattern of the nearby area.

3 DATA AND PARAMETERS

3.1 Data and Parameters Available at Validation

Data / Parameter	$\mathbf{EF_{grid,OM,y}}$
Data unit	tCO_2/MWh
Description	Operating Margin CO_2 emission factor in year y
Source of data	Calculated from CEA database, Version 11, April 2016[8]

[8] http://cea.nic.in/reports/others/thermal/tpece/cdm_co2/user_guide_ver11.pdf

Value applied	0.9941
Justification of choice of data or description of measurement methods and procedures applied	Calculated as per "Tool to calculate the emission factor for an electricity system, version 05.0.0" 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 the Central Electricity Authority, Ministry of Power, Government of India.
Purpose of the data	For the calculation of the Baseline Emission
Comments	This parameter is fixed ex-ante for the entire crediting period.

Data / Parameter	$\mathbf{EF_{grid,BM,y}}$
Data unit	tCO_2/MWh
Description	Build Margin CO_2 emission factor in year y
Source of data	Calculated from CEA database, Version 11, April 2016[9]
Value applied	0.9285
Justification of choice of data or description of measurement methods and procedures applied	Calculated as per "Tool to calculate the emission factor for an electricity system, version 05.0.0" BM is calculated ex-ante based on the most recent information available at the time of submission of PD and is fixed for the entire crediting period. The data is obtained from "CO_2 Baseline Database for Indian Power Sector" version 11.0, published by the Central Electricity Authority, Ministry of Power, Government of India.
Purpose of the data	For the calculation of the Baseline Emission
Comments	This parameter is fixed ex-ante for the entire crediting period.

Data / Parameter	$\mathbf{EF_{grid,CM,y}}$
Data unit	tCO_2/MWh
Description	Combined Margin CO_2 emission factor in year y
Source of data	Calculated from CEA database, Version 11, April 2016[10]
Value applied	0.9777
Justification of choice of data or description of measurement methods and procedures applied	The combined margin emissions factor is calculated as follows: $\mathbf{EF_{grid,CM,y} = EF_{grid,OM,y} * W_{OM} + EF_{grid,BM,y} * W_{BM}}$ Where: $EF_{grid,BM,y}$= Build margin CO_2 emission factor in year y (tCO_2/MWh) $EF_{grid,OM,y}$= Operating margin CO_2 emission factor in year y (tCO_2/MWh) W_{OM} = Weighting of operating margin emissions factor (%) = 75%

[9] http://cea.nic.in/reports/others/thermal/tpece/cdm_co2/user_guide_ver11.pdf
[10] http://cea.nic.in/reports/others/thermal/tpece/cdm_co2/user_guide_ver11.pdf

	W_{BM}= Weighting of build margin emissions factor (%) = 25%
Purpose of the data	For the calculation of the Baseline Emission
Comments	This parameter is fixed ex-ante for the entire crediting period.

3.2 Data and Parameters Monitored

Data / Parameter	**$EG_{PJ,y}$**
Data unit	MWh
Description	Quantity of net electricity generation supplied by the project (Solar) plant/unit to the grid in year y
Source of data	Joint meter readings
Description of measurement methods and procedures to be applied	The value of net electricity generation supplied to the grid as per Joint Meter Reading Report forms the basis for calculation of the emission reductions; which can be cross checked from the invoice raised to DISCOM. Net electricity supplied to grid will be calculated as the difference of the measured values of "export" and "import" of electricity through the dedicated SEB energy meter installed at the delivery point (i.e. the connected substation). Net electricity generated and supplied by the project (Solar) plant/unit to the grid = Electricity Export to the grid – Electricity Import from the grid Monthly meter readings are taken from the main and check meter installed at the substation and certified by the representatives of SEB Officials and the representatives of the project proponent.
Frequency of monitoring/recording	Continuous monitoring, hourly measurement and at least monthly recording
Value monitored	103,014.76 MWh
Monitoring equipment	**Monitoring:** Tri vector meter will be used **Data type:** Measured **Type of meter:** Static type meter (Main & Check). Both are Bidirectional meters. **Class of meter:** 0.2s The Calibration details of the Energy Meter has been mentioned in Appendix-1 of the Monitoring Report.
QA/QC procedures to be applied	• The energy meter reading are taken on monthly basis • Energy meters will be calibrated once in a five year[11] and faulty meters will be duly replaced immediately. • All the energy meters are under the control of state utility

[11] As per CEA regulation

	and calibration of energy meters is also under the jurisdiction of state utility. • The Net electricity exported to the grid will be cross checked against the invoice raised by the PP towards the DISCOM
Purpose of the data	Calculation of Baseline emissions
Calculation method	-
Comments	The data would be archived electronically and maintained for the entire crediting period plus two years.

3.3 Monitoring Plan

Aim of monitoring

The monitoring methodology specified in the methodology requires that the project-monitoring plan to consist of monitoring of quantity of net electricity supplied to the grid in the year y. In order to monitor the mitigation of GHG due to the project activity, the total energy exported needs to be measured. The net energy supplied to grid by the project activity multiplied by emission factor for regional grid, would form the baseline for the project activity.

Since the baseline emission factor is based on an ex-ante determination, monitoring of this parameter is not required. The sole parameter for monitoring is the net electricity exported to the grid.

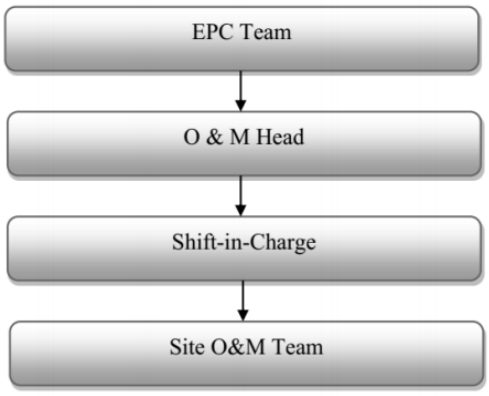
Monitoring roles and responsibilities

The operational and management structure implemented for data monitoring is as follows:

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

The authority and responsibility for registration, monitoring, measurement, reporting and reviewing of the data rests with the project proponent. PP proposed the following structure for data monitoring, collection, data archiving and calibration of equipments for this project activity.

The team comprises of the following members:



Responsibilities of O & M Head: Overall functioning and maintenance of the project activity and overall responsibility of compliance with the CDM/VCS Monitoring Plan.

Responsibilities of Plant In-charge: Responsibility for Maintains the data records, ensures completeness of data, and reliability of data. Regularly verifying the monthly energy generation date with energy sales receipt or installed meters reading for identification of any discrepancies in data collection and taking suitable action to rectify them.

Responsibilities of Shift In-charge: Responsibility for day to day data collection and maintains day to day log book for monitored data. Responsibility for monthly and annual report generation. Quality assurance of the data/reports and preliminary check of data for any discrepancies.

Apportioning

In case of common metering arrangement, the apportioning will be done by state electricity board and PP is getting break up sheet where the energy supplied by project activity to grid is mentioned.

The same break up sheet will be used for invoice purpose. This apportioning process is under control of state electricity board and PP do not have any control on it.

QA/QC procedures

The energy meters at the feeders are maintained and owned by state electricity board. Neither the project proponent nor the site personnel have any control over it. The records will be crosschecked with the records of sold electricity to state electricity board. The meters are calibrated by state electricity board at-least once in five years.

Data Measurement

The export and import energy will be measured continuously using above mentioned Main & Check meters. Export & Import readings of Main & Check meters shall be taken on monthly basis by authorized officer of state electricity board in the presence of PP or representative of PP. The meter reading will be taken jointly and signed by the representatives of the state electricity board

and project investors. Based on the readings, invoices will be raised by project investors. These invoices can be used for cross checking the meter readings taken for the project activity. It is to be noted though PP or PP representative is available during meter reading, the calculations of net electricity supplied to grid is completely under purview of state electricity board officer and PP do not have any control on it. Also accuracy class of meters and calibration frequency is under purview of state electricity board officer and PP do not have any control on it. PP got the monthly credit report from where net electricity supplied to grid is obtained and used for emission reduction calculations.

Data Archiving

Monthly data shall be archived electronically and in paper form and stored for the entire crediting period and two years thereafter.

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.

In the event that the main meter, which is used to record the net electricity exported by the project, is found to be faulty it will be repaired or replaced and the data from the check meter will be used in its place. In the unlikely event that the check meter fails it will also be repaired or replaced.

Training and maintenance requirements

Each and every site personnel is provided with proper training to meet the requirements of the Operations and maintenance. This ultimately leads to creativity in problem solving.

Personnel training

In order to ensure a proper functioning of the project activity and a properly monitoring of emission reductions, the staff (CDM/VCS team) will be trained. The plant helpers will be trained in equipment operation, data recording, reports writing, operation and maintenance and emergency procedures in compliance with the monitoring plan.

Apportioning

In case of mismatch of date between the start date of the billing cycle and the start date of monitoring period the data will be apportioned in line to the daily generation values for the said mismatch period.

During the current monitoring period, apportioning has been done for the month of March 2018, since there is mismatch of monitoring period and billing cycle. The apportioning has been done by considering the daily generation data for the complete month of March 2018 which is divided by

the daily generation data for the no. of days to be apportioned. This ratio is then multiplied with the generation data from JMR of March 2018.

4 QUANTIFICATION OF GHG EMISSION REDUCTIONS AND REMOVALS

4.1 Baseline Emissions

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

Where:

BE_y: Baseline emissions in year y (tCO_2e/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 VCS project activity in year y (MWh/yr)

$EF_{grid,CM,y}$: Combined margin CO_2 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" (tCO_2e/MWh)

Parameter	Unit	Value
$EG_{PJ,y}$	MWh	103,014.76
$EF_{grid,CM,y}$	tCO_2e	0.9777
BE_y	=	103,014.76 * 0.9777
	=	100,718 (Rounded down)

4.2 Project Emissions

$PE_{FF,y}$ = 0, As per para 37 of ACM0002 version 17, "For all renewable energy power generation project activities, emissions due to the use of fossil fuels for the backup generator can be neglected".

$PR_{FF\ y}$ = 0

4.3 Leakage

As per para 60 of ACM0002 version 17, No leakage emissions need to considered for the project activity.

4.4 Net GHG Emission Reductions and Removals

$ER_y = BE_y – PE_y$

Where:

ER_y	=	Emission reductions in year y (t CO_2e/yr)
BE_y	=	Baseline emissions in year y (t CO_2/yr)
PE_y	=	Project emissions in year y (t CO_2e/yr)

Therefore, Net GHG Emission Reductions and Removals are calculated as follows:

ER_y = 100,718 – 0

= 100,718 tCO_2

Year	Baseline emissions or removals (tCO_2e)	Project emissions or removals (tCO_2e)	Leakage emissions (tCO_2e)	Net GHG emission reductions or removals (tCO_2e)
2018	75,015	0	0	75,015
2019	25,703	0	0	25,703
Total	**100,718**	**0**	**0**	**100,718**

It is to be noted here that as per the estimated emission reduction to be achieved from the project activity for the current monitoring period is 93,022 tCO_2e, whereas actual emission reductions achieved are 100,718 tCO_2e, which is approximately 8% higher than the estimated emission reductions. The generation of electricity depends upon the number of annual days of sunshine availability and many other climatic conditions, which are not within the control of the project participant. The higher generation during the current verification period is hence due to certain natural conditions and hence acceptable.

APPENDIX 1: METER DETAILS

Meter and Calibration details for current monitoring period:

40 MW Project Activity by Giriraj Enterprises

Meter Type	Meter Serial Number	Make	Accuracy Class	Calibration Date[12]	Validity
Main Meter	15196299	L & T	0.2s	10-08-2015	09-08-2020
Check Meter	15196298	L & T	0.2s	10-08-2015	09-08-2020

16.25 MW Project Activity by D J Malpani

Meter Type	Meter Serial Number at plant site	Make	Accuracy Class	Calibration Date[13]	Validity
Main Meter	16538722	Elster	0.2s	30-03-2015	29-03-2020
Check Meter	16351162	Elster	0.2s	30-03-2015	29-03-2020
Standby Meter	16538763	Elster	0.2s	30-03-2015	29-03-2020

[12] As the calibration frequency of the meter is once in five year, the calibration reports are valid during the current monitoring period. Hence, error factor has not been applied.

[13] As the calibration frequency of the meter is once in five year, the calibration reports are valid during the current monitoring period. Hence, error factor has not been applied.

APPENDIX 2: MAJOR BREAKDOWN DETAILS

1. Breakdown details of Virudhunagar site, Tamil Nadu- 40 MW

Date	Plant Break Down Detail	Breakdown Hrs	Detail of Grid Breakdown	Breakdown Hrs
10-04-18			Grid B/D due to power swing	4:00 hours
21-04-18			Grid B/D due to power swing	4:00 hours
22-05-18	Common Yard VCB Tripped due to power swing and Manual operation Bottons gets stucked	2:00 hours		
23-05-18	VCB tripped due to power pack fuse failure	1:00 hours		
14-06-18	B/D due to Ground fault	1:00 hours		
25-07-18	TR tripped due to Over load	1:00 hours		
26-07-18	Inverter Tripped due to Power swing	3:00 hours		
07-08-18	Inverter Tripped due to Power swing	3:00 hours		
08-08-18	B/D due to Ground fault	2:00 hours		
29-09-18	B/D due to Ground fault	2:00 hours		
30-09-18	B/D due to Ground fault	2:00 hours		
08-10-18			Grid B/D due to power swing	4:00 hours
09-10-18			Grid B/D due to power swing	4:00 hours
12-11-18	TR tripped due to Over load	1:00 hours		
23-11-18	VCB tripped due to power pack fuse failure	1:00 hours		
04-12-18			Grid B/D due to power swing	4:00 hours
30-12-18			Grid B/D due to power swing	4:00 hours
21-01-19	Inverter Tripped due to Power swing	3:00 hours		
22-01-19			Grid B/D due to power swing	4:00 hours
23-01-19			Grid B/D due to power swing	4:00 hours
24-01-19	B/D due to Ground fault	2:00 hours		
05-02-19	Inverter Tripped due to Power swing	3:00 hours		
06-02-19			Grid B/D due to power swing	4:00 hours
17-03-19	VCB tripped due to power pack fuse failure	1:00 hours		

2. Breakdown details of Zaheerabad site, Telangana- 16.25 MW

Date	Plant Break Down Detail	Breakdown Hrs	Detail of Grid Breakdown	Breakdown Hrs
21-04-18			Grid B/D due to power swing	4:00 hours
28-04-18	TR tripped due to Over load	1:00 hours		

02-05-18	Common Yard VCB Tripped due to power swing and Manual operation Bottons gets stucked	2:00 hours		
13-05-18	VCB tripped due to power pack fuse failure	1:00 hours		
04-06-18	B/D due to Ground fault	1:00 hours		
15-06-18	TR tripped due to Over load	1:00 hours		
06-07-18	Inverter Tripped due to Power swing	3:00 hours		
07-08-18	Common Yard VCB Tripped due to power swing and Manual operation Bottons gets stucked	2:00 hours		
18-08-18	B/D due to Ground fault	2:00 hours		
19-09-18	B/D due to Ground fault	2:00 hours		
22-09-18	Common Yard VCB Tripped due to power swing and Manual operation Bottons gets stucked	2:00 hours		
18-10-18			Grid B/D due to power swing	4:00 hours
29-10-18			Grid B/D due to power swing	4:00 hours
12-11-18	TR tripped due to Over load	1:00 hours		
13-11-18	VCB tripped due to power pack fuse failure	1:00 hours		
14-12-18			Grid B/D due to power swing	4:00 hours
20-12-18	Common Yard VCB Tripped due to power swing and Manual operation Bottons gets stucked	2:00 hours		
01-01-19	Inverter Tripped due to Power swing	3:00 hours		
12-01-19			Grid B/D due to power swing	4:00 hours
23-01-19			Grid B/D due to power swing	4:00 hours
27-01-19	B/D due to Ground fault	2:00 hours		
15-02-19	Inverter Tripped due to Power swing	3:00 hours		
26-02-19			Grid B/D due to power swing	4:00 hours
07-03-19	VCB tripped due to power pack fuse failure	1:00 hours		
18-03-19	VCB tripped due to power pack fuse failure	1:00 hours		