



# Verified Carbon Standard

## MRMPL WIND POWER PROJECT



Document Prepared by Infinite Solutions

<b>Project Title</b>	MRMPL Wind Power Project
<b>Version</b>	05
<b>Report ID</b>	VVER66
<b>Date of Issue</b>	28-March-2022
<b>Project ID</b>	1781
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# 1 PROJECT DETAILS

## 1.1 Summary Description of the Implementation Status of the Project

The project sponsor is Modern Road Makers Pvt. Ltd. (herein referred to as MRMPL). It is a subsidiary of IRB Infrastructure Developers Limited (IRBIDL). It is involved in the construction, operation and maintenance of roads through various infrastructure projects in the road sector and is one of the major road developers in India.

The project is the generation of electricity from wind power by installation of 16 Wind Turbine Generators (WTG) at Jaisalmer, Rajasthan. Each WTG has an installed capacity of 1.25 MW. The total installed capacity of the project is 20 MW. The purpose of the project is to produce power from clean source and to reduce the dependence on fossil fuels for energy requirements. Project proponent has signed a power purchase agreement (PPA) with “Jodhpur Vidyut Vitran Nigam Limited” (JVNL) to export the electricity to local grid.

The project displaces electricity from the grid (North East West North East (NEWNE) grid, India). This helps in significant reduction of GHG emissions as the NEWNE Grid is mostly dependent on fossil fuel generated electricity.

**Project WTG commissioning Details has been provided below:**

Sr No.	Location No.	DOC
1	R060	12/1/2009
2	R061	12/1/2009
3	R078	28/9/2008
4	R007	28/9/2008
5	R008	28/9/2008
6	R063	12/1/2009
7	R064	12/1/2009
8	R069	12/1/2009
9	R070	12/1/2009
10	R071	12/1/2009
11	R072	12/1/2009
12	R073	12/1/2009
13	R074	12/1/2009
14	R016	12/1/2009
15	R062	12/1/2009
16	R067	28/9/2008

The monitoring period is from 01<sup>st</sup> May 2018 to 31<sup>st</sup> Mar 2019. The total GHG emission reductions or removals generated in this monitoring period are 21,92 tCO<sub>2</sub>.

## 1.2 Sectoral Scope and Project Type

Project type: Renewable energy projects

Sectoral Scope: 1- Energy Industries (renewable/non-renewable sources).

Project Type : I - Renewable Energy Projects

Methodology : ACM0002: Grid-connected electricity generation from renewable sources - Version 10

The project is not a grouped project activity

## 1.3 Project Proponent

<b>Organization name</b>	Modern Road Makers Pvt Ltd.
<b>Contact person</b>	A. D. Yadav
<b>Title</b>	Chief Financial Officer
<b>Address</b>	A - 201, Universal Business Pard, 2nd Floor, Kamani Oil Mill Road, Chandivli Estate, Andheri (East)
<b>Telephone</b>	+91 22 6733 5959
<b>Email</b>	info@irb.co.in

## 1.4 Other Entities Involved in the Project

<b>Organization name</b>	Infinite Solutions
<b>Role in the Project</b>	Project Consultant
<b>Contact person</b>	Jimmy Sah
<b>Title</b>	Head - Sustainability
<b>Address</b>	Address: 214-215 Milinda Manor Opp. Next Treasure Island,2 RNT Marg,Indore-452001
<b>Telephone</b>	Landline No.: 0731-4050174
<b>Email</b>	jimmy@infisolutions.org

## 1.5 Project Start Date

Project Start Date: 28-September-2008

The project start date is the date on which first 5 MW of the project was commissioned.

## 1.6 Project Crediting Period

Crediting Period Start date: 01-May-2012

Crediting Period End date: 30-April-2022

The project activity adopts renewable crediting period of 10 years of period which can be renewed



## 1.8 Title and Reference of Methodology

Approved Consolidated Baseline and Monitoring methodology ACM0002 (Version 10 Sectoral Scope 01, EB 47)

Title: Consolidated baseline methodology for grid-connected electricity generation from renewable sources

Reference: <http://cdm.unfccc.int/UserManagement/FileStorage/NF9EDA0V5K382HW0JR14GS7XYQUMCP>

The other references which have been taken for the preparation of the document are:

TOOL 01 -Tool for the demonstration and assessment of additionality, Version 05.2, EB 39

Reference: [http://cdm.unfccc.int/Reference/tools/ls/meth\\_tool01.pdf](http://cdm.unfccc.int/Reference/tools/ls/meth_tool01.pdf)

TOOL 07 -Tool to calculate the emission factor for an electricity system, Version 02, EB 50

Reference: [http://cdm.unfccc.int/Reference/tools/ls/meth\\_tool07\\_v01\\_1.pdf](http://cdm.unfccc.int/Reference/tools/ls/meth_tool07_v01_1.pdf)

## 1.9 Participation under other GHG Programs

The project is registered under CDM mechanism, project id 3839. Project Proponent has submitted undertaking that they will not claim same emission reductions of the project from CDM and VCS for the same monitoring period.

The project has undergone CDM verification till 30 Apr 2012, the current monitoring period is from 01 May 2018 to 31 Mar 2019. The Project Proponent has submitted undertaking for not availing other forms of environmental credit as well participation in other GHG programs for the same monitoring period under consideration

## 1.10 Other Forms of Credit

The Project is registered with as CDM project, no. 3839. The Project Proponent has submitted undertaking for not availing other forms of environmental credit for the same monitoring period under consideration.

## 1.11 Sustainable Development

The project proponent has considered the sustainable development of the region due to the project activity. Ministry of Environment and Forests, Govt. of India has stipulated the following indicators for sustainable development in the interim approval guidelines for CDM projects:

### **Social well-being:**

- The project activity contributes towards local socio-economic development around its area of operation through provision of employment opportunities (direct and indirect) for local population.
- The project activity contributes towards local socio-economic development around its area of operation through provision of employment opportunities (direct and indirect) for local population.

**Environmental well-being:**

- The project activity causes sustenance and improvement in regional air quality by avoiding commonly used fossil fuels for power generation. It thereby, also, results in maintenance of the ecosystem and human health due to avoidance in the use of GHG emissive fuels such as coal.
- It also leads to conservation of natural resources such as coal, oil etc

**Economic well-being:**

- By providing employment opportunities, this project activity leads to development in the local economy.
- Through bringing in revenue to India through CDM process, it demonstrates how certain real and perceived financial barriers can be overcome for implementing clean energy measures.

**Technological well-being:**

- The successful implementation of the project activity will result in encouraging the use of cleaner technology. This will lead to replacement of the non-eco-friendly sources of power generation like thermal energy which are the major sources of power in the country.

## 2 SAFEGUARDS

### 2.1 No Net Harm

There are no negative environmental and/or negative socio-economic impacts due to the project. As the project activity does not involve any major construction activity. It primarily requires the installation of the WTGs, interfacing the generators with the State Electricity Board by setting up HT transmission lines and installation of other accessories.

The report on “Developmental Impacts and Sustainable Governance Aspects of Renewable Energy Projects” prepared by MNRE dated September 2013. This report clearly mentioned that wind project activity operations do not result in direct air pollution, noise pollution. Please refer below web link for the same.

Thus there are no any significant impacts due to implementation of project activity on air, water, soil quality and ambience are envisaged due to the project activity. There were no socio-economic impacts identified from the project.

### 2.2 Local Stakeholder Consultation

Discussions with Local stakeholders are being carried out at periodic intervals.

There are no negative comments received for the project. In line with VCS requirements the following process has been implemented to receive comments from local stakeholders as well as communicate with them at periodic intervals.

Methods	Details
Communication Book or Register	Communication Register is maintained at Admin office at project site office.

	Any comments/inputs/grievance received shall be processed in line with procedure.
Telephone access Internet/email access	Mr. Anil Yadav Mobile number +91 22 6733 5959 Email Id: <a href="mailto:Anil.Yadav@irb.co.in">Anil.Yadav@irb.co.in</a> An employee of the company is responsible for handling any stakeholder's comment. The comments mentioned shall be recorded in the Communication register and shall be processed in line with procedure

### 2.3 AFOLU-Specific Safeguards

Not Applicable.

## 3 IMPLEMENTATION STATUS

### 3.1 Implementation Status of the Project Activity

The project activity involves installation of Wind power generation project in Jaisalmer, Rajasthan. It involves the installation of 16 units of model S-66 SUZLON make 1250 kW rating Wind Turbine Generators with a total installed capacity 20 MW.

Technology employed:

In wind energy generation, kinetic energy of wind is converted into mechanical energy and subsequently into electrical energy. Wind blowing at high speeds has a considerable amount of kinetic energy. When this kinetic energy passes through the blades of the wind turbines, it is converted into mechanical energy and rotates the wind blades. When the wind blades rotate, the connected shaft hence rotates, which is connected to a generator, thereby producing electricity. The technology is a clean technology since there are no GHG emissions associated with the electricity generation. Hence, the project activity has used an environmentally safe technology. In addition, there is no transfer of technology involved in this project activity.

The main features of the technology are given below:

S.No	Description	Specification
1	Make	Suzlon
2	Rated Power	1250 kW
3	Rotor Type	3 Blades, Horizontal axis
4	Blade Material	Epoxy bonded fiber glass
5	Rotor Diameter	66m
6	Swept Area	3421 Sq.m
7	Hub Height	74.5 m
8	Cut-in wind speed	3.0 m/s
9	Rated Wind Speed	14 m/s
10	Cut-off wind speed	22 m/s
11	Gearbox Type	Integrated 3 Stage 1 planetary & 2 helical
12	Gear Ratio	1:74:9

13	Nominal load	1390 kW
14	Type of Cooling	Oil Cooling System, Forced lubrication
15	Generator Rotational Speed	1500 RPM
16	Rated Output	1250 kW
17	Average Lifetime of WTGs	20 years

The project activity is expected to export 36,199 MWh annually of electrical energy, throughout its entire life span of 20 years. This will result in average annual reduction of 32,788 tCO<sub>2</sub> per annum from the project activity. The project activity does not involve any technology transfer. Technical lifetime of project activity is 20 years from the date of commissioning. Hence, the residual technical life of the project activity is given below WTG wise.

Sr No.	Location No.	DOC	Residual life till
1	R060	12/1/2009	11/01/2029
2	R061	12/1/2009	11/01/2029
3	R078	28/9/2008	27/09/2028
4	R007	28/9/2008	27/09/2028
5	R008	28/9/2008	27/09/2028
6	R063	12/1/2009	11/01/2029
7	R064	12/1/2009	11/01/2029
8	R069	12/1/2009	11/01/2029
9	R070	12/1/2009	11/01/2029
10	R071	12/1/2009	11/01/2029
11	R072	12/1/2009	11/01/2029
12	R073	12/1/2009	11/01/2029
13	R074	12/1/2009	11/01/2029
14	R016	12/1/2009	11/01/2029
15	R062	12/1/2009	11/01/2029
16	R067	28/9/2008	27/09/2028

## 3.2 Deviations

### 3.2.1 Methodology Deviations

Not Applicable.

### 3.2.2 Project Description Deviations

Not Applicable.

## 3.3 Grouped Projects

Not Applicable.

# 4 DATA AND PARAMETERS

## 4.1 Data and Parameters Available at Validation

<b>Data / Parameter</b>	EF <sub>GRID,OM,Y</sub>
<b>Data unit</b>	tCO <sub>2</sub> /MWh
<b>Description</b>	Weighted Average Simple Operating margin of the grid
<b>Source of data</b>	Central Electricity Authority database (Version 4.0)
<b>Value applied</b>	1.0086
<b>Justification of choice of data or description of measurement methods and procedures applied</b>	The value has been sourced from Central Electricity Authority database (Version 4.0)
<b>Purpose of Data</b>	The value has been used form the Central Electricity Authority (CEA) database (Version 4.0, dated 1st September 2008) for the calculation of the Baseline emissions
<b>Comments</b>	-

<b>Data / Parameter</b>	EF <sub>GRID,BM,Y</sub>
<b>Data unit</b>	tCO <sub>2</sub> /MWh
<b>Description</b>	Build Margin of the grid.
<b>Source of data</b>	Central Electricity Authority database (Version 4.0)
<b>Value applied</b>	0.5977
<b>Justification of choice of data or description of measurement methods and procedures applied</b>	The value has been sourced from Central Electricity Authority database (Version 4.0)
<b>Purpose of Data</b>	The value has been used form the Central Electricity Authority (CEA) database (Version 4.0, dated 1st September 2008) for the calculation of the Baseline emissions
<b>Comments</b>	

<b>Data / Parameter</b>	EF <sub>GRID,CM,Y</sub>
<b>Data unit</b>	tCO <sub>2</sub> /MWh
<b>Description</b>	Combined Margin emission factor of the grid
<b>Source of data</b>	Central Electricity Authority database (Version 4.0)
<b>Value applied</b>	0.9058

Justification of choice of data or description of measurement methods and procedures applied	The value has been sourced from Central Electricity Authority database (Version 4.0)
Purpose of Data	This value is used for the calculation of the Baseline emissions
Comments	-

## 4.2 Data and Parameters Monitored

Data / Parameter	EG <sub>y</sub>
Data unit	MWh
Description	Total electricity exported to grid
Source of data	Credit notes from the state electricity utility
Description of measurement methods and procedures to be applied	<p>Monitoring: Electrical Energy Meters which are electronic tri-vector meters of accuracy class 0.2 (Main &amp; check meters)</p> <p>Data type: Measured and calculated</p> <p>Archiving: Paper and Electronic</p> <p>Recording Frequency: Daily Responsibility: The O&amp;M site-in-charge is responsible for the regular recording of data.</p>
Frequency of monitoring/recording	Monthly
Value monitored	24,154
Monitoring equipment	Monitoring: Electrical Energy Meters which are electronic tri-vector meters of accuracy class 0.2 (Main & Check meters) Data type: Measured & Calculated Archiving: Paper & Electronic
QA/QC procedures to be applied	<p>Meter calibration is conducted annually for the meters;</p> <p><b>Please find below the meter's details in Appendix-1.</b></p> <p>The calibration has been conducted by third party NABL accredited lab</p>
Purpose of the data	Calculation of baseline emissions
Calculation method	Mentioned in monitoring plan

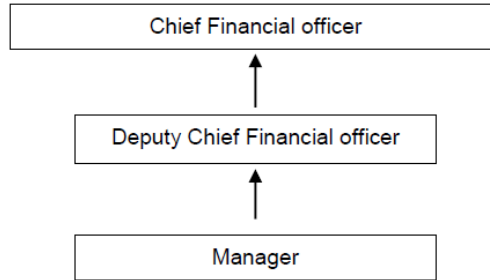
Comments	Data archived: The data will be kept for two years after the end of the crediting period or the last issuance of VERs for this project activity, whichever occurs later.
Data / Parameter	EG <sub>y</sub>
Data unit	MWh
Description	Total electricity imported to grid
Source of data	Credit notes from the state electricity utility
Description of measurement methods and procedures to be applied	Monitoring: Electrical Energy Meters which are electronic tri-vector meters of accuracy class 0.2 (Main & check meters)  Data type: Measured and calculated Archiving: Paper and Electronic  Recording Frequency: Daily Responsibility: The O&M site-in-charge is responsible for the regular recording of data.
Frequency of monitoring/recording	Monthly
Value monitored	95.36
Monitoring equipment	Electrical Energy Meters which are electronic tri-vector meters of accuracy class 0.2 (Main & check meters)
QA/QC procedures to be applied	Meter calibration is conducted annually for the meters; <b>Please find below the meter's details in Appendix -1.</b> The calibration has been conducted by third party NABL accredited lab
Purpose of the data	Calculation of baseline emissions
Calculation method	Mentioned in monitoring plan
Comments	Data archived: The data will be kept for two years after the end of the crediting period or the last issuance of VERs for this project activity, whichever occurs later.

### 4.3 Monitoring Plan

#### Monitoring Process at Rajasthan

Project participant has implemented 20 MW Wind energy power generation project. Power generation using renewable energy like wind power is eligible for carbon credit benefits. Following is a monitoring plan for project activity:

#### Organizational Structure



Responsibility:

Analysis of power generation reports, performance report and monthly meter reading is handled by project proponents on regular basis. The data collection on daily basis is done by O&M team contracted by project proponent. An automated generation report is sent to the manager. The manager maintains the generation reports.

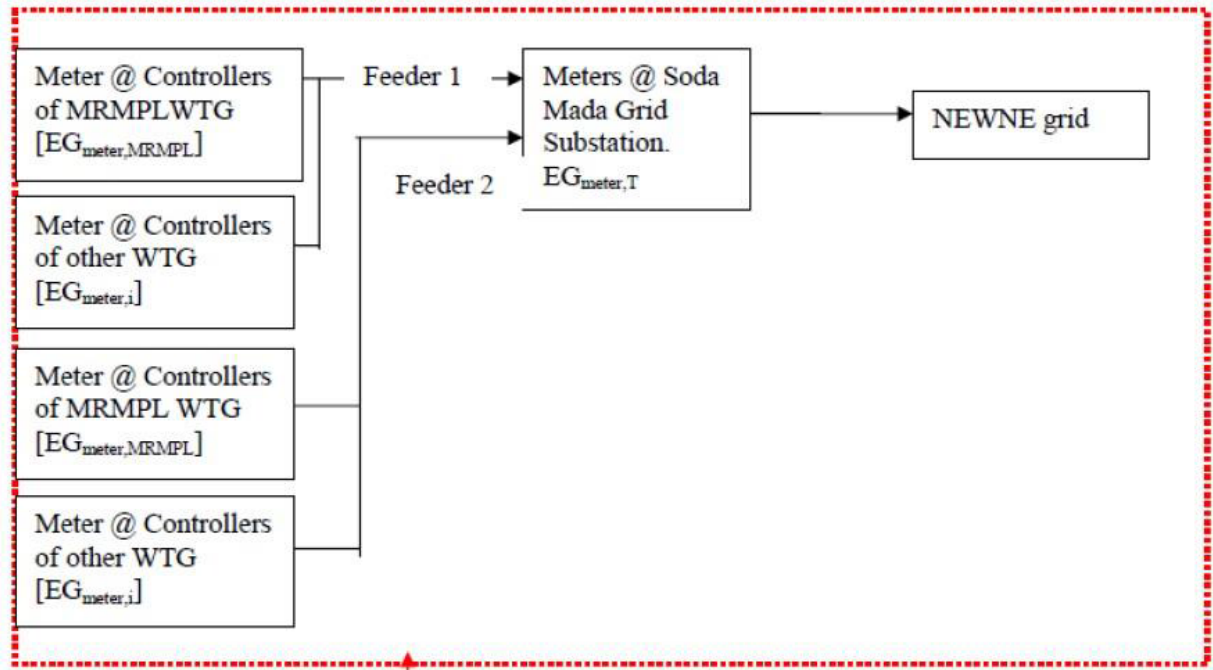
The Deputy chief Financial officer is assisted by the manager on the project. He is responsible to plan and allocate the annual budget for operation, estimation of the likely operating cost, electricity dispatch, organizing third party contractors, revenue collection etc. The deputy CFO reports to the chief financial officer who is responsible for the overall project management.

O&M team is responsible for preventive maintenance, handling emergency situations and improvement measures. O&M team ensures that joint monthly reading, issuance of credit notes and meter testing on regular basis.

Data Monitoring:

The delivered energy is metered by the authorities of JVVNL in the presence of representatives of the technology supplier at the substation at Soda Mada. Metering equipment used is electronic tri-vector meters. The metering equipment is maintained in accordance with electricity standards. The monthly meter readings at the project sites (controller reading) and the receiving station are taken simultaneously and jointly by the parties. The controller readings of the Wind mills are also recorded by the technology supplier by a Central Monitoring system installed at the wind site. Daily and monthly generation reports are sent to MRMPL.

The single line diagram for the metering may be represented as follows:



All the Main and Check meters are tested for accuracy annually with reference to a portable standard meter. As the instruments are calibrated and marked at regular intervals, the accuracy of measurement can be assured at all times. To ensure accurate and continuous monitoring, MRMPL has a standby meter, calibrated by an authorized agency.

The allocation of electricity is executed as per the following procedure:

1. Enter the value of electricity received from meter at the controller (kWh).
2. Enter the value of electricity supplied to meter at the controller (kWh).
3. Take the difference of electricity received and supplied to meter at the controller (kWh)
4. Take the difference of electricity as per the above steps 1 to 3 for each of the WTGs (of owner i) connected to the feeder of the MRMPL WTG.  $[EG_{meter,i}]$
5. Take the sum of all the controller readings as calculated in Step 4.  $[\Sigma EG_{meter,i}]$
6. Divide individual difference by total calculated as per step 5 and multiply by 100 to find % allocation for each of the WTG of MRMPL.  
 $[EG_{meter,MRMPL} / \Sigma EG_{meter,i} \times 100]$
7. Enter the value of electricity received from the feeder at the substation (kWh).
8. Enter the value of electricity supplied to the feeder at the substation (kWh).
9. Take the difference of electricity received and supply to meter at the substation. (kWh)  
 $[EG_{meter,T}]$
10. Multiply the value calculated as per step 9 by % allocation calculated as per step 6 to calculate the net electricity export allocated to the WTGs of MRMPL connected to the feeder.  
 $[EG_{net,MRMPL,i.e., EG_y \text{ and } EC_y}]$

The project owner uses the credit notes sent by state electricity board for respective the WTGs at different locations. The cumulative power supplied to grids is tabulated and multiplied by respective Grid Emission Factor to calculate number of VER

# 5 QUANTIFICATION OF GHG EMISSION REDUCTIONS AND REMOVALS

## 5.1 Baseline Emissions

Baseline emissions are calculated by multiplying the Net electricity exported to the grid with net baseline emission factor, as per the CDM approved methodology.

$BE_y = \text{Baseline Emission Factor (EF}_{\text{grid, CM, y}}) \times \text{Net electricity supplied to Regional Grid (EG}_{\text{facility, y}})$

Where,

$BE_y = \text{Baseline Emissions (tons/year)}$

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

$EF_{\text{grid, CM, y}} = \text{Combined margin CO}_2 \text{ emission factor for grid connected power generation in year y calculated using the latest version of the "Tool to calculate the emission factor for an electricity system" (tCO}_2\text{/MWh)}$

The Baseline emission factor is calculated in the registered CDM PDD as per "Tool to calculate the emission factor for an electricity system", Version 02, EB 50.

Thus, as per the CDM PDD, the calculated Baseline emission factor is  $EF_{\text{grid, CM, y}} = 0.9058 \text{ tCO}_2\text{/MWh}$ . The Baseline Emission Factor is fixed.

The net export from the project activity is 24,058 MWh. Hence the baseline emissions are calculated as below:

$\text{Baseline Emissions (BE}_y) = 0.9058 * 24,058 = 21,792\text{tCO}_2$

## 5.2 Project Emissions

The project uses wind energy only for power generation which leads to zero net GHG on-site emissions. Hence there is no net emission within the project boundary. Hence,  $PE_y = 0$ .

## 5.3 Leakage

The project proponents have identified no anthropogenic greenhouse gases by sources outside the project boundary that are significant, measurable and attributable to the project activity. Hence, no leakage is considered from the project activity. Hence,  $LE_y = 0$

## 5.4 Net GHG Emission Reductions and Removals

The emission reductions are calculated as per the equation:

$ER = BE_y - PE_y - LE_y$

$ER = \text{Emission Reduction (tCO}_2\text{/year)}$

$BE_y = \text{Baseline Emissions (tCO}_2\text{/year)}$

PE<sub>y</sub> – Project Emissions (tCO<sub>2</sub>/year)

LE<sub>y</sub> - Leakage Emissions (tCO<sub>2</sub>/year)

ER = BE<sub>y</sub> – PE<sub>y</sub> – LE<sub>y</sub>

Year	Baseline emissions or removals (tCO <sub>2</sub> e)	Project emissions or removals (tCO <sub>2</sub> e)	Leakage emissions (tCO <sub>2</sub> e)	Net GHG emission reductions or removals (tCO <sub>2</sub> e)
2018 (01 May 2018 to 31 Dec 2018)	18,764	0	0	18,764
2019 (01 Jan 2019 to 31 Mar 2019)	3029	0	0	3029
<b>Total</b>	<b>21,792</b>	<b>0</b>	<b>0</b>	<b>21,792</b>

Further, the comparison for estimated emission reductions as per validated VCS PD and actual observed are detailed below. The emission reductions are lower than the estimated value.

Parameters	tCO <sub>2</sub> e
Estimated Annual Emission Reduction	32,788
Emission Reductions for the monitoring period (335 days)	30,093
Emission reductions achieved in monitoring period	21,792
Percentage of variation when compared with estimated ERs in VCS PD	-27.63 %

Further, the emission reductions are 27.63 % lower than the estimated values.

# APPENDIX 1: CALIBRATION DETAILS

Details	Main Meter	Check Meter
Meter Number	RJB90212	RJB90213
Make	Secure	Secure
Accuracy class	0.2s	0.2s
Location	Soda Mada	Soda Mada
Calibration date	09/06/2017	09/06/2017
Due Date	08/06/2018	08/06/2018
Calibration date	09/06/2018	09/06/2018
Due Date	08/06/2019	08/06/2019

Details	Replacement Date	Main meter	Check meter
Old Meter Number	07/04/2017	RJB00316	RJB00317
New meter		RJB90212	RJB90213

Due to the meter failure the meters has been changed and date is 07/04/2017. Please note that new meters are always pre calibrated.

**JODHPUR VIDHYUT VITRAN NIGAM LTD.**

Joint Inspection report of metering arrangement No. 33/220KV Transformer no 1 (220KV PSS Mada) connected at 400 KV Akal substation of RRVNPL for the purpose of ABT meter replacement in district Jaisalmer.

Total Load = 224.50 MW

Date : 18.04.17

Total sheets = 03

Particulars of Customers	Sr. No.	Location	Capacity	Discom	Customer Name
		1	As per record		

Sr. No.	Location	Capacity	Discom	Customer Name
1	As per record			

Name of Connecting GSS	220 KV Grid Substation Akal RVPNL Jaisalmer		
Ref No. and Date	No. JdVVNL/SE/M&P-PC/JU/S.Tech/F.	D 37	Dt. 07/04/17

Capacity	224.50 MW
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Supply Voltage	220 KV
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Purpose of Visit	Joint Inspection report of metering arrangement No.33/220KV Transformer no 1 (220KV PSS Mada) connected at 400KV Grid substation Akal for the purpose of TVM meter replace with ABT Meter
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Particulars	New Installed		Old Installed	
	CT	PT	CT	PT
Make	No New installation		As per record	
Serial No.				
Ratio				
Feeder Voltage				
Class				
V.A Burden				
Ownership				
Sealings				

Particulars	Main Meter		Back UP Meter	
	Old	New	Old	New
S.No.	RJB00316	RJB90212	RJB00317	RJB90213
Make	Secure	Secure	Secure	Secure
Type	E3M021, 3 Ph. 4 Wire	E3M024, 3 Ph. 4 Wire	E3M021, 3 Ph. 4 Wire	E3M024, 3 Ph. 4 Wire
Amperage / Class of Accuracy	-/1A ,0.2s	-/1A ,0.2s	-/1A ,0.2s	-/1A ,0.2s
Voltage/	-/110/√3	-/110/√3	-/110/√3	-/110/√3
Pulse/Rev. Constant	160 pulses/Wh	16000 pulses/KWh	160 pulses/Wh	16000 pulses/KWh
Overall M.F	800 in KWh	800000 in KWh	800 in KWh	800000 in KWh

Particulars	Main Meter		Back UP Meter	
	Old	New	Old	New
S.No.	RJB00316	RJB90212	RJB00317	RJB90213
Make	Secure	Secure	Secure	Secure
Type	E3M021, 3 Ph. 4 Wire	E3M024, 3 Ph. 4 Wire	E3M021, 3 Ph. 4 Wire	E3M024, 3 Ph. 4 Wire
Amperage / Class of Accuracy	-/1A ,0.2s	-/1A ,0.2s	-/1A ,0.2s	-/1A ,0.2s
Voltage/	-/110/√3	-/110/√3	-/110/√3	-/110/√3
Pulse/Rev. Constant	160 pulses/Wh	16000 pulses/KWh	160 pulses/Wh	16000 pulses/KWh
Overall M.F	800 in KWh	800000 in KWh	800 in KWh	800000 in KWh

Particulars	Main Meter		Back UP Meter	
	Old	New	Old	New
S.No.	RJB00316	RJB90212	RJB00317	RJB90213
Make	Secure	Secure	Secure	Secure
Type	E3M021, 3 Ph. 4 Wire	E3M024, 3 Ph. 4 Wire	E3M021, 3 Ph. 4 Wire	E3M024, 3 Ph. 4 Wire
Amperage / Class of Accuracy	-/1A ,0.2s	-/1A ,0.2s	-/1A ,0.2s	-/1A ,0.2s
Voltage/	-/110/√3	-/110/√3	-/110/√3	-/110/√3
Pulse/Rev. Constant	160 pulses/Wh	16000 pulses/KWh	160 pulses/Wh	16000 pulses/KWh
Overall M.F	800 in KWh	800000 in KWh	800 in KWh	800000 in KWh

Particulars	Main Meter		Back UP Meter	
	Old	New	Old	New
S.No.	RJB00316	RJB90212	RJB00317	RJB90213
Make	Secure	Secure	Secure	Secure
Type	E3M021, 3 Ph. 4 Wire	E3M024, 3 Ph. 4 Wire	E3M021, 3 Ph. 4 Wire	E3M024, 3 Ph. 4 Wire
Amperage / Class of Accuracy	-/1A ,0.2s	-/1A ,0.2s	-/1A ,0.2s	-/1A ,0.2s
Voltage/	-/110/√3	-/110/√3	-/110/√3	-/110/√3
Pulse/Rev. Constant	160 pulses/Wh	16000 pulses/KWh	160 pulses/Wh	16000 pulses/KWh
Overall M.F	800 in KWh	800000 in KWh	800 in KWh	800000 in KWh

Particulars	Main Meter		Back UP Meter	
	Old	New	Old	New
S.No.	RJB00316	RJB90212	RJB00317	RJB90213
Make	Secure	Secure	Secure	Secure
Type	E3M021, 3 Ph. 4 Wire	E3M024, 3 Ph. 4 Wire	E3M021, 3 Ph. 4 Wire	E3M024, 3 Ph. 4 Wire
Amperage / Class of Accuracy	-/1A ,0.2s	-/1A ,0.2s	-/1A ,0.2s	-/1A ,0.2s
Voltage/	-/110/√3	-/110/√3	-/110/√3	-/110/√3
Pulse/Rev. Constant	160 pulses/Wh	16000 pulses/KWh	160 pulses/Wh	16000 pulses/KWh
Overall M.F	800 in KWh	800000 in KWh	800 in KWh	800000 in KWh

Particulars	Main Meter		Back UP Meter	
	Old	New	Old	New
S.No.	RJB00316	RJB90212	RJB00317	RJB90213
Make	Secure	Secure	Secure	Secure
Type	E3M021, 3 Ph. 4 Wire	E3M024, 3 Ph. 4 Wire	E3M021, 3 Ph. 4 Wire	E3M024, 3 Ph. 4 Wire
Amperage / Class of Accuracy	-/1A ,0.2s	-/1A ,0.2s	-/1A ,0.2s	-/1A ,0.2s
Voltage/	-/110/√3	-/110/√3	-/110/√3	-/110/√3
Pulse/Rev. Constant	160 pulses/Wh	16000 pulses/KWh	160 pulses/Wh	16000 pulses/KWh
Overall M.F	800 in KWh	800000 in KWh	800 in KWh	800000 in KWh

Particulars	Main Meter		Back UP Meter	
	Old	New	Old	New
S.No.	RJB00316	RJB90212	RJB00317	RJB90213
Make	Secure	Secure	Secure	Secure
Type	E3M021, 3 Ph. 4 Wire	E3M024, 3 Ph. 4 Wire	E3M021, 3 Ph. 4 Wire	E3M024, 3 Ph. 4 Wire
Amperage / Class of Accuracy	-/1A ,0.2s	-/1A ,0.2s	-/1A ,0.2s	-/1A ,0.2s
Voltage/	-/110/√3	-/110/√3	-/110/√3	-/110/√3
Pulse/Rev. Constant	160 pulses/Wh	16000 pulses/KWh	160 pulses/Wh	16000 pulses/KWh
Overall M.F	800 in KWh	800000 in KWh	800 in KWh	800000 in KWh

Particulars	Main Meter		Back UP Meter	
	Old	New	Old	New
S.No.	RJB00316	RJB90212	RJB00317	RJB90213
Make	Secure	Secure	Secure	Secure
Type	E3M021, 3 Ph. 4 Wire	E3M024, 3 Ph. 4 Wire	E3M021, 3 Ph. 4 Wire	E3M024, 3 Ph. 4 Wire
Amperage / Class of Accuracy	-/1A ,0.2s	-/1A ,0.2s	-/1A ,0.2s	-/1A ,0.2s
Voltage/	-/110/√3	-/110/√3	-/110/√3	-/110/√3
Pulse/Rev. Constant	160 pulses/Wh	16000 pulses/KWh	160 pulses/Wh	16000 pulses/KWh
Overall M.F	800 in KWh	800000 in KWh	800 in KWh	800000 in KWh

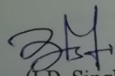
Particulars	Main Meter		Back UP Meter	
	Old	New	Old	New
S.No.	RJB00316	RJB90212	RJB00317	RJB90213
Make	Secure	Secure	Secure	Secure
Type	E3M021, 3 Ph. 4 Wire	E3M024, 3 Ph. 4 Wire	E3M021, 3 Ph. 4 Wire	E3M024, 3 Ph. 4 Wire
Amperage / Class of Accuracy	-/1A ,0.2s	-/1A ,0.2s	-/1A ,0.2s	-/1A ,0.2s
Voltage/	-/110/√3	-/110/√3	-/110/√3	-/110/√3
Pulse/Rev. Constant	160 pulses/Wh	16000 pulses/KWh	160 pulses/Wh	16000 pulses/KWh
Overall M.F	800 in KWh	800000 in KWh	800 in KWh	800000 in KWh

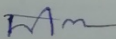
Particulars	Main Meter		Back UP Meter	
	Old	New	Old	New
S.No.	RJB00316	RJB90212	RJB00317	RJB90213
Make	Secure	Secure	Secure	Secure
Type	E3M021, 3 Ph. 4 Wire	E3M024, 3 Ph. 4 Wire	E3M021, 3 Ph. 4 Wire	E3M024, 3 Ph. 4 Wire
Amperage / Class of Accuracy	-/1A ,0.2s	-/1A ,0.2s	-/1A ,0.2s	-/1A ,0.2s
Voltage/	-/110/√3	-/110/√3	-/110/√3	-/110/√3
Pulse/Rev. Constant	160 pulses/Wh	16000 pulses/KWh	160 pulses/Wh	16000 pulses/KWh
Overall M.F	800 in KWh	800000 in KWh	800 in KWh	800000 in KWh


Particulars	Main Meter		Back UP Meter	
	Old	New	Old	New
S.No.	RJB00316	RJB90212	RJB00317	RJB90213
Make	Secure	Secure	Secure	Secure
Type	E3M021, 3 Ph. 4 Wire	E3M024, 3 Ph. 4 Wire	E3M021, 3 Ph. 4 Wire	E3M024, 3 Ph. 4 Wire
Amperage / Class of Accuracy	-/1A ,0.2s	-/1A ,0.2s	-/1A ,0.2s	-/1A ,0.2s
Voltage/	-/110/√3	-/110/√3	-/110/√3	-/110/√3
Pulse/Rev. Constant	160 pulses/Wh	16000 pulses/KWh	160 pulses/Wh	16000 pulses/KWh
Overall M.F	800 in KWh	800000 in KWh	800 in KWh	800000 in KWh

Particulars	Main Meter		Back UP Meter	
	Old	New	Old	New
S.No.	RJB00316	RJB90212	RJB00317	RJB90213
Make	Secure	Secure	Secure	Secure
Type	E3M021, 3 Ph. 4 Wire	E3M024, 3 Ph. 4 Wire	E3M021, 3 Ph. 4 Wire	E3M024, 3 Ph. 4 Wire
Amperage / Class of Accuracy	-/1A ,0.2s	-/1A ,0.2s	-/1A ,0.2s	-/1A ,0.2s
Voltage/	-/110/√3	-/110/√3	-/110/√3	-/110/√3
Pulse/Rev. Constant	160 pulses/Wh	16000 pulses/KWh	160 pulses/Wh	16000 pulses/KWh
Overall M.F	800 in KWh	800000 in KWh	800 in KWh	800000 in KWh

Particulars	Main Meter		Back UP Meter	
	Old	New	Old	New
S.No.	RJB00316	RJB90212	RJB00317	RJB90213
Make	Secure	Secure	Secure	Secure
Type	E3M021, 3 Ph. 4 Wire	E3M024, 3 Ph. 4 Wire	E3M021, 3 Ph. 4 Wire	E3M024, 3 Ph. 4 Wire
Amperage / Class of Accuracy	-/1A ,0.2s	-/1A ,0.2s	-/1A ,0.2s	-/1A ,0.2s
Voltage/	-/110/√3	-/110/√3	-/110/√3	-/110/√3
Pulse/Rev. Constant	160 pulses/Wh	16000 pulses/KWh	160 pulses/Wh	16000 pulses/KWh
Overall M.F	800 in KWh	800000 in KWh	800 in KWh	800000 in KWh

  
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