Monitoring report form (Version 03.2)

Monitoring report

Title of the project activity	Renewable Wind Power Generation for promoting Energy Security
Reference number of the project activity	5553
Version number of the monitoring report	1
Completion date of the monitoring report	13/02/2014
Registration date of the project activity	15/03/2012
Monitoring period number and duration of this monitoring period	01/04/2012 – 31/12/2013
Project participant(s)	Gangadhar Narsingdas Agrawal (Private Entity)
Host Party(ies)	India
Sectoral scope(s) and applied methodology(ies)	1 : Energy industries (Renewable - / non-renewable sources) **Methodology applied**: (ACM0002), "Consolidated baseline methodology for grid-connected electricity generation from renewable sources" Reference: Version: 12.2, EB 65
Estimated amount of GHG emission reductions or net anthropogenic GHG removals by sinks for this monitoring period in the registered PDD	84,918[1] tCO_2e
Actual GHG emission reductions or net anthropogenic GHG removals by sinks achieved in this monitoring period	75,997 t CO_2e
Actual GHG emission reductions or net anthropogenic GHG removals by sinks achieved during the period up to 31 December 2012(if applicable)	38,204 t CO_2e
Actual GHG emission reductions or net anthropogenic GHG removals by sinks achieved during the period from 1 January 2013 onwards (if applicable).	37,793 t CO_2e

[1] Estimated CERs for the current monitoring period (640 days) based on average annual estimation of CERs 48,430 as per the registered PDD.

SECTION A. Description of project activity

A.1. Purpose and general description of project activity

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The purpose of the project activity is to produce electric power from wind electric generators (WEGs).

Brief description of the installed technology and equipment:

The project activity involves installation of 26 wind mills of various capacities around various states of India, cumulatively producing 25.5 MW. It consists of 7 WTGs of 1.5 MW each in the state of Karnataka. 4 WTGs of 1.5 MW each in Maharashtra and 15 WTGs of 0.6 MW each in the state of Gujarat.

State	S. No.	WTG Location No.	Capacity (MW)
Maharashtra	1.	N – 131	1.5
	2.	N – 132	1.5
	3.	N – 133	1.5
	4.	N – 23	1.5
Karnataka	1.	K – 377	1.5
	2.	K – 378	1.5
	3.	K – 379	1.5
	4.	K – 381	1.5
	5.	K – 375	1.5
	6.	K – 376	1.5
	7.	K – 380	1.5
Gujarat	1.	VRRB/600/07-08/0736	0.6
	2.	VRRB/600/07-08/0737	0.6
	3.	VRRB/600/07-08/0738	0.6
	4.	VRRB/600/07-08/0739	0.6
	5.	VRRB/600/07-08/0740	0.6
	6.	VRRB/600/07-08/1147	0.6
	7.	VRRB/600/07-08/1149	0.6
	8.	VRRB/600/07-08/1148	0.6
	9.	VRRB/600/07-08/1150	0.6
	10.	VRRB/600/07-08/1151	0.6
	11.	VRRB/600/07-08/1178	0.6
	12.	VRRB/600/07-08/1174	0.6
	13.	VRRB/600/07-08/1175	0.6
	14.	VRRB/600/07-08/1176	0.6
	15.	VRRB/600/07-08/1177	0.6

The project activity comprises of 26 WTGs which will cumulatively produce 25.5 MW. Out of these, 11WTGs have been supplied by Suzlon Energy Ltd. And are of 1.5 MW each (4 in Maharashtra and 7 in Karnataka). The rest 15 WTGs have been supplied by Vestas RRB and are of 0.6 MW each which are in the state of Gujarat.

WTGs wise commissioning dates are as follows: -

State	WTG Location No.	Commissioning date
Maharashtra	N – 131	17/09/2007
	N – 132	17/09/2007
	N – 133	17/09/2007
	N – 23	29/01/2008
Karnataka	K – 377	20/03/2008
	K – 378	20/03/2008
	K – 379	20/03/2008
	K – 381	20/03/2008
	K – 375	20/03/2008
	K – 376	20/03/2008
	K – 380	20/03/2008
Gujarat	VRRB/600/07-08/0736	19/02/2008
	VRRB/600/07-08/0737	02/10/2007
	VRRB/600/07-08/0738	07/02/2008
	VRRB/600/07-08/0739	03/10/2007
	VRRB/600/07-08/0740	05/01/2008
	VRRB/600/07-08/1147	30/03/2008
	VRRB/600/07-08/1149	31/03/2008
	VRRB/600/07-08/1148	30/03/2008
	VRRB/600/07-08/1150	31/03/2008
	VRRB/600/07-08/1151	31/03/2008
	VRRB/600/07-08/1178	31/05/2008
	VRRB/600/07-08/1174	31/05/2008
	VRRB/600/07-08/1175	31/05/2008
	VRRB/600/07-08/1176	31/05/2008
	VRRB/600/07-08/1177	31/05/2008

The technical specifications of the WTGs installed in the project activity are as follows:

RRB Vestas WTGs (0.6 MW)	
Particulars	**Details**
Overall Data	
Cut in wind in speed	4 m/s
Cut-out wind speed	25 m/s
Survival Wind Speed	70 m/s
Tip Speed	64 m/s
Rotor Speed	26.2 rpm
Hub Height	50 m
Nacelle Tilt angle	5^{o}
Generator	
Type	Single Wounded Asynchronous
Rated Power Output	600 kW
Voltage	690 V
Revolutions	1527 rpm
Frequency	50 Hz
Gear box	
Type	Planetary / Helical
Gear ratio	1:58.2
No of Steps	3
Tower	
Type	Lattice
Material	Steel
Sections	6/9
Nacelle Cover	Fibre Glass Reinforced Polymer
Rotor	
No of Blades	3
Diameter	47 m
Swept Area	1735 m^2
Power Regulation	Pitch Regulated
Brake Systems	
Aerodynamics	Full feathering of blade
Mechanical	Disc brake
Yaw System	Slewing system with gear motors yawing
Controls	Microprocessor based

Suzlon WTGs (1.5 MW)	
Particulars	**Details**
Rotor Diameter	82 m
Installed electrical output	1500 kW
Cut-in wind speed	4 m/s
Cut-out wind speed	20 m/s
Rotor swept area	5281 m^2
Rotational speed	15.6/18.4 rpm
Rotor material	Fibre glass Epoxy
Regulation	Pitch/Suzlon Flexislip System
Generator	Asynchronous generator, 4 poles
Rated Output	1500 kW
Rotational speed	1511 rpm
Operational voltage	690 V
Frequency	50 Hz
Gear box	3 stage gear box, 1 planetary and 2 helical
Gear ratio	1:95.09
Nominal Load	1650 kW
Type of cooking	Oil cooling system
Yaw drive system	4 active electrical yaw motors
Yaw bearing	Polyamide slide bearing

Safety system	
Aerodynamic break	3 times independent pitch regulation
Mechanical break	Spring g powered disc break, hydraulically released fail safe
Control unit	Microprocessor controlled, indicating actual operating conditions, UPS backup system
Design standards	As per GL/IEC

Downtime details of the project activity:
For WTGs location no. K375, K376, K377, K378, K379, K380 & K381

S. No.	Month	Downtime hours (Hrs)	Reasons
1.	April-2012	260.8	• Shut Down Taken By OMS Team • Grid Down from EB • SE Reboot PLC • WTG Preventive Maintenance
2.	May-2012	76.83	• Shut Down Taken By OMS Team • Mech Switch Twist CCW End Stop • Grid Down from EB • Modification
3.	June-2012	135.4	• Grid Down from EB • Electric power failure • Mech Drive Train Vib. Stop
4.	July-2012	477.9	• FSS Fault1 • Line Breakdown due to Earth fault • Elec Yaw Sensor Error Stop • Mech Rotor Peak Speed Stop • Mech Rpm Diff Stop • Generator Bearing problem • Shut Down Taken By OMS Team • Damper plate failure
5.	Aug-2012	93.5	• Feeder Break Down • Mech Rotor FR Over Speed Stop • VCB Tripped • Preventive Check
6.	Sept-2012	234.5	• Grid Down from EB • VCB Tripped • Elec FB Gear Oil Pump
7.	Oct-2012	101.9	• WTG Preventive Maintenance • HT Yard Maintenance • Elec Voltage Asymmetry • Shut Down Taken By OMS Team
8.	Nov-2012	134.7	• Elec Safety Chain Stop • Grid Down from EB • Rep Pitch CAN Com Fail • Mech Tower Vib Stop
9.	Dec-2012	191	• Elec Vector Surge Stop • Grid Down from EB • Rep Pitch CAN Com Fail • Elec FB Generator Fan Error
10.	Jan-2013	101.40	• Shut Down Taken By OMS Team

				• Pitch Accu Charger Stop • WTG under inspection • Grid Down from EB • Elec FB Yaw CCW Error	
	11.	Feb-2013	278.50	• Pitch Angle1 SP Difference Stop • Pitch Brake 3 Not Released • Grid Down from EB • Pitch Ext Power Supply 24V Stop Conv1 • Rep Pitch CAN Com Fail	
	12.	March-2013	663.90	• Mech Switch Twist CCW End Stop • Grid Down from EB • Pitch Accu Charger Stop • Pitch Akku1 Voltage Low Stop	
	13.	April-2013	489.90	• WTG Preventive Maintenance • Shut Down Taken By EB • Pitch Akku3Voltage Low Stop • Mech Rotor FR Over Speed Stop	
	14.	May-2013	253.80	• Pitch Akku3Voltage Low Stop • Natural Calamities • Elec FB Generator Error Stop • Grid Down from EB	
	15.	June-2013	326.60	• Rep Pitch FreqConvPitch3 Error Stop • Grid Down from EB • Shut Down Taken By OMS Team • Pitch Resolver Encoder Diff 2 Stop • Pitch Akku1Voltage Low Stop	
	16.	July-2013	782.30	• Mech Rotor FR Over Speed Stop • Forced Back down • Rep Pitch FreqConvPitch1 Error Stop • Grid Down from EB	
	17.	Aug-2013	1094.91	• Rep Pitch CANComFail • Mech RotorFR OverSpeedStop • Grid Down from EB • Rep Pitch FreqConvPitch2 ErrStop	
	18.	Sept-2013	868.41	• Grid Down from EB • Mech RotorFR OverSpeedStop • Forced Backdown • Elec YawSensor ErrStop	
	19.	Oct-2013	208.60	• Preventive Check • Grid Down from EB • Rep Pitch Emergency Run • Pitch Resolver Encoder Diff1 Stop • Pitch Akku1Voltage LowStop	
	20.	Nov-2013	161.70	• Line Breakdown due to Earth fault • Pitch Brake2 Not Released • Rep Pitch FreqConvPitch2 Error Stop • Elec Reactive Power High Stop	
	21.	Dec-2013	152.80	• Grid Down from EB • Line Breakdown due to Earth fault • Rep Pitch FreqConvPitch3 Error Stop • Elec Reactive Power High Stop	

For WTGs location no. N23

S. No.	Month	Downtime hours (Hrs)	Reasons
1.	April-2012	213.10	• Yaw rim Failure • WTG Preventive Maintenance
2.	May-2012	27.10	• Pitch Freq Conv Pitch3 Error Stop
3.	June-2012	44.50	• Elec Yaw Sensor Error Stop • Pitch CAN Com Fail
4.	July-2012	25.30	• Pitch CAN Com Fail • Monthly Lubrication
5.	Aug-2012	16.50	• Pitch Freq Conv Pitch2 Error Stop
6.	Sept-2012	4.90	• Pitch Emergency Run
7.	Oct-2012	31.70	• Shut Down Taken By EB • Pitch Resolver Encoder Diff1 Stop
8.	Nov-2012	42.30	• Pitch Freq ConvPitch3 Error Stop • Pitch Emergency Run
9.	Dec-2012	9.70	• EB Meter Replace • UPS Tripped
10.	Jan-2013	5.10	• Monthly Lubrication • Shut Down Taken By EB
11.	Feb-2013	26.20	• Shut Down Taken By EB • Elec FB Yaw CCW Error
12.	March-2013	35.10	• Pitch BatterySurveillance1 • Line Breakdown due to Earth fault
13.	April-2013	30.60	• WTG Preventive Maintenance • Shut Down Taken By EB • HT Yard Maintenance
14.	May-2013	46.40	• Natural Calamities • Shut Down Taken By EB
15.	June-2013	32.90	• Pitch Akku1Voltage LowStop • Shut Down Taken By EB • Pitch Freq Conv Pitch3 Error Stop
16.	July-2013	39.20	• Pitch End Switch 5GradNeg Conv3 • Shut Down Taken By EB • Pitch Ext Power Supply 24VStop Conv1
17.	Aug-2013	43.20	• Pitch Emergency Run • Elec FB Yaw CCW Error • Rep Pitch Freq Conv Pitch1 Error Stop
18.	Sept-2013	153.60	• Pitch CAN3ComFail • FSS Fault • Special Safety Checking
19.	Oct-2013	43.40	• WTG Preventive Maintenance • Pitch Freq Conv Pitch2 Error Stop
20.	Nov-2013	14.90	• Pitch Resolver Encoder Diff2 Stop • Shut Down Taken By EB
21.	Dec-2013	555.90	• Force full Stoppage • Elec FB Yaw CW Error

For WTGs location no. N131, N132 & N133

S. No.	Month	Downtime hours (Hrs)	Reasons
1.	April-2012	28.70	• Elec FB Generator Error Stop • WTG Preventive Maintenance • UPS Tripped
2.	May-2012	75.20	• WTG Preventive Maintenance • Shut Down Taken By OMS Team • Gear Oil Change
3.	June-2012	108.8	• VCB Tripped • Elec Gen Brushes Worn Out • Rep Pitch Emergency Run
4.	July-2012	107	• Elec Gen Brushes Worn Out • Monthly Lubrication
5.	Aug-2012	18.10	• Pitch FreqConvPitch3 Error Stop • Preventive Check
6.	Sept-2012	15.10	• Power Cable work • Line Breakdown due to Earth fault
7.	Oct-2012	71.50	• WTG Preventive Maintenance • Pitch FreqConvPitch3 Error Stop • Shut Down Taken By EB
8.	Nov-2012	189.30	• Rep Pitch Emergency Run • Shut Down Taken By EB
9.	Dec-2012	40.60	• Shut Down Taken By OMS Team • EB Meter Replace
10.	Jan-2013	36.40	• Rep Pitch FreqConvPitch3 Error Stop • Elec Current Soft starter High • Monthly Lubrication
11.	Feb-2013	84.00	• Rep SE Reboot PLC • Shut Down Taken By EB • Shut Down Taken By OMS Team
12.	March-2013	142.30	• Elec Gen Brushes Worn Out • Rep Pitch CAN Com Fail • Line Breakdown due to Earth fault
13.	April-2013	49.30	• Shut Down Taken By EB • Shut Down Taken By OMS Team • SE Reboot PLC
14.	May-2013	126.20	• Shut Down Taken By EB • Line Breakdown due to Earth fault • Rep SE Reboot PLC
15.	June-2013	68.70	• Shut Down Taken By EB • Shut Down Taken By OMS Team • Forced Back down • Elec FB Thyristor Bypass Error Stop
16.	July-2013	81.90	• Pitch CAN3ComFail • Rep Pitch Freq Conv Pitch3 Error Stop • Shut Down Taken By EB
17.	Aug-2013	168.70	• Pitch CAN2ComFail

			• Shut Down Taken By OMS Team • Pitch ResolverEncoderDiff2Stop • Temp Control Panel Low Stop
18.	Sept-2013	54.00	• Elec FB Thyristor Bypass Error Stop • Elec Gen Brushes Worn Out • Line Breakdown due to Earth fault
19.	Oct-2013	69.70	• WTG Preventive Maintenance • Elec FB Yaw CCW Error • Shut Down Taken By EB • Elec FB Thyristor Bypass Error Stop
20.	Nov-2013	92.50	• Rep Pitch CAN Com Fail • Pitch Accu Charger Stop • Rep Pitch Freq ConvPitch3 Error Stop
21.	Dec-2013	2023.40	• Force full Stoppage • Reading Not Available • HT Yard Maintenance

Total emission reductions achieved in this monitoring period is 75,997 t CO_2e.

A.2. Location of project activity

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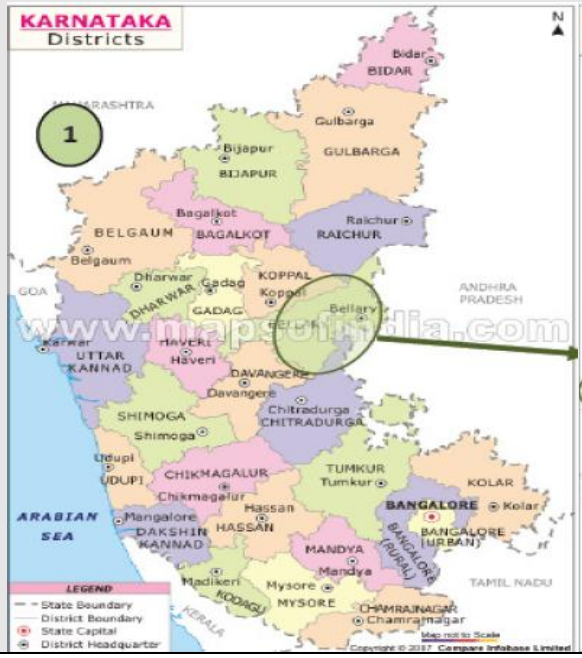
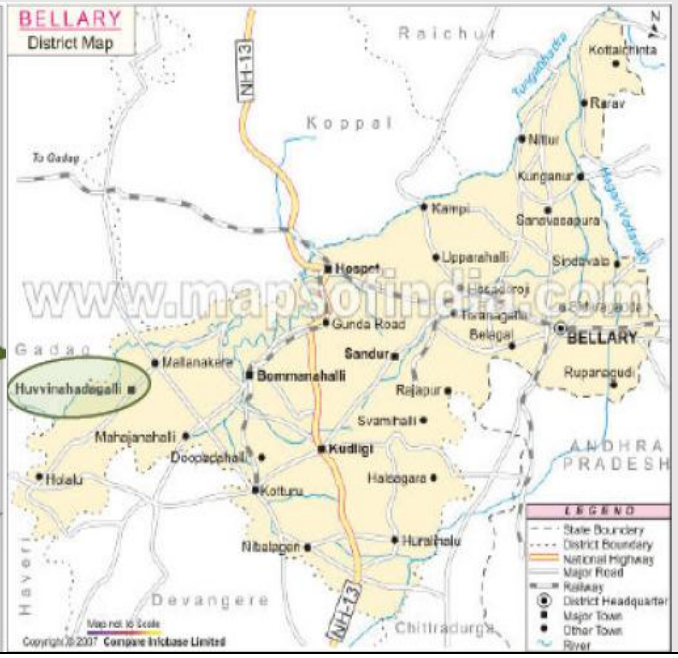
Host Party for the project activity is India.

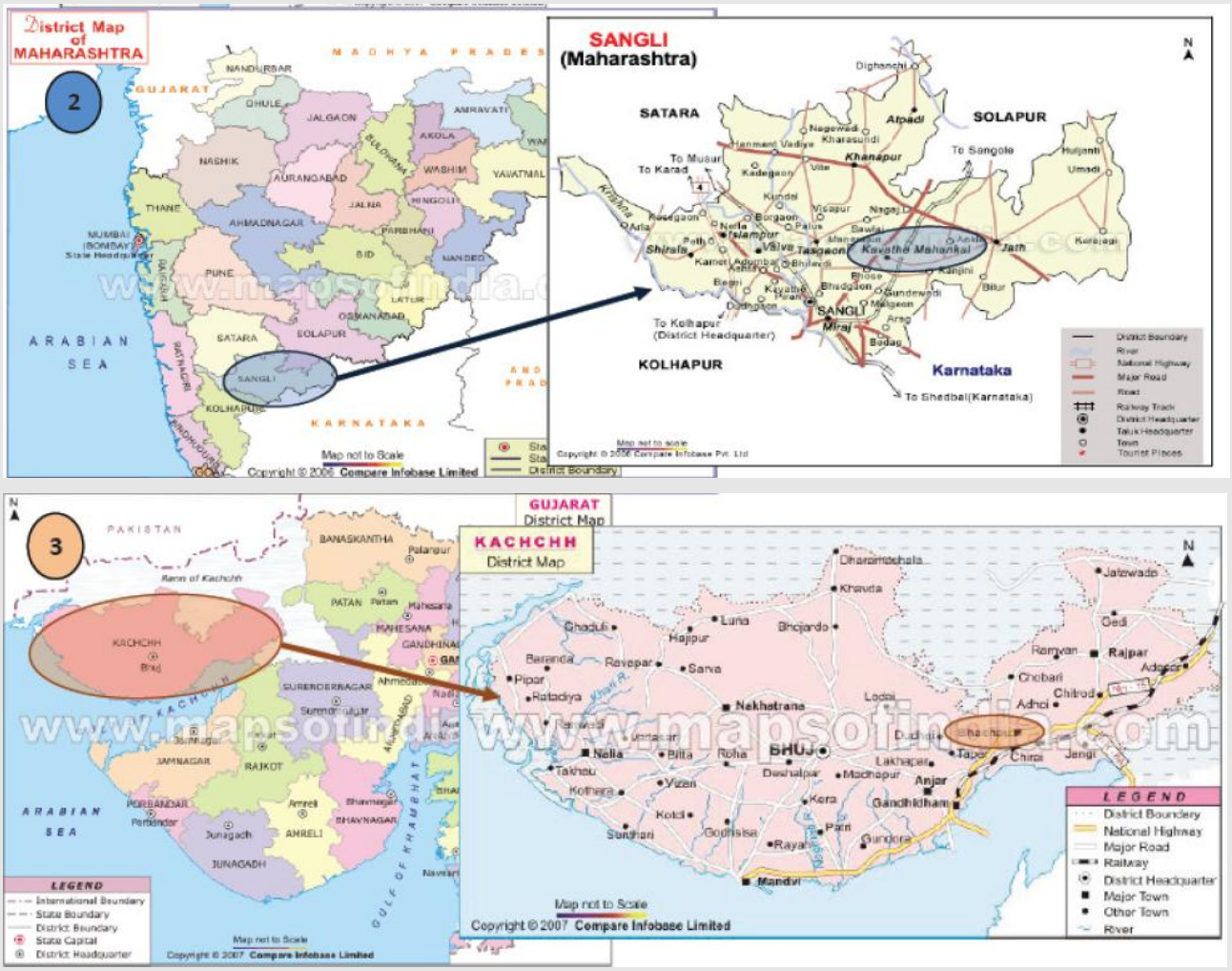
The Latitude and Longitude of the physical location of the project activity for unique identification is given in the table below:

WTG No.	State	District	Latitude	Longitude
N – 131	**Maharashtra**	**Sangli**	17° 09’ 29.4” N	74° 55’10.6” E
N – 132			17 ° 09’ 44.7” N	74° 55’ 00.9” E
N – 133			17 ° 09’39.2” N	74° 54’ 34.9” E
N – 23			17 ° 12’ 00.4” N	74° 57’ 03.6” E
K – 377	**Karnataka**	**Bellary**	15 ° 01’ 09.0” N	75 ° 51’14.2” E
K – 378			15 ° 01’ 03.2” N	75 ° 51’21.4” E
K – 379			15 ° 00’ 56.3” N	75 ° 51’ 28.0” E
K – 381			15 ° 00’ 50.9” N	75° 51’35.0” E
K – 375			15 ° 00’ 43.8” N	75° 51’ 40.1” E
K – 376			15 ° 00’ 38.3” N	75° 51’47.0” E
K – 380			15 ° 00’ 33.0” N	75° 51’ 53.2” E
VRRB/600/07-08/0736	**Gujarat**	**Kutch**	23° 19’ 32.9” N	70° 41’’ 51.4” E
VRRB/600/07-08/0737			23° 17’ 30.5” N	70° 40’ 19.4” E
VRRB/600/07-08/0738			23° 17’ 32.2” N	70° 40’ 3.6” E
VRRB/600/07-08/0739			23° 17’ 49.8” N	70° 39’ 36.9” E
VRRB/600/07-08/0740			23° 18’ 24” N	70° 39’ 57.3” E
VRRB/600/07-08/1147			23° 18’ 34.7” N	70° 39’ 56.4” E
VRRB/600/07-08/1149			23° 19’ 16.9” N	70° 42’ 14.2” E
VRRB/600/07-08/1148			23° 19’ 5.5” N	70° 40’ 45.9” E
VRRB/600/07-08/1150			23° 19’ 31.6” N	70° 42’ 12.4” E
VRRB/600/07-08/1151			23° 18’ 54.8” N	70° 39’ 42.4” E
VRRB/600/07-08/1178			23° 19’ 40.1” N	70° 41’ 47.8” E
VRRB/600/07-08/1174			23° 19’ 57” N	70° 42’ 22.3” E
VRRB/600/07-08/1175			23° 20’ 29” N	70° 41’ 58.7” E
VRRB/600/07-08/1176			23° 19’ 19.3” N	70° 42’ 1” E

VRRB/600/07-08/1177			23° 20' 3.1" N	70° 42' 41.9" E







A.3. Parties and project participant(s)

Party involved ((host) indicates a host Party)	Private and/or public entity(ies) project participants (as applicable)	Indicate if the Party involved wishes to be considered as project participant (Yes/No)
India (Host)	Gangadhar Narsingdas Agrawal (Private Entity)	No

A.4. Reference of applied methodology

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ACM0002 “Consolidated baseline methodology for grid connected electricity generation from renewable sources” (Version 12.2.0); EB 65.

Project activity also refers to the following tools:

- Tool for the demonstration and assessment of additionality (Version 06.0.0); EB 65
- Tool to calculate the emission factor for an electricity system, (Version 02.2.1); EB 63

A.5. Crediting period of project activity

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01/04/2012 – 31/03/2022 (Fixed)

Start date of crediting period: 01/04/2012

SECTION B. Implementation of project activity

B.1. Description of implemented registered project activity

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All WEGs part of the project activity have been commissioned and are operating. The project activity is undergoing verification for its first monitoring period.

The commissioning date for all the projects can be refer from section A.1.

The project is in operation since the commissioning of all WTGs. There is no exchange of equipments or major breakdown of equipments during the current monitoring period. Also, no such event occurred during the current monitoring period that may have impact on the applicability of methodology.

The energy meter diagram for all the project sites can be referred from ANNEX-1.

B.2. Post registration changes

B.2.1. Temporary deviations from registered monitoring plan or applied methodology

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B.2.2. Corrections

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B.2.3. Permanent changes from registered monitoring plan or applied methodology

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B.2.4. Changes to project design of registered project activity

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B.2.5. Changes to start date of crediting period

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B.2.6. Types of changes specific to afforestation or reforestation project activity

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SECTION C. Description of monitoring system

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The project proponent has engaged various experienced O&M service providers for the management of the WTGs. O&M team is responsible for preventive maintenance, handling emergency situation and improvement measures.

Maharashtra

Operation and Maintenance contract for the WTGs in Maharashtra have been awarded to Suzlon Energy Ltd

for the management of WTGs. O & M team is responsible for preventive maintenance, handling emergency situations and improvement measures.

Metering & Monitoring:
The WTGs supply power to MSEDCL Grid at common metering point, at 220/33KV Ghatnandre Sub Station. Actual electricity supplied by WTGs each month is monitored by MSEDCL. Monthly share of electricity is prorated by the state electricity board based on the individual WTG generation and the total electricity supplied by the wind farm.
Tower wise electricity generation is measured by using WTG controller at the project site. Electricity exported to grid is measured using MSEDCL meter installed on uploading station (220 KV/33 KV) Ghatnandre Sub-Station, this reading would be taken monthly by joint team of Operation and Maintenance (O&M) team at wind farm and MSEDCL personnel.

MSEDCL issues monthly certificate for actual power exported by various WTGs in the wind farm. This reading is derived using above meters. Reading recorded in this certificate for the WTGs in the project activity would be used for actual estimations. This reading can be cross verified with the actual invoices presented to MSEDCL. Calibration of the substation meter is carried on an annual basis.
If main mater and check meter are found faulty, energy generation would be monitored in accordance with procedures described in PPA as follows.
If during testing both the Main and Check meter are found within the permissible limit of error i.e. 0.5%, the energy computation is as per the Main meter. If during test, any of the main meters is found to be within the permissible limits of error but the corresponding check meter is beyond the permissible limit, the energy computation is as per the Main meter. The check meter should calibrate immediately.
If during the tests, the Main meter is found to be beyond permissible limits of error, but the corresponding check meter is found to be within the permissible limits of error, then the energy computation for the month test check is in accordance with check meter. The main meter is calibrated immediately and the energy for the period thereafter is as per the calibrated main meter.
If during any of the monthly meter readings, the variation between the main meter and the check meter would become more than 0.5%, all the meters should be re-tested and calibrated immediately by MSEDCL.
The correction required as per result of the testing is applied to the generation and consumption of energy for the period from last meter reading to the time of such test checks. Energy for the periods thereafter shall be in accordance with the calibrated main meter.
Data storage and Archiving:
The energy credit document should be kept at safe storage for verification of emission reductions generated from the project activity. Supporting documents such as invoices presented would also be kept in safe storage for later verification by an independent third party. The period of storage would be 2 years after the end of crediting period or till the last issuance of CERs for the project activity whichever occurs later.

Gujarat
Operation and Maintenance contract for the wind mills in Gujarat have been awarded to Vestas RRB India Ltd. for the management of WTGs. O & M team is responsible for preventive maintenance, handling emergency situations and improvement measures.

Metering & Monitoring:
The generated power is stepped up to 33KV at the Project Site and further stepped up to 66KV at the Chandrodi substation (Sending Station). The Chandrodi site substation is connected to GETCO's (Gujarat Energy Transmission Corporation Limited) Shivlakha Substation. Net electricity exported to grid by the wind farm is measured using GETCO meters installed at HT end of the 33/66 KV substation at Chandrodi. This is the joint meter reading and is taken monthly in presence of GETCO, GEDA and O & M personnel. Tower wise generation for WTGs in the wind farm would be measured by various transformer yard meters at the project site. This should be done on a daily basis and a monthly compilation sent to GEDA.
Monthly share of electricity certificate is prorated by GEDA based on actual generation of various WTGs and the net total electricity supplied by the Wind Farm. Reading recorded in this certificate for the WTGs in the project activity would be used for actual estimations. This value can be cross verified with the actual invoices presented to GUVNL. Calibration of WTG meters and substation meter should be carried on an annual basis.
If main mater and check meter are found faulty, energy generation is monitored in accordance with procedures described in PPA as follows.
In case, both the main meters and check meter are found to be beyond permissible limit of error, both the meters shall be calibrated immediately and the correction applicable to main meter shall be applied to the energy registered by the main meter at the correct energy for the purpose of energy account/billing for the actual period during which inaccurate measurements were made, if such period can be determined or, if not readily determinable, shall be the shorter of.

- the period since the immediately preceding test of the relevant main meter, (OR)
- One hundred and eighty (180) days immediately preceding the test at which the relevant Main meter was determined to be defective or inaccurate.

Data storage and Archiving:
The energy credit document should be kept at safe storage for verification of emission reductions generated from the project activity. Supporting documents such as actual invoices presented to GUVNL should also be kept in safe storage for later verification by an independent third party. The period of storage would be 2 years after the end of crediting period or till the last issuance of CERs for the project activity whichever occurs later.

Karnataka
Operation and Maintenance contract for the wind mills in Karnataka have been awarded to Suzlon Energy Ltd for the management of WTGs. O & M team is responsible for preventive maintenance, handling emergency situations and improvement measures.

Metering & Monitoring:
The wind machines supply power to KPTCL grid at common metering point, at 33/66 KV substation at Gujanur. Actual energy supplied by wind mills each month is estimated by KPTCL. KPTCL issued a certificate for the share of electricity generated every month. Monthly share of electricity certificate is prorated by KPTCL based on actual generation of wind mills and the net total electricity supplied by the Wind Farm.
Metering equipment shall be electronic tri-vector meters. The metering equipment shall be maintained in accordance with electricity standards. Actual power generated by wind mills is measured using transformer yard meter at the project site. Both main meter and check meter are installed. Net electricity exported to grid by the wind farm is measured using meter installed at HT end of the 33/66 kV substation at Gujanur. Both main meter and check meter are installed. Both of these are joint meter readings and are taken on monthly basis in the presence of KPTCL/BESCOM and representative of the project proponent (Operation and maintenance personnel).
Based on this BESCOM issued a certificate for share of net electricity exported by the wind mills to the grid. Reading recorded in this certificate for the WTGs in the project activity would be used for actual estimations. This reading can be cross verified with the actual invoices presented to BESCOM.
Calibration of WTG meter and substation meter should be carried on an annual basis. If main mater and check meter are found faulty, energy generation is monitored in accordance with procedures described in PPA as follows:
Main meter and check meter should be tested for every year with reference to a portable standard meter
The meters should be deemed to be working satisfactorily if the errors are within specifications for the meters
If both the main meters and the corresponding check meters are found to be beyond the permissible limits of error, both the meters should be immediately calibrated and the correction applied to the reading registered by the main meter to arrive at the correct reading of energy supplied for billing purposes for the period from the last month's meter reading up to the current test. Billing for the period thereafter till the next monthly meter reading should be as per the calibrated meter. Records of calibration certificates would be maintained for verification. Hence, high quality is ensured with the above parameters. Sales records would be used and kept for checking the consistency of the recorded data.
The monthly Invoice for each billing is in accordance with the below mentioned equation as detailed in the Power Purchase Agreement
DE= X_1- (X*Z %)

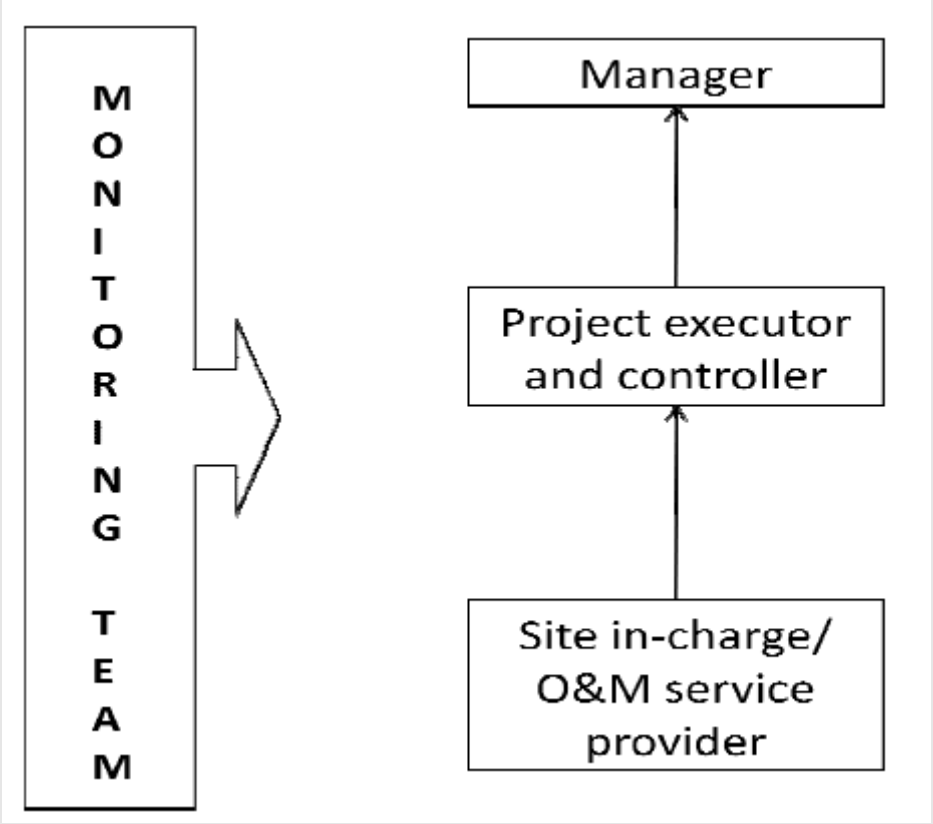
Where
DE is the delivered energy pertaining to the project.
X_1 is the reading of the energy meter installed at the project site.
Z is the percentage transmission line loss incurred in the transmission line between the project and the receiving station

$$Z = \left\{ \frac{\left(X_1 + X_2 + X_3 + X_4 + \_\_\_\_\_\right) - Y}{\left(X_1 + X_2 + X_3 + X_4 + \_\_\_\_\_\right)} \right\} \times 100$$

Where
Y is the reading of the bulk energy meter installed on the 66 KV side of the receiving station.
X_1,X_2, X_3, X_4 etc., are the readings of the energy meters installed at various individual windmill power projects being developed to be set up in the area and connected to the receiving station.

Data storage and Archiving:
The energy credit document would be kept at safe storage for verification of emission reductions generated from the project activity. Supporting documents such as invoices presented to BESCOM should also be kept in safe storage for later verification by an independent third party. The period of storage will be 2 years after the end of crediting period or till the last issuance of CERs for the project activity whichever occurs later.

Organizational Structure & Responsibilities:



The project activity is operated and managed by the PP with the help of site in appointed by PP) and site O&M contractor (personnel appointed by supplier of WTG/PP). For the accurate execution of the project abides and will abide by all regulatory and statutory requirements as prescribed under the state and central laws and regulations. The project team is delegated with the responsibility to electricity generated and also safe keeping of the recorded data.
The electricity being generated is monitored at each wind mill/common metering point as per the provision in the site using calibrated energy meters of which is in electricity boards. This meter records the electricity generated on a continuous basis.
Every month officials of the respective electricity board visits each metering point in the presence of site in-charge and the meter reading is taken recorded. The electricity generation invoice which is obtained from the grid is then cross-checked with the data recorded by meter to avoid any differences. The energy meter is inspected and sealed on behalf of the Electricity Board an either party except in the presence of the other party or its accredited representatives.
The project team is also responsible for calculation of actual creditable emission reduction in the most transparent and relevant manner. All the monitoring data is stored/will be recorded and kept under safe custody. In case of the faulty meters it will be changed immediately and the necessary correction in the electricity generation will be adjusted in agreement with the state electricity board.

Meter calibration details can be referred from ANNEX-2.

SECTION D. Data and parameters

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

Data / Parameter:	$EF_{SR,OM,y}$
Unit:	tCO_2e/MWh
Description:	Operating Margin of the Southern Grid of India
Source of data:	CO_2 Baseline Database for the Indian Power Sector, Version 4.0,Published by Central Electricity Authority, Ministry of Power, Government of India This is available at http://www.cea.nic.in/reports/planning/cdm_co2/database_publishing_ver4.zip
Value(s) applied):	0.9982
Purpose of data:	Calculation of baseline emission
Additional comment:	Operating Margin Emission Factor has been calculated by the Central Electricity Authority using the simple OM approach in accordance with "Tool to calculate the emission factor for an electricity system"

Data / Parameter:	$EF_{SR,BM,y}$
Unit:	tCO_2e/MWh
Description:	Build Margin of the Southern Grid of India
Source of data:	CO_2 Baseline Database for the Indian Power Sector, Version 4.0,Published by Central Electricity Authority, Ministry of Power, Government of India This is available at http://www.cea.nic.in/reports/planning/cdm_co2/database_publishing_ver4.zip
Value(s) applied):	0.7133
Purpose of data:	Calculation of baseline emission
Additional comment:	Build Margin Emission Factor has been calculated by the Central Electricity Authority using the simple OM approach in accordance with "Tool to calculate the emission factor for an electricity system"

Data / Parameter:	$EF_{NEWNE,OM,y}$
Unit:	tCO_2e/MWh
Description:	Operating Margin of the NEWNE Grid of India

Source of data:	CO_2 Baseline Database for the Indian Power Sector, Version 4.0,Published by Central Electricity Authority, Ministry of Power, Government of India This is available at http://www.cea.nic.in/reports/planning/cdm_co2/database_publishing_ver4.zip
Value(s) applied):	1.0086
Purpose of data:	Calculation of baseline emission
Additional comment:	Operating Margin Emission Factor has been calculated by the Central Electricity Authority using the simple OM approach in accordance with "Tool to calculate the emission factor for an electricity system"

Data / Parameter:	**$EF_{NEWNE,BM,y}$**
Unit:	tCO_2e/MWh
Description:	Build Margin of the NEWNE Grid of India
Source of data:	CO_2 Baseline Database for the Indian Power Sector, Version 4.0,Published by Central Electricity Authority, Ministry of Power, Government of India This is available at http://www.cea.nic.in/reports/planning/cdm_co2/database_publishing_ver4.zip
Value(s) applied):	0.5977
Purpose of data:	Calculation of baseline emission
Additional comment:	Build Margin Emission Factor has been calculated by the Central Electricity Authority using the simple OM approach in accordance with "Tool to calculate the emission factor for an electricity system"

Data / Parameter:	**$EF_{SR,CM,y}$**
Unit:	tCO_2e/MWh
Description:	Combined Margin Emission factor for Southern regional electricity grid
Source of data:	Calculated value based on weights of 75:25 for OM and BM "CO_2 Baseline Database for Indian Power Sector" published by the Central Electricity Authority, Ministry of Power, Government of India. Version 4.
Value(s) applied):	0.9269
Purpose of data:	Calculation of baseline emission
Additional comment:	Combined Margin Emission Factor has been calculated by the Central Electricity Authority using the simple OM approach in accordance with "Tool to calculate the emission factor for an electricity system"

Data / Parameter:	$EF_{NEWNE,CM,y}$
Unit:	tCO_2e/MWh
Description:	Combined Margin Emission factor for NEWNE regional electricity grid
Source of data:	Calculated value based on weights of 75:25 for OM and BM "CO_2 Baseline Database for Indian Power Sector" published by the Central Electricity Authority, Ministry of Power, Government of India. Version 4.
Value(s) applied):	0.9059
Purpose of data:	Calculation of baseline emission
Additional comment:	Combined Margin Emission Factor has been calculated by the Central Electricity Authority using the simple OM approach in accordance with "Tool to calculate the emission factor for an electricity system"

D.2. Data and parameters monitored

Data / Parameter:	EG_{ym}
Unit:	MWh
Description:	Quantity of net electricity supplied by the WTGs in Maharashtra associated with the project activity to the grid in year y
Measured/ Calculated / Default:	Measured
Source of data:	Certificate for share of electricity for power generated in the wind farm issued by Maharashtra State Electricity Dist. Co. Ltd. (MSEDCL)
Value(s) of monitored parameter:	24,347.15 (Cumulative value for the monitoring period)
Monitoring equipment:	-
Measuring/ Reading/ Recording frequency:	Monthly

Calculation method (if applicable):	The value of EG_{ym} reported in these monthly share of electricity certificates for WTGs in the project activity at Sangli (Location no. N-131, N-132, N-133, N-23) are calculated values. Monthly share of electricity is apportioned by the MSEDCL based on the individual WTG generation and the total electricity supplied by the wind farm. WTG wise electricity generation is measured using WTG controller at the project site. Net Electricity exported to grid by the wind farm is measured using MSEDCL meter installed at sub-station. The meter is a tri-vector meter which records both import and export. This reading is taken monthly by joint team of operation and Maintenance (O&M) team at the wind farm and MSEDCL personnel. The accuracy of MSEDCL meter used for Joint Meter Readings is 0.2. The WTG controller data is recorded by O&M team and communicated to MSEDCL.
QA/QC procedures:	Calibration of the MSEDCL meter would be carried out annually. Net electricity exported by the project activity can be cross verified with the actual invoices presented to MSEDCL.
Purpose of data:	Baseline emission calculations
Additional comment:	The period of storage of 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.

Data / Parameter:	**EG_{yg}**
Unit:	MWh
Description:	Quantity of net electricity supplied by the WTGs in Gujarat associated with the project activity to the grid in year y
Measured/ Calculated / Default:	Measured
Source of data:	Certificate for share of electricity for power exported by Wind Farm at Chandrodi issued by Gujarat Energy Development Agency (GEDA).
Value(s) of monitored parameter:	7,755.53 (Cumulative value for the monitoring period)
Monitoring equipment:	-
Measuring/ Reading/ Recording frequency:	Monthly

Calculation method (if applicable):	Actual energy supplied by WTGs each month is calculated by Gujarat Energy Development Agency (GEDA). GEDA issues a certificate for the share of electricity generated every month. Monthly share of electricity certificate is apportioned by GEDA based on actual generation of various WTGs and the net total electricity supplied by the Wind Farm. Actual power generated by various WTGs is measured using transformer yard meter at the project site. The accuracy class of WTG meter is 0.5 s. These are monitored on daily basis and a compilation of this data is sent to GEDA every month. Net electricity exported to grid by the wind farm is measured using GETCO meters installed at HT end of the 33/66 KV substation at Chandrodi. This is the joint meter reading and is taken in the presence of GETCO, GEDA and O & M personnel. Accuracy class of GETCO meters is 0.2s. Based on this GEDA issues certificate for share of electricity generated by various power producers.
QA/QC procedures:	This value can be cross verified with the actual invoices presented to GUVNL Calibration of transformer yard meters and substation meter will be carried out annually.
Purpose of data:	Baseline emission calculations
Additional comment:	The period of storage of 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.

Data / Parameter:	**EG_{yk}**
Unit:	MWh
Description:	Quantity of net electricity supplied by the WTGs in Karnataka associated with the project activity to the grid in year y
Measured/ Calculated / Default:	Measured
Source of data:	Certificate for the net electricity exported to the grid by the WTGs associated with the project activity issued by Bangalore Electricity Supply Company Limited (BESCOM)
Value(s) of monitored parameter:	50, 616.27(Cumulative value for the monitoring period)
Monitoring equipment:	-
Measuring/ Reading/ Recording frequency:	Monthly

Calculation method (if applicable):	Actual energy supplied by WTGs each month is estimated by BESCOM.BESCOM issues a certificate for the share of electricity generated every month. Monthly share of electricity certificate is apportioned based on actual generation of WTGs and the net total electricity supplied by the Wind Farm. Actual power generated by wind mill is measured using transformer yard meters at the project site. Both main meter and check meter are installed. Net electricity exported to grid by the wind farm is measured using KPTCL meters installed at HT end of the 33/66 KV substation at Gujanur. Both main meter and check meter are installed. Both of these are joint meter readings and are taken on monthly basis in the presence of KPTCL/BESCOM and representative of the project proponent (Operation and maintenance personnel). The accuracy class of the above meters is 0.2s. Based on this BESCOM will issue certificate for share of net electricity exported by the wind mills to the grid.
QA/QC procedures:	This value can be cross verified with the actual invoices presented to Bangalore Electricity Supply Company Limited (BESCOM). Calibration of WTG meter and substation meter will be carried out on an annual basis.
Purpose of data:	Baseline emission calculations
Additional comment:	The period of storage of 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.

D.3. Implementation of sampling plan

>>

This section is left blank intentionally as not applicable.

SECTION E. Calculation of emission reductions or GHG removals by sinks

E.1. Calculation of baseline emissions or baseline net GHG removals by sinks

>>

This is a project of renewable wind energy generation supplying electricity to the grid. The baseline emissions depend of the quantity of electricity being supplied to the grid and the emission factor of the grid.

The sample baseline emissions calculation for a month of October-2012 is shown as follows:

Maharashtra:

$BE_{ym} = EG_{ym} * EF_{NEWNE,CM,y}$

Where,

EG_{ym} = Quantity of net electricity supplied by the WTGs in Maharashtra associated with the project activity to the grid in year y.

$EF_{NEWNE,CM,y}$ = Combined Margin Emission factor for NEWNE electricity grid in t CO_2e/ MWh

Baseline emissions (BE) = 652.04 * 0.9059
=590.69 t CO_2e

BE_{ym} = 22,056 t CO_2e (Cumulative value for the monitoring period)

Gujarat:

$BE_{yq} = EG_{yq} * EF_{NEWNE,CM,y}$

Where,

EG_{yg} = Quantity of net electricity supplied by the WTGs in Gujarat associated with the project activity to the grid in year y.
$EF_{NEWNE,CM,y}$ = Combined Margin Emission factor for NEWNE electricity grid in t CO_2e/ MWh

Baseline emissions (BE) = 147.91 * 0.9059
= 133.99 t CO_2e

BE_{yg} = 7,025 t CO_2e (Cumulative value for the monitoring period)

$BE_{yk} = EG_{yk} * EF_{SR,CM,y}$

Where,
EG_{yk} = Quantity of net electricity supplied by the WTGs in Karnataka associated with the project activity to the grid in year y.
$EF_{SR,CM,y}$ = Combined Margin Emission factor for south electricity grid in t CO_2e/ MWh

Baseline emissions (BE) =1,9255.77 * 0.9269
=1,785 t CO_2e

BE_{yk} = 46,916 t CO_2e (Cumulative value for the monitoring period)

The detailed worksheet of baseline emissions are shown below:

Month	Net Electricity supplied to the grid (MWh) EG_{ym}	Baseline Emissions, BE_{ym} (tCO_2e)
April- 2012	438.76	397.47
May-2012	1,072.77	971.82
June-2012	2,340.65	2,120.40
July-2012	2,385.58	2,161.10
August-2012	2,508.79	2,272.71
September-2012	1,847.29	1,673.46
October-2012	652.04	590.69
November-2012	303.75	275.16
December-2012	389.80	353.12
January - 2013	254.08	230.17
February - 2013	383.19	347.13
March - 2013	502.68	455.38
April- 2013	902.83	817.87
May-2013	1,275.73	1,155.68
June-2013	2,202.95	1,995.66
July-2013	2,531.77	2,293.53
August-2013	2,111.42	1,912.74
September-2013	939.78	851.35
October-2013	924.87	837.84
November-2013	283.35	256.68
December-2013	95.08	86.13
Total	**24,347.15**	**22,056**[2]

[2] Rounded down Value

Month	Net Electricity supplied to the grid EG_{yk} (MWh)	Baseline Emissions, BE_{yk} (tCO_2e)
April-2012	1,045.27	968.87
May-2012	2,907.08	2,694.57
June-2012	4,694.16	4,351.02
July-2012	4,724.68	4,379.30
August-2012	4,294.37	3,980.45
September-2012	2,986.32	2,768.02
October-2012	1,925.77	1,785.00
November-2012	988.94	916.65
December-2012	1,612.45	1,494.58
January - 2013	1,106.62	1,025.73
February - 2013	1,030.71	955.37
March - 2013	1,083.74	1,004.52
April- 2013	1,384.41	1,283.21
May-2013	2,599.52	2,409.49
June-2013	4,272.76	3,960.42
July-2013	4,460.97	4,134.87
August-2013	2,905.18	2,692.81
September-2013	1,803.68	1,671.83
October-2013	1,505.93	1,395.84
November-2013	1,476.42	1,368.49
December-2013	1,807.30	1,675.19
Total	**50,616.27**	**46,916**[3]

Month	Net Electricity supplied to the grid EG_{yg} (MWh)	Baseline Emissions, BE_{yg} (tCO_2e)
April-2012	431.82	391.19
May-2012	981.04	888.73
June-2012	953.94	864.17
July-2012	636.11	576.25
August-2012	479.41	434.30
September-2012	242.62	219.79
October-2012	147.91	133.99
November-2012	159.77	144.73
December-2012	437.83	396.63
January - 2013	418.81	379.40
February - 2013	460.69	417.34
March - 2013	547.58	496.05
April- 2013	626.79	567.81
May-2013	896.95	812.54
June-2013	292.14	264.65

[3] Rounded down Value

July-2013	42.13	38.16
August-2013	-	-
September-2013	-	-
October-2013	-	-
November-2013	-	-
December-2013	-	-
Total	**7,755.53**	**7,025**[4]

E.2. Calculation of project emissions or actual net GHG removals by sinks

>>
As the project activity does not utilize any fossil fuel, there are no emissions from/due to the project activity.

Project Emissions (PE_y) = 0

E.3. Calculation of leakage

>>
There is no leakage due to the project activity.

Leakage (LE_y) = 0

E.4. Summary of calculation of emission reductions or net anthropogenic GHG removals by sinks

Month	Baseline Emissions, BE_{ym} (tCO_2e)	Project emission, PE_y (tCO_2e)	Leakage, LE_y (tCO_2e)	Emission Reductions, ER_{ym} (tCO_2e)
April- 2012	397.47	0	0	397.47
May-2012	971.82	0	0	971.82
June-2012	2,120.40	0	0	2,120.40
July-2012	2,161.10	0	0	2,161.10
August-2012	2,272.71	0	0	2,272.71
September-2012	1,673.46	0	0	1,673.46
October-2012	590.69	0	0	590.69
November-2012	275.16	0	0	275.16
December-2012	353.12	0	0	353.12
January - 2013	230.17	0	0	230.17
February - 2013	347.13	0	0	347.13
March - 2013	455.38	0	0	455.38
April- 2013	817.87	0	0	817.87
May-2013	1,155.68	0	0	1,155.68
June-2013	1,995.66	0	0	1,995.66
July-2013	2,293.53	0	0	2,293.53
August-2013	1,912.74	0	0	1,912.74
September-2013	851.35	0	0	851.35
October-2013	837.84	0	0	837.84
November-2013	256.68	0	0	256.68

[4] Rounded down Value

December-2013	86.13	0	0	86.13
Total	**22,056**			**22,056**[5]

Month	Baseline Emissions, BE_{yk} (tCO_2e)	Project emission, PE_y (tCO_2e)	Leakage, LE_y (tCO_2e)	Emission Reductions, ER_{yk} (tCO_2e)
April- 2012	968.87	0	0	968.87
May-2012	2,694.57	0	0	2,694.57
June-2012	4,351.02	0	0	4,351.02
July-2012	4,379.30	0	0	4,379.30
August-2012	3,980.45	0	0	3,980.45
September-2012	2,768.02	0	0	2,768.02
October-2012	1,785.00	0	0	1,785.00
November-2012	916.65	0	0	916.65
December-2012	1,494.58	0	0	1,494.58
January - 2013	1,025.73	0	0	1,025.73
February - 2013	955.37	0	0	955.37
March - 2013	1,004.52	0	0	1,004.52
April- 2013	1,283.21	0	0	1,283.21
May-2013	2,409.49	0	0	2,409.49
June-2013	3,960.42	0	0	3,960.42
July-2013	4,134.87	0	0	4,134.87
August-2013	2,692.81	0	0	2,692.81
September-2013	1,671.83	0	0	1,671.83
October-2013	1,395.84	0	0	1,395.84
November-2013	1,368.49	0	0	1,368.49
December-2013	1,675.19	0	0	1,675.19
Total	**46,916**			**46,916**[6]

Month	Baseline Emissions, BE_{yg} (tCO_2e)	Project emission, PE_y (tCO_2e)	Leakage, LE_y (tCO_2e)	Emission Reductions, ER_{yg} (tCO_2e)
April- 2012	391.19	0	0	391.19
May-2012	888.73	0	0	888.73
June-2012	864.17	0	0	864.17
July-2012	576.25	0	0	576.25
August-2012	434.30	0	0	434.30
September-2012	219.79	0	0	219.79
October-2012	133.99	0	0	133.99
November-2012	144.73	0	0	144.73

[5] Round down value
[6] Round down value

December-2012	396.63	0	0	396.63
January - 2013	379.40	0	0	379.40
February - 2013	417.34	0	0	417.34
March - 2013	496.05	0	0	496.05
April- 2013	567.81	0	0	567.81
May-2013	812.54	0	0	812.54
June-2013	264.65	0	0	264.65
July-2013	38.16	0	0	38.16
August-2013	-	0	0	-
September-2013	-	0	0	-
October-2013	-	0	0	-
November-2013	-	0	0	-
December-2013	-	0	0	-
Total	**7,025**			**7,025**[7]

E.5. Comparison of actual emission reductions or net anthropogenic GHG removals by sinks with estimates in registered PDD

Item	Values estimated in ex-ante calculation of registered PDD	Actual values achieved during this monitoring period
Emission reductions or GHG removals by sinks ($t CO_2e$)	84,918	75,997

E.6. Remarks on difference from estimated value in registered PDD

>>
The CERs for the current monitoring period are -10.51% lesser than the estimated annual emission reductions as per the estimations made in registered PDD. The estimated emission reductions are lower due to less capacity utilization factor (CUF).

E.7. Actual emission reductions or net anthropogenic GHG removals by sinks during the first commitment period and the period from 1 January 2013 onwards

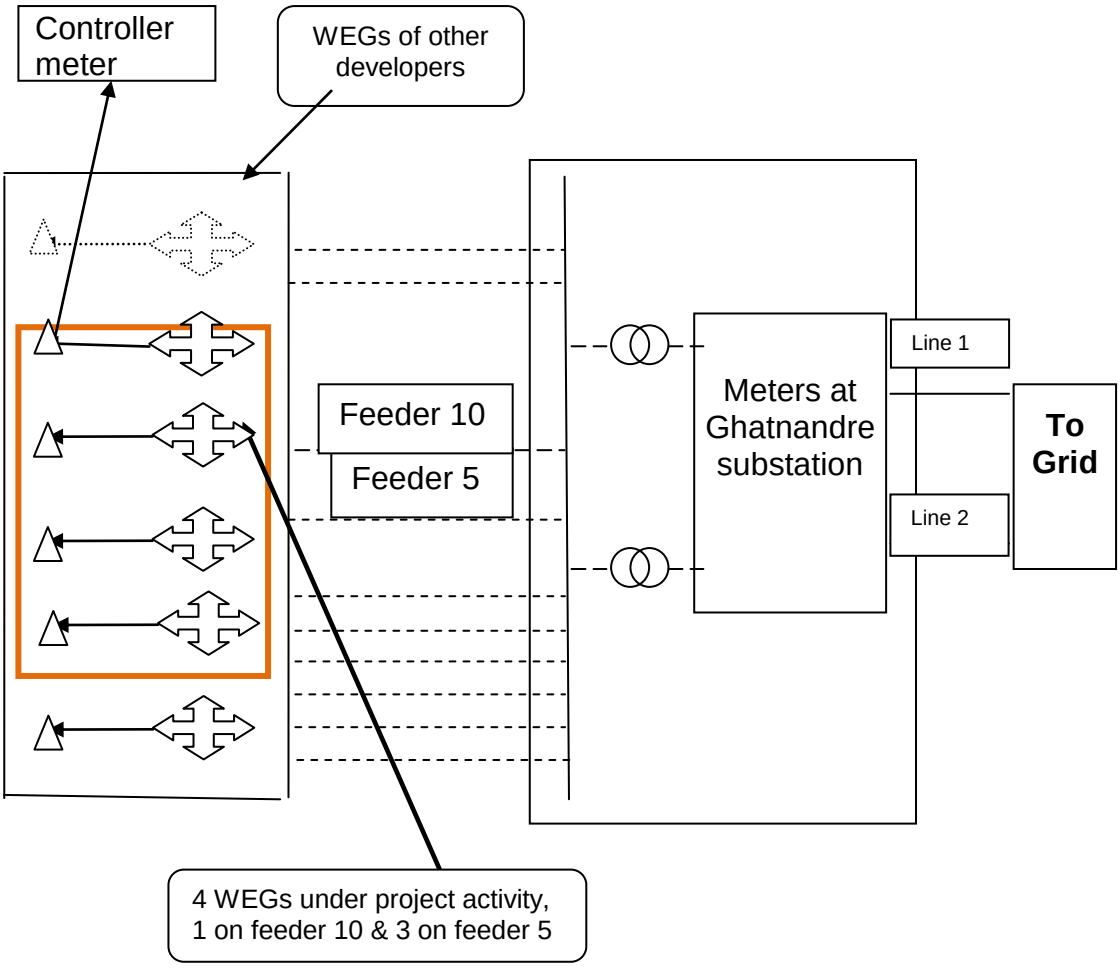
Item	Actual values achieved up to 31 December 2012		Actual values achieved from 1 January 2013 onwards	
Emission reductions or GHG removals by sinks ($t CO_2e$)	**Period**	**Emission Reduction ($t CO_2e$)**	**Period**	**Emission Reduction ($t CO_2e$)**
	01-04-2012 to 31-12-2012	38,204	01-01-2013 to 31-12-2013	37,793
	Total	**38,204**	**Total**	**37,793**

- - - - -

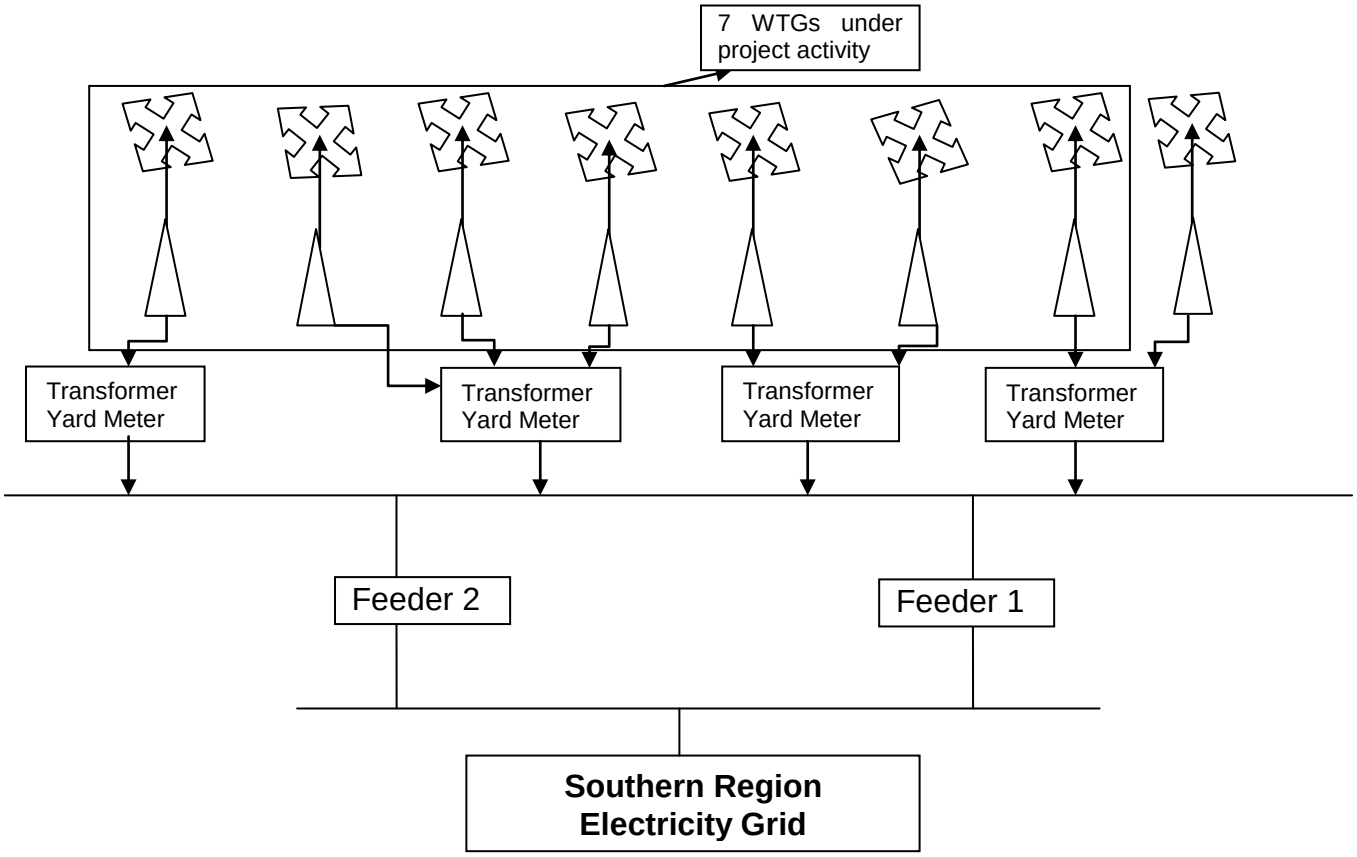
[7] Round down value

ANNEX-1

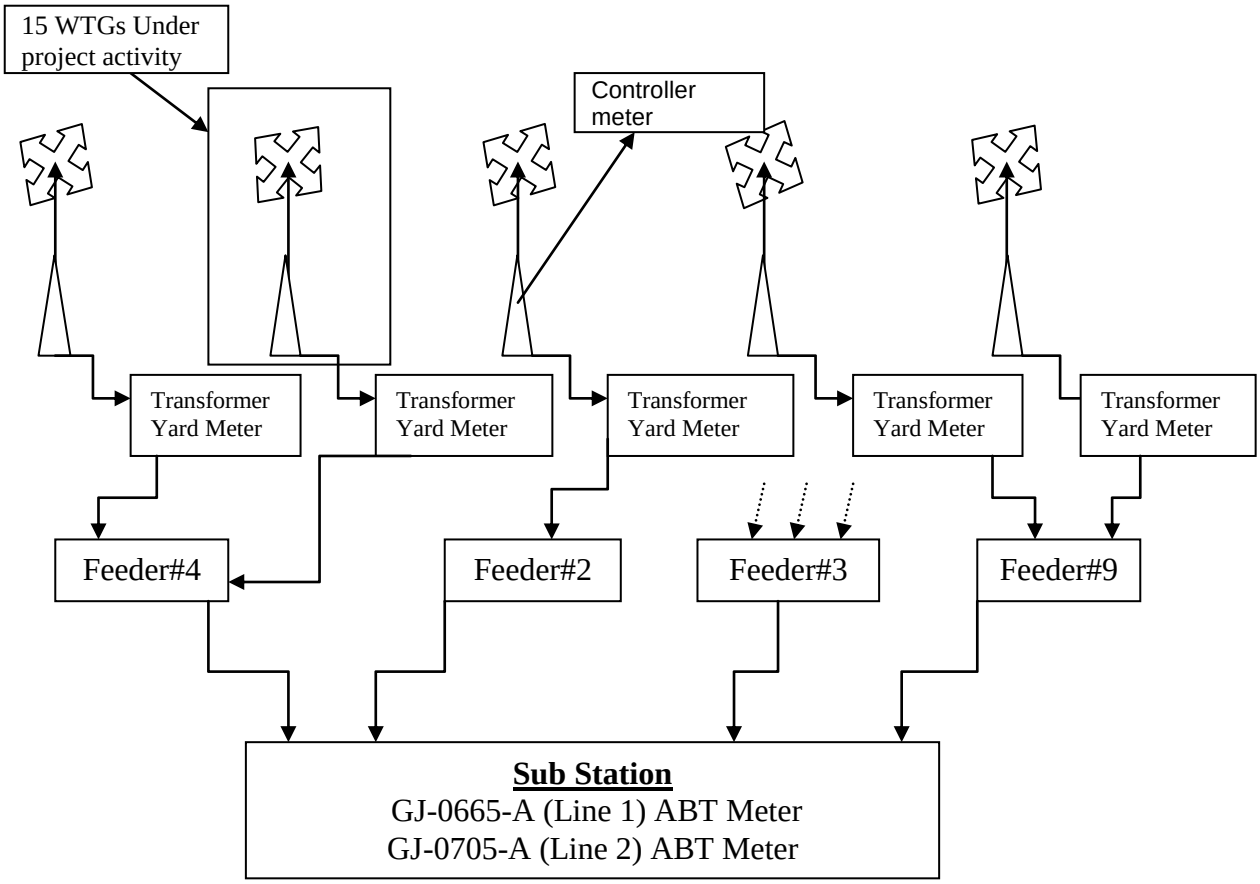
Metering diagram for Maharashtra site (N23, N131, N132 & N133)



Metering diagram for Karnataka site (K547, K548, K553 & K552)


7 WTGs under project activity
Transformer Yard Meter
Transformer Yard Meter
Transformer Yard Meter
Transformer Yard Meter
Feeder 2
Feeder 1
Southern Region Electricity Grid

Metering diagram for Gujarat site



ANNEX-2
Calibration details of the energy meters

Sr. No.	State	Location No	Make	Meter Sr. No.*	Accuracy Class	Testing Details	Date of testing	Due Date of Calibration
1	Maharashtra	220 kV Substation (Feeder # 5)	Elster	14796421 (New Main Meter)	0.2	Maharashtra State Electricity Transmission Co. Ltd.	28-06-2013	27-06-2014
							18-12-2012	17-12-2013
				04725792 (Old Main Meter)			13-06-2011	12-06-2012
				14796422 (New Check Meter)			28-06-2013	27-06-2014
							18-12-2012	17-12-2013
				04725787 (Old Check Meter)			13-06-2011	12-06-2012
		220 kV Substation (Feeder # 10)		14796408 (New Main Meter)	0.2		28-06-2013	27-06-2014
							21-12-2012	20-12-2013
				04738063 (Old Main Meter)			13-06-2011	12-06-2012
				14796409 (New Check Meter)			28-06-2013	27-06-2014

							21-12-2012	20-12-2013
				04902208 (Old Check Meter)			13-06-2011	12-06-2012
2	Karnataka	33 kV Substation	L & T	07341541 (Main Meter)	0.2	Gulbarga Electricity Supply Company Ltd.	19-07-2013	18-07-2014
							24-07-2012	23-07-2013
				07341543 (Check Meter)			29-07-2011	28-07-2012
3	Gujarat**	220 kV Substation	L & T	GJ-0665-A (Line 1)	0.2	Gujarat Energy Transmission Corporation Limited	27-11-2009	26-11-2014
				GJ-0705-A (Line 2)				

* At Maharashtra site feeder 5 & feeder 10 meters were changed as per MSEDCL order dated 23 Sept 2011.
** As per Gujarat Electricity grid code 2013 and CEA notification 2006 substation meter should be calibration in every 5 years.
http://www.gercin.org/draftpdf/en_1358403330.pdf

ANNEX-3
Apportioning Approach

Approach of apportionment of electricity for location N23

For the month of April 2012 (01/04/2012 - 26/04/2012)

Date	Electricity Generation at WTG controller (kWh) for Location no. N23
29-Mar-12	1503
30-Mar-12	2527
31-Mar-12	4221
1-Apr-12	982
2-Apr-12	627
3-Apr-12	1068
4-Apr-12	774
5-Apr-12	0
6-Apr-12	0
7-Apr-12	0
8-Apr-12	0
9-Apr-12	0
10-Apr-12	3972
11-Apr-12	2699
12-Apr-12	8588
13-Apr-12	1036
14-Apr-12	899
15-Apr-12	1469
16-Apr-12	3554
17-Apr-12	2390
18-Apr-12	7402
19-Apr-12	7726
20-Apr-12	4209
21-Apr-12	1588
22-Apr-12	5224
23-Apr-12	4020
24-Apr-12	1872
25-Apr-12	5591
26-Apr-12	5376

Electricity generated at WTG controller for April-2012	kWh	79,317
As per monthly report (MWh)	kWh	73,081.50
Total loss	kWh	6,235.50
Electricity generation at controller between 01/Apr - 26/Apr.	kWh	71,066
Electricity generation between 01/Apr - 26/Apr	kWh	**64,830.50**

Approach of apportionment of electricity for location N131, N132 & N133

For the month of April 2012 (01/04/2012 - 26/04/2012)

Date	Electricity Generation at WTG controller (kWh) for Location no. N131	Electricity Generation at WTG controller (kWh) for Location no. N132	Electricity Generation at WTG controller (kWh) for Location no. N133
29-Mar-12	3650	3489	3309
30-Mar-12	7810	6962	7420
31-Mar-12	6679	6370	6570
1-Apr-12	1671	1434	1801
2-Apr-12	4378	3812	2893
3-Apr-12	4551	4314	3732
4-Apr-12	10651	11035	9944
5-Apr-12	9080	8681	7978
6-Apr-12	4719	4399	4932
7-Apr-12	4476	3800	4265
8-Apr-12	5523	5282	4477
9-Apr-12	4896	4007	3786
10-Apr-12	5527	4578	4207
11-Apr-12	5343	5198	5695
12-Apr-12	8241	7638	5194
13-Apr-12	1355	1083	1092
14-Apr-12	1188	1056	1362
15-Apr-12	1236	1029	880
16-Apr-12	6451	6113	5614
17-Apr-12	5178	4327	3254
18-Apr-12	7691	7621	6893
19-Apr-12	9735	8753	7771
20-Apr-12	8205	7397	7830
21-Apr-12	2432	3176	2866
22-Apr-12	11469	10357	11111
23-Apr-12	7389	6595	8916
24-Apr-12	2810	2213	3176
25-Apr-12	6802	5395	5933
26-Apr-12	3714	3349	3400

Electricity generated at WTG controller for April-2012	kWh	4,58,614
As per monthly report (MWh)	kWh	4,26,186.90
Total loss	kWh	32,427.10
Electricity generation at controller between 01/Apr - 26/Apr.	kWh	4,06,355
Electricity generation between 01/Apr - 26/Apr	kWh	**3,73,927.90**

ANNEX-4
Total Emission Reduction from April 2012 to Dec 2012

Total Emission reduction from April 2012 to Dec 2012 =	$ER_{ym} + ER_{yk} + ER_{yg}$
	38,204

Total Emission Reduction from Jan 2013 to Dec 2013

Total Emission reduction from January 2013 to December 2013 =	$ER_{ym} + ER_{yk} + ER_{yg}$
	37,793

ANNEX 5
Gujarat Site Machine Details

Machine No.	WTG No.	Phase
GNA - 01 (PS-354)	VRRB/600/07-08/0737	Phase I
GNA - 02 (PS-343)	VRRB/600/07-08/0739	Phase I
GNA - 03 (PS-375)	VRRB/600/07-08/0740	Phase I
GNA - 04 (PS-342)	VRRB/600/07-08/0736	Phase I
GNA - 05 (PS-390)	VRRB/600/07-08/0738	Phase I
GNA - 06 (PS-443)	VRRB/600/07-08/1147	Phase II
GNA - 07 (PS-428)	VRRB/600/07-08/1148	Phase II
GNA - 08 (PS-468)	VRRB/600/07-08/1149	Phase II
GNA - 09 (PS-348)	VRRB/600/07-08/1150	Phase II
GNA - 10 (PS-340)	VRRB/600/07-08/1151	Phase II
GNA - 11 (PS-429)	VRRB/600/07-08/1174	Phase III
GNA - 12 (PS-318)	VRRB/600/07-08/1175	Phase III
GNA - 13 (PS-320)	VRRB/600/07-08/1176	Phase III
GNA - 14 (PS-321)	VRRB/600/07-08/1177	Phase III
GNA - 15 (PS-208)	VRRB/600/07-08/1178	Phase III

Document information

Version	*Date*	*Description*
03.2	5 November 2013	Editorial revision to correct table in page 1.
03.1	2 January 2013	Editorial revision to correct table in section E.5.
03.0	3 December 2012	Revision required to introduce a provision on reporting actual emission reductions or net anthropogenic GHG removals by sinks for the period up to 31 December 2012 and the period from 1 January 2013 onwards (EB70, Annex 11).
02.0	13 March 2012	Revision required to ensure consistency with the "Guidelines for completing the monitoring report form" (EB 66, Annex 20).
01	28 May 2010	EB 54, Annex 34. Initial adoption.

Decision Class: Regulatory
Document Type: Form
Business Function: issuance
Keywords: monitoring report, performance monitoring