MONITORING REPORT
Version 03

Bundled grid-connected wind electricity generation project identified as Bundle E3 in Maharashtra and Gujarat, India

Monitoring Period: 05th February 2007 to 1st September 2009

Date: 25th April 2011

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1. Project Description

Introduction:

The VCS project activity under consideration entails bundled wind energy generation with a total capacity of 7.75 MW, comprising of six Wind Turbine Generators (WTGs), five out of which have a capacity of 1.25 MW each and one has a capacity of 1.5 MW located at various locations in the states of Maharashtra and Gujarat, India. The relevant details of the individual components of the bundled project activity have been tabulated below:

Sl. No.	Project Participant	Cumulative Installed Capacity (MW)	Number of WTGs Installed	WTG Location Nos.
1	UIC Udyog Limited	5 MW	4	K-537, K-539, K-542, K-543
2	Khatau Narbheram & Co	1.5 MW	1	W-55
3	Hind Metals and Industries (P) Limited	1.25 MW	1	J-43

The electricity generated by the project activity is exported through the Maharashtra State Electricity Distribution Company Limited (in the state of Maharashtra, India) and Gujarat Urja Vikas Nigam Limited (in the state of Gujarat, India) on the basis of Power Purchase Agreements signed for each of the individual wind-farms with the state authorities. The electricity exported from the wind-farms installed under the project activity to the grid thereby replaces an equivalent amount generated by the thermal power dominated electricity grid. Therefore the project activity results in an equivalent amount of GHG emission reduction which otherwise would have resulted from fossil fuel combustion related to electricity generation at the grid end as per the generation mix.

Technical Description of the project activity

The various WTGs used for the generation of electricity by project promoters are of the type Suzlon S-82 and S-70.

PARAMETERS:	SUZLON S-82 WTG	SUZLON S-70 WTG
Rotor		
Rotor Diameter	82 m	69.1
Hub Height	80 m	74 m
Swept Area	5281 m^2	3750 m^2
Rotational Speed	16.30	13.2/19.8
Rotor Material	GRP	GRP
Regulation	Pitch regulated	Pitch regulated
Operational Data		
Cut-in wind speed	4 m/s	3 m/s
Rated wind speed	14 m/s	12 m/s
Cut-out wind speed	20 m/s	20 m/s
Survival wind speed	65 m/s	65 m/s
Generator		
Type	Asynchronous generator, 4 poles	Asynchronous generator, 4/6 pole
Rated Output	1500 kW	250/1250 kW
Rotational speed	1511 rpm	1010/1515 rpm

Operating voltage	690 V	690 V
Frequency	50 Hz	50 Hz
Protection	IP 54	IP 56
Insulation class	"H"	"H"
Cooling system	Air cooled	Air cooled
Gear-Box		
Type	Integrated, 3 stage gearbox, 1 planetary & 2 helical	Integrated, 3 stage gearbox, 1 planetary & 2 helical
Gear ratio	1:95.09	1:77.848
Nominal load	1650 kW	1390 kW
Type of cooling	Oil cooling system	Oil cooling system
Yaw Drive		
Yaw drive system	4 active electrical yaw motors	4 active electrical yaw motors
Yaw bearing	Polyamide slide bearing	Polyamide slide bearing

VCS Project Start Date/Crediting Period Start Date:

For the bundled project activity under consideration, the project start date, *i.e.*, the date on which the project began reducing GHG emissions by power generation is the *earliest* of the dates of the commissioning of the individual WTGs by the State Electricity Authority. The commissioning date for each of the wind mills under the bundled project activity is provided in the table below.

Project Participant	WTG No.	Location	Commissioning Date
UICUL	K-537	Maharashtra	29/03/2007
UICUL	K-539	Maharashtra	29/03/2007
UICUL	K-542	Maharashtra	31/03/2007
UICUL	K-543	Maharashtra	31/03/2007
KNC	W-55	Gujarat	31/03/2007
HMIPL	J-43	Maharashtra	05/02/2007

As evident from the table above, the earliest commissioning date is 05/02/2007 for the WTG promoted by Hind Metals and Industries (P) Limited in Location No. J-43.

Therefore the Project start date for the bundled VCS project activity under consideration, which is also the date of commencement of the crediting period, is 05th February 2007.

2. Parameters Monitored

The monitoring of Voluntary Carbon Units (VCUs) generated by the bundled project activity follows the Indicative simplified baseline and monitoring methodologies for selected small-scale CDM project activity categories: I.D 'Grid connected renewable electricity generation' (Version 13)

The following parameters have been monitored as per the procedures and practices mentioned in the tables presented below:

Data / Parameter:	$E_{EXP,NET,i,y}$
Data unit:	kWh /Year
Description:	Net Electricity Exported to grid by the i^{th} WTG in the year y
Source of data to be used:	Electricity Export Bills of the i^{th} WTG at regular intervals (monthly)

Value of data applied for the purpose of calculating expected emission reductions

i			**1**	**2**	**3**
WTG Location No.			**KNC**	**UICUL**	**HMIPL**
			W-55	**K-537, K-539, K-542, K-543**	**J-43**
$E_{EXP,NET,i,y}$	***y***	***1***	421209	5923741	1155388
		2	2750327	8961819	1711529
		3	1935937	8672793	1549287
	Total		**5107473**	**23558354**	**4416204**
	Grand Total		**33082030**		
Comments	Actual Net Electricity Exported Data in kWh				

Description of measurement methods and procedures to be applied:	$E_{EXP,NET,,i,y}$ will be calculated from the sum of the monthly data obtained from the electricity export bills. The process of calculation of the billed amount is described in section 4.2. Net electricity exported to the grid by the project activity is calculated as follows: $E_{EXP,NET,i,y,m} = E_{EXP,i,y,m} - E_{IMP,i,y,m}$ $E_{EXP,NET,i,y} = \sum_{m=1}^{12} E_{EXP,NET,i,m}$ $E_{EXP,NET,y} = \sum_{i=1}^{n} E_{EXP,NET,i,y}$ (Please refer to Section 4.2 of the Project Description for details) where 'm' stands for each month from January (m=1) to December (m=12) $E_{EXP,NET,,i,y}$ will be calculated from data measured by the generation meters at the output of the generator of each WTG by means of measurements from the main meter (check-meter also present) at the grid sub-station.(Joint meter reading). The meters will be an import-export meter provided with a totaliser from which cumulative reading can be taken to yield the net electricity exported to the state grid at the end of every month.
QA/QC	The parameter would be monitored continuously and recorded at monthly

procedures to be applied:	intervals. The main meter as well as the check meter will be maintained and calibrated by the Maharashtra State Electricity Distribution Company Limited and Paschim Gujarat Vij Company Limited on a regular basis as per their internal calibration schedule as specified in the power purchase agreement. The senior manager, O&M in charge of the power plant and responsible for verifying the quantum of electricity exported to the grid *vis-à-vis* the net electricity generated from the wind power generating unit within the same time period.
Any comment:	The relevant data will be recorded in electronic form and the same along with the electricity bills will be archived for two years beyond the crediting period.

Data / Parameter:	$EF_{GRID,OM}$
Data unit:	tCO_2/ MWh
Description:	Operating Margin CO_2 emission factor of the grid
Source of data to be used:	CO_2 Baseline Database
Value of data applied for the purpose of calculating expected emission reductions	1.00 Obtained from the CO_2 Baseline Database Version 4.0, Dated October 2008 (Operating Margin Emission Factor for NEWNE Regional Electricity Grid) published by Central Electricity Authority (CEA), India
Description of measurement methods and procedures to be applied:	Information available from authorised government agencies – National standard value has been calculated by Central Electricity Authority (CEA) as per guidelines of the 'Tool to calculate the emission factor for an electricity system'
QA/QC procedures to be applied:	Not Applicable
Any comment:	The emission factor would be fixed *ex-ante* for the duration of the entire crediting period of the project activity. The relevant data will be recorded in electronic form and the same will be archived for two years beyond the crediting period.

Data / Parameter:	$EF_{GRID,BM}$
Data unit:	tCO_2/ MWh
Description:	Build Margin CO_2 emission factor of the grid
Source of data to be used:	CO_2 Baseline Database
Value of data applied for the purpose of calculating expected emission reductions	0.60 as per CO_2 Baseline Database Version 4.0, Dated October 2008 (Build Margin Emission Factor for NEWNE Regional Grid) published by Central Electricity Authority (CEA), India,
Description of measurement methods and procedures to be applied:	Information available from authorized government agencies – National standard value has been calculated by Central Electricity Authority (CEA) as per guidelines Tool to calculate the emission factor for an electricity system'
QA/QC procedures to be applied:	Not Applicable
Any comment:	The emission factor would be fixed ex-ante based on the most recent available version of the CEA CO_2 Baseline Database or other public domain sources for all instance of verification and issuance over the duration of the entire crediting period of the project activity. The relevant data

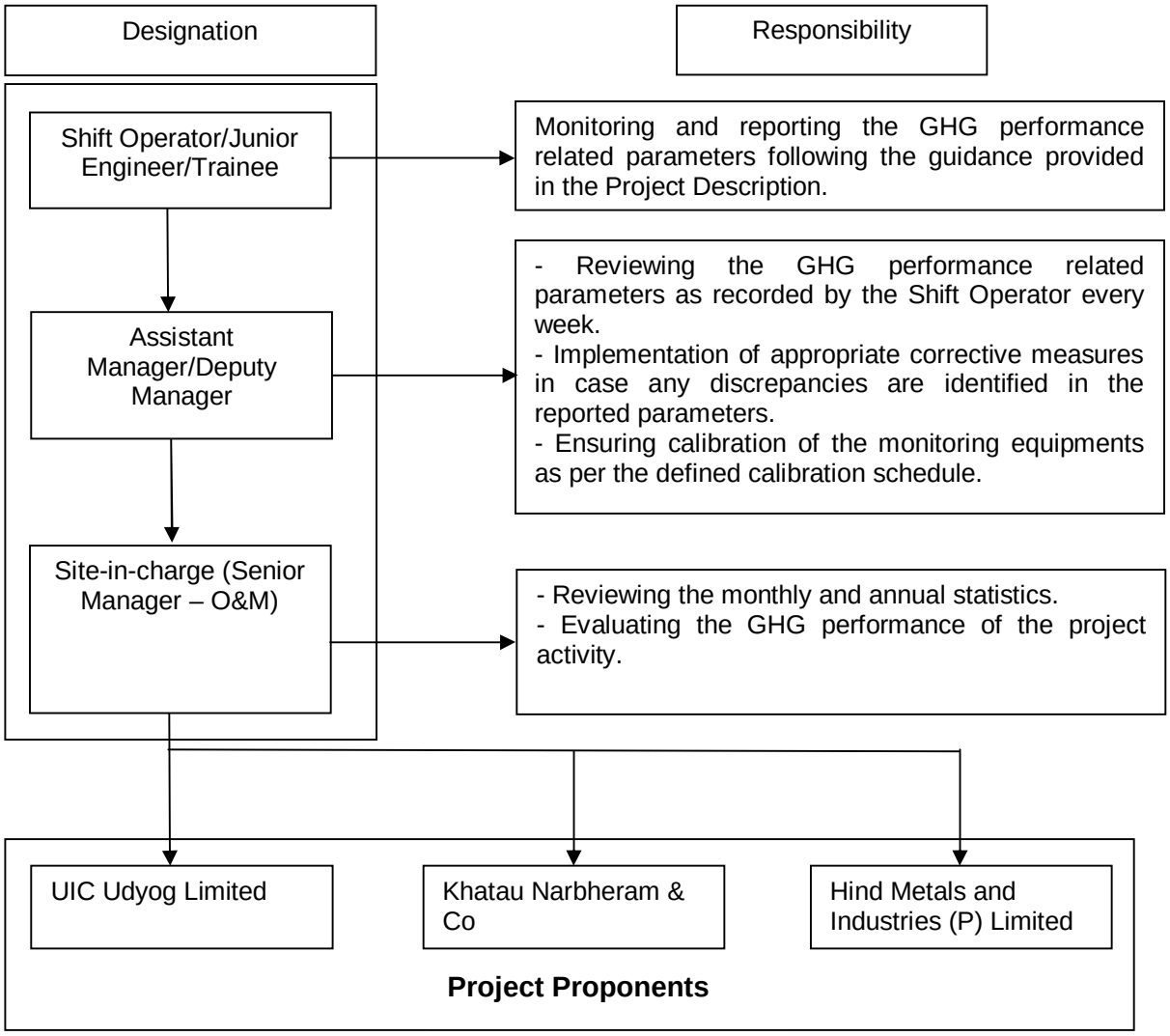
	will be recorded in electronic form and the same will be archived for two years beyond the crediting period.

Data / Parameter:	EF_{GRID}
Data unit:	tCO_2/ MWh
Description:	Combined Margin CO_2 emission factor of the grid
Source of data to be used:	CO_2 Baseline Database
Value of data applied for the purpose of calculating expected emission reductions	0.90 for the NEWNE Regional Grid as per the calculation procedure explained in section 4.2 of the Project Description
Description of measurement methods and procedures to be applied:	Information available from authorized government agencies – National standard value has been calculated by Central Electricity Authority (CEA) as per guidelines Tool to calculate the emission factor for an electricity system'
QA/QC procedures to be applied:	Not Applicable
Any comment:	The emission factor would be fixed *ex-ante* for the duration of the entire crediting period of the project activity. The relevant data will be recorded in electronic form and the same will be archived for two years beyond the crediting period.

3. Monitoring Plan

Monitoring Plan:

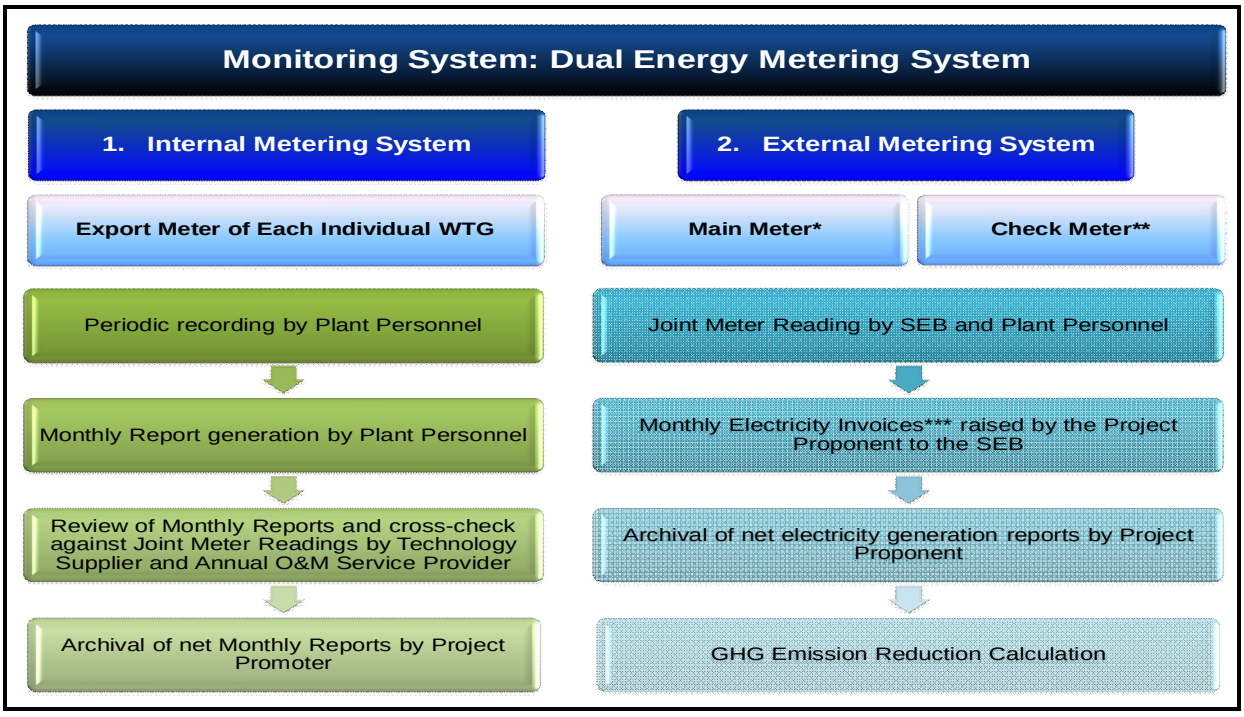
The project proponents have devised a monitoring plan inclusive of an operational structure in order to monitor GHG emission reductions from the project activity. The roles and responsibilities of the relevant personnel involved in monitoring, reporting and verification of various GHG performances related parameters in the project activity are explained in the following schematic diagram:



Performance Review and GHG Internal Audit:

In order to ensure proper operation of the project activity, monthly reviews will be conducted by the Site-in-charge (Senior Manager – O&M) of Suzlon Infrastructure Services Limited on behalf of the project proponents. In case of any discrepancies identified between the meter readings of the main and check energy meters during the monthly reviews, the respective meters will be put under vigilance for three days and then the faulty meter will be taken out of the system. In the meantime the electricity consumption of the particular area will be measured by the check meter to ensure continuous monitoring of the relevant parameters.
Internal Audit will be conducted once in a year in order to assess the GHG performance of the project activity. Auditors will consist of people from Suzlon Infrastructure Services Limited. The audit findings and the necessary corrective actions will be documented and reported to the Management Representative(s) of various project proponents for their immediate actions. Compliance with the audit findings and evaluation of implementation of the corrective actions will be a part of the subsequent audit.

The prevalent system in practice to monitor the electrical energy generated and there from the GHG emission reduction quantum from the project activity is provided in the following figure.



* Sealed, maintained and calibrated by the SEB. Also, the meter readings of the main meter are used for the Electricity Bills raised for electricity exported.
** In the event of some problems with the main meter, the meter readings of the check meter are used for the Electricity Bills raised for electricity exported.
*** The net exported electricity quantum as appearing in these bills are the most conservative value of the same. Hence ER calculations are based on it.

Calibration Certificate

Sl. No.	Project Participant	WTG Location No.	Meter No.		Calibration Certificate	Calibration Certificate Date
			Main Meter	Check Meter		
1	UIC Udyog Limited	K-537, K-539, K-542, K-543	4860905	4860906	EE/TDD/TECH/15/480	8/10/2007
					EE/TDD/TECH-/223	27/05/2008
					EE/TDD/DHL/TECH-/320	8/7/2009
2	Khatau Narbheram & Co.	W-55	GJB00674	GJB00676		27/09/2010
3	Hind Metals & Industries (P) Limited	J-43	4738075	4738076	EE/TDD/TECH-/223	27/05/2008
					EE/TDD/DHL/TECH-/320	8/7/2009

However, in case the calibration certificates do not cover certain portion of the crediting period for any particular WTG , the net electrical energy exported to grid has been corrected in line with guidelines of EB 52 Annex 60 by applying the maximum permissible error of the instrument to the measured values as per the following algorithm:-
Corrected net electricity exported for the monitoring period for which calibration certificates are not available = Gross electricity exported for the same period X (1- maximum permissible error) – Electricity imported from grid for the same period X (1+ maximum permissible error)

The details of the period for each WTG to which the above algorithm is applied has been tabulated below:

Sl. No.	Project Participant	WTG Location No.	Period for which Correction Factor Used
1	UIC Udyog Limited	K-537, K-539, K-542, K-543	March 2007 - September 2007, June 2009
2	Khatau Narbheram & Co.	W-55	March 2007 - August 2009
3	Hind Metals & Industries (P) Limited	J-43	February 2007 - May 2008, June 2009

4. Calculation Formulae

The wind power generation project activity displaces an equivalent amount of electricity that would have been generated in the fossil-fuel dominated NEWNE Regional grid generation-mix[1].

[1] The Indian power grid system (or the National Grid) is divided into two regional grids namely NEWNE Regional Grid and Southern Regional Grid. These regional grids have independent state Load Dispatch Centres (LDCs) that

Calculation of net units of electricity substituted in the grid:

The net electricity exported to the grid by the project activity in the project would be calculated as the sum of the net electricity exported by each individual WTG (electricity imported subtracted from the electricity export quantum) to the nearest sub-station.

$$E_{EXP,NET,i,y} = E_{EXP,i,y} - E_{IMP,i,y} \quad \ldots\ldots\ldots (1)$$

$E_{EXP,i,y}$ Units of electricity exported to the grid by the i^{th} component (WTG) during the project year y (in MWh) – as per the monthly power sale invoices (calculated for invoice generation as per the procedure explained below)

$E_{IMP,i,y}$ Units of electricity imported from the grid by the i^{th} component (WTG) during the project year y (in MWh) – as per the monthly power sale invoices

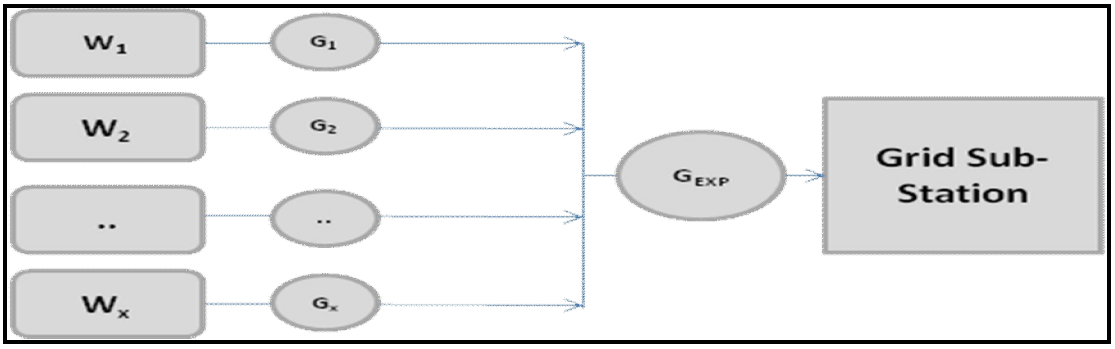
$E_{EXP,NET,i,y}$ Net units of electricity exported to the grid by the i^{th} component (WTG) during the project year y (in MWh) – as per the monthly power sale invoices

i Total number of individual wind-mills constituting the project activity

Description of the calculation of electricity export quantum (monthly billed amount) appearing in the monthly power sale invoices:

As the grid sub-station is connected to a number of WTGs, the main export meter at the sub-station measures the cumulative electricity export data of all the connected WTGs. The monthly electricity export by each of the individual WTGs is then calculated in the following manner for the purpose of raising of invoices:

In the figure provided below, $G_{1,m}$, $G_{2,m}$, …., $G_{x,m}$ are the individual electricity generation (in kWh) of the corresponding *x* number of WTGs W_1,W_2, .., W_X, where gross generation $G_{i,m}$ of the *i*th WTG for the month *m* is measured by the generation meter at the outlet of the generator of the i^{th} WTG.



The total electricity generation for the month *m* of all the wind turbines connected to a particular sub-station feeder is $G_{TOTAL,m}$, *i.e.*,

$$G_{TOTAL,m} = G_{1,m} + G_{2,m} + .. + G_{X,m} \quad \ldots\ldots\ldots (1a)$$

manage flow of power in their jurisdiction. Power generated by state owned generation units and private owned generation units is consumed by the respective states. Power generated by central sector plants is shared by all states forming part of the grid in a fixed proportion.

The main export meter at the grid sub-station (along with a check-meter as back-up) measures the net electricity exported to the grid sub-station by the cluster of *x* WTGs for the month *m, i.e.*, $G_{EXP,m}$.
Due to losses occurring during transmission of electricity from the WTGs to the sub-station,

$$G_{EXP\ ,\ m} < G_{TOTAL\ ,\ m} \quad , \qquad \textit{where} \quad G_{EXP,m} = \sum_{i=1}^{x} G_{EXP,i,m} \qquad \ldots\ldots\ldots \text{(1b)}$$

Thus the difference between $G_{TOTAL,m}$ and $G_{EXP,m}$ represents the total transmission loss occurring between the WTGs and the sub-station for the month *m*, given by

$$L_{TOTAL\ ,\ m} = G_{TOTAL\ ,\ m} - G_{EXP\ ,\ m} \qquad \ldots\ldots\ldots \text{(1c)}$$

This transmission loss for the month *m* is shared by all the WTGs ($L_{i,m}$ being the transmission loss attributed to the i^{th} WTG) in proportion of their generation for the month *m*, as shown below:

$$L_{i,m} = \frac{G_{i,m}}{G_{TOTAL,m}} \times L_m \,, \qquad \text{where} \quad L_m = \sum_{i=1}^{x} L_{i,m} \qquad \ldots\ldots\ldots \text{(1d)}$$

Therefore, the net electricity exported to the grid by an individual WTG W_i in the month *m* is calculated as[2]:

$$G_{EXP\ ,i,m} = G_{i,m} - L_{i,m} \qquad \ldots\ldots\ldots \text{(1e)}$$

Sl. No.	Symbol	Parameter	Calculated/ Measured	Meter Location	Comments
1	$G_{i,m}$	Gross generation of the i^{th} WTG for the month *m*	Measured	WTG generator outlet	
2	$G_{TOTAL,m}$	Total gross generation of the *x* WTGs for the month *m*	Calculated	-	Sum of *x* items in Sl. No. 1
3	$G_{EXP,m}$	Net electrical energy export from the *x* WTG cluster to the grid sub-station for month *m*	Measured	Grid sub-station	
4	$L_{TOTAL,m}$	Total transmission loss for month *m*	Calculated	-	Difference of Sl. No. 2 and Sl. No. 3
5	$L_{i,m}$	Transmission loss attributable to the i^{th}	Calculated		Proportion of Sl. No. 1 in Sl. No. 2

[2] It is to be noted that the parameter $G_{EXP\ ,i,y} = \sum_{m=1}^{12} G_{EXP\ ,i,m}$ is same as $E_{EXP,i,y}$ appearing in equation (1)

Sl. No.	Symbol	Parameter	Calculated/ Measured	Meter Location	Comments
		WTG			for the i^{th} item
6	$G_{EXP,i,m}$	Net electricity exported to the grid by the ith WTG	Calculated	-	Used to generate the monthly power sale invoice

Hence, for the bundled project activity under consideration,

$$E_{EXP,NET,y} = \sum_{i=1}^{n} E_{EXP,NET,i,y} \text{ ..... (2)}$$

Where,

$E_{EXP,NET,y}$ Net units of electricity exported to the grid by the project activity during the project year y (in MWh) by the project activity

Baseline Emission Calculations

The Baseline Emission is calculated as,

$$BE_y = E_{EXP,NET,y} \times EF_{GRID} \text{ ..... (3)}$$

Where,

BE_y Baseline Emissions due to displacement of electricity at the grid by the project activity during the year y (in tCO_2)

EF_{GRID} Emission factor of the grid to which the electricity generated by the project activity is exported (in tCO_2/ MWh)

Emission Factor of the Grid (EF_{GRID})

The emission factor for the electricity displaced in the grid due by the electricity generated by the project activity is calculated as per the 'Tool to calculate the emission factor for an electricity system' by CEA and made available publicly.

Project Emissions:

As the project activity is a wind power project, there are no anthropogenic emissions by sources of GHGs within the project boundary as a result of the project activity. Hence there are no project emissions to be considered.

$$PE_y = 0 \text{ ..... (4)}$$

Leakage Emissions:

As per the methodology AMS-I.D./ Version 13,

"*If the energy generating equipment is transferred from another activity or if the existing equipment is transferred to another activity, leakage is to be considered*".

There are no anthropogenic emissions identified by sources outside the project boundary due to the project activity. Furthermore, the equipments (WTGs) used by the project activity are newly

procured and hence not transferred from another project. Thus, there are no leakage emissions attributable to the project activity.

Thus, the GHG emissions attributable to the project activity (project emissions) in the project year y are expressed as:

Emission Reductions:

The emission reductions of the project activity are calculated as the difference between the baseline emissions and the project emissions:

$$ER_y = BE_y - PE_y \text{ .....} \quad (5)$$

Where,

ER_y Emission reductions for the project activity in the project year y in tonnes of CO_2e

5. Monitored Data and Emission Reduction Calculation

The values of the monitored parameters used for emission reduction calculations are tabulated below:

Parameter	Value of data applied for the purpose of calculating expected emission reductions

$E_{EXP,NET,y}$

Month-wise Net Electricity Export Data (in kWh)

Parameter				KNC	UICUL	HMIPL
i				**1**	**2**	**3**
WTG Location No.				W-55	K-537, K-539, K-542, K-543	J-43
Capacity (MW)				1.5	5	1.25
$E_{EXP,NET,i,y}$ (kWh)	*y*	*1*	Feb-07	0	0	55042
			Mar-07	237	30433	44741
			Apr-07	0	941043	26748
			May-07	0	1705033	118407
			Jun-07	0	643796	271428
			Jul-07	0	635000	236577
			Aug-07	0	999363	244611
			Sep-07	0	509363	77698
			Oct-07	0	245195	40435
			Nov-07	99517	47171	11810
			Dec-07	321454	167344	27891
			Total	**421209**	**5923741**	**1155388**
		2	Jan-08	0	223290	48734
			Feb-08	173941	322584	54917
			Mar-08	167893	519644	68488
			Apr-08	0	1063581	168466
			May-08	490748	2228584	392631
			Jun-08	394942	1138708	268419
			Jul-08	448855	1093213	275738
			Aug-08	346599	1282885	224552
			Sep-08	226047	652835	109526
			Oct-08	68595	158942	31935
			Nov-08	169807	127412	34039
			Dec-08	262900	150141	34083
			Total	**2750327**	**8961819**	**1711529**
		3	Jan-09	199849	168926	29636
			Feb-09	159401	315330	48024
			Mar-09	133839	536000	87216

					Apr-09	137908	971544	173709	
					May-09	236891	2294654	372549	
					Jun-09	456893	1964740	259352	
					Jul-09	64312	1144537	303801	
					Aug-09 (till 1st September 2009)	546844	1277062	275000	
					Total	**1935937**	**8672793**	**1549287**	
			Total			**5107473**	**23558354**	**4416204**	
			Grand Total			**33082030**			

***EF*$_{GRID,OM}$** 1.00
Obtained from the CO_2 Baseline Database Version 4.0, Dated October 2008 (Operating Margin Emission Factor for NEWNE Regional Electricity Grid) published by Central Electricity Authority (CEA), India

***EF*$_{GRID,BM}$** 0.60 as per CO_2 Baseline Database Version 4.0, Dated October 2008 (Build Margin Emission Factor for NEWNE Regional Grid) published by Central Electricity Authority (CEA), India.

***EF*$_{GRID}$** 0.90 as per the calculation procedure explained below.

Calculation of the Carbon Intensity of the NEWNE Regional Grid		
Item	**Symbol**	**Value**
Operating Margin (tCO_2/MWh) (incl. Imports)	$EF_{GRID,OM}$	1.00
Build Margin (tCO_2/MWh) (not adjusted for imports)	$EF_{GRID,BM}$	0.60
For intermittent and non-despatchable generation types such as wind and solar photovoltaic, the Central Electricity Authority CO_2 Baseline Database Version 4.0 grid tool allows to weigh the operating margin and build margin at 75% and 25%, respectively. Hence, the calculation formula is: $EF_{GRID} = (EF_{GRID,OM} \times O.75) + (EF_{GRID,BM} \times 0.25)$ ..... (6)		
Combined Margin Emission Factor in tCO_2/MWh (including Imports)	EF_{GRID}	0.90

The emission reductions of the project activity are calculated as the difference between the baseline emissions and the project emissions:

$$ER_y = BE_y - PE_y$$

As established above, Project Emissions are: $PE_y = 0$

Hence, Emission Reductions are given by:

$$BE_y = E_{EXP,NET,y} \times EF_{GRID} = 33082030 \times 0.90$$

= 29774 tCO_2

Years	Project Participant	WTG Location No.	Project Emissions (tonnes of CO_2 e)	Baseline Emissions (tonnes of CO_2 e)	Leakage Emissions (tonnes of CO_2 e)	Overall Emission Reductions (tonnes of CO_2 e)
1st Year (Feb' 07~ Dec' 07)	KNC	W-55	0	379	0	379
	UICUL	K-537, K-539, K-542, K-543	0	5,331	0	5,331
	HMIPL	J-43	0	1,040	0	1,040
	Total		**0**	**6,750**	**0**	**6,750**
2nd Year Jan' 08 ~ Dec' 08)	KNC	W-55	0	2,475	0	2,475
	UICUL	K-537, K-539, K-542, K-543	0	8,066	0	8,066
	HMIPL	J-43	0	1,540	0	1,540
	Total		**0**	**12,081**	**0**	**12,081**
3rd Year {Jan' 09 ~ Aug' 09 (till 1st Sept 2009)}	KNC	W-55	0	1,742	0	1,742
	UICUL	K-537, K-539, K-542, K-543	0	7,806	0	7,806
	HMIPL	J-43	0	1,394	0	1,394
	Total		**0**	**10,942**	**0**	**10,942**
Total	KNC	W-55	0	4,597	0	4,597
	UICUL	K-537, K-539, K-542, K-543	0	21,203	0	21,203
	HMIPL	J-43	0	3,975	0	3,975
	Total		**0**	**29,774**	**0**	**29,774**
Grand Total (tonnes of CO_2e)			**0**	**29,774**	**0**	**29,774**

Month	UIC Udyog Limited					
Date of commissioning	29/03/2007			31/03/2007		
Capacity (MW)	2.5 (1.25 x 2)			2.5 (1.25 x 2)		
WTG No(s).	K-537, K-539			K-542, K-543		
Location (State)	Maharashtra					
	Gross Export	Corrected Gross Export	Import	Corrected Import	Net Export	Corrected Net Export
FEB'07						
MAR'07	31175	31113	678	679	30497	30433
APR'07	946304	944411	3362	3369	942942	941043
MAY'07	1708954	1705536	502	503	1708452	1705033
JUNE'07	646949	645655	1855	1859	645094	643796
JULY'07	637865	636589	1586	1589	636279	635000
AUG'07	1002560	1000555	1190	1192	1001370	999363
SEP'07	512836	511810	2442	2447	510394	509363
OCT'07	252355	252355	7160	7160	245195	245195
NOV'07	53966	53966	6795	6795	47171	47171
DEC'07	171079	171079	3735	3735	167344	167344
TOTAL	**5964043**	**5953070**	**29305**	**29328**	**5934738**	**5923741**
JAN'08	227080	227080	3790	3790	223290	223290
FEB'08	326560	326560	3976	3976	322584	322584
MAR'08	524689	524689	5045	5045	519644	519644
APR'08	1065807	1065807	2226	2226	1063581	1063581
MAY'08	2228618	2228618	34	34	2228584	2228584
JUN'08	1140168	1140168	1460	1460	1138708	1138708
JULY'08	1093587	1093587	374	374	1093213	1093213
AUG'08	1283202	1283202	317	317	1282885	1282885
SEP'08	657369	657369	4534	4534	652835	652835
OCT'08	166256	166256	7314	7314	158942	158942
NOV'08	132326	132326	4914	4914	127412	127412
DEC'08	154444	154444	4303	4303	150141	150141
TOTAL	**9000106**	**9000106**	**38287**	**38287**	**8961819**	**8961819**
JAN'09	172482	172482	3556	3556	168926	168926
FEB'09	319602	319602	4272	4272	315330	315330
MAR'09	539734	539734	3734	3734	536000	536000
APR'09	974009	974009	2465	2465	971544	971544
MAY'09	2294824	2294824	170	170	2294654	2294654

JUN'09	1969286	1965347	606	607	1968680	1964740
JULY'09	1145544	1145544	1007	1007	1144537	1144537
AUG'09 (till 1st September 2009)	1278036	1278036	974	974	1277062	1277062
TOTAL	**8693517**	**8689578**	**16784**	**16785**	**8676733**	**8672793**
GRAND TOTAL	**23657666**	**23642754**	**84376**	**84400**	**23573290**	**23558354**

Month	**Khatau Narbheram & Co**					
Date of commissioning	31/03/2007					
Capacity (MW)	1.5					
WTG No(s).	W-55					
Location (State)	Gujarat					
	Grid export	**Grid import**	**Grid net export**	**Corrected Grid Net Export**	**Net Export**	**Corrected Net Export**
FEB'07						
MAR'07	966000	18000	948000	943080	238	237
APR'07	0	0	0	0	10571	0
MAY'07	0	0	0	0	377999	0
JUNE'07	0	0	0	0	252473	0
JULY'07	0	0	0	0	186210	0
AUG'07	0	0	0	0	300436	0
SEP'07	0	0	0	0	135116	0
OCT'07	0	0	0	0	53725	0
NOV'07	10626000	222000	10404000	10349760	100039	99517
DEC'07	30378000	114000	30264000	30111540	323082	321454
TOTAL	**41970000**	**354000**	**41616000**	**41404380**	**1739889**	**421209**
JAN'08	0	0	0	0	240262	0
FEB'08	31210000	182000	31028000	30871040	174825	173941
MAR'08	45134000	218000	44916000	44689240	168745	167893
APR'08	0	0	0	0	124446	0
MAY'08	114070000	34000	114036000	113465480	493216	490748
JUN'08	114538000	80000	114458000	113884910	396929	394942
JULY'08	108718000	64000	108654000	108110090	451113	448855
AUG'08	96582000	144000	96438000	95954370	348346	346599
SEP'08	75982000	196000	75786000	75405110	227189	226047
OCT'08	23704000	440000	23264000	23143280	68953	68595
NOV'08	47780000	340000	47440000	47199400	170673	169807
DEC'08	70750000	244000	70506000	70151030	264230	262900

TOTAL	**728468000**	**1942000**	**726526000**	**722873950**	**3128927**	**2750327**
JAN'09	55508000	228000	55280000	55001320	200862	199849
FEB'09	48708000	248000	48460000	48215220	160210	159401
MAR'09	48978000	288000	48690000	48443670	134520	133839
APR'09	49354000	104000	49250000	49002710	138604	137908
MAY'09	75648000	52000	75596000	75217500	238083	236891
JUN'09	136328000	66000	136262000	135580030	459191	456893
JULY'09	17072000	8000	17064000	16978600	64635	64312
AUG'09 (till 1st September 2009)	105075000	21000	105054000	104528520	549593	546844
TOTAL	**536671000**	**1015000**	**535656000**	**532967570**	**1945698**	**1935937**
GRAND TOTAL	**1307109000**	**3311000**	**1303798000**	**1297245900**	**6814514**	**5107473**

Month	**Hind Metals and Industries (P) Limited**					
Date of commissioning	5/2/2007					
Capacity (MW)	1.25					
WTG No(s).	J-43					
Location (State)	Maharashtra					
	Gross Export	**Corrected Gross Export**	**Import**	**Corrected Import**	**Net Export**	**Corrected Net Export**
FEB'07	55599	55488	445	446	55154	55042
MAR'07	45945	45853	1110	1112	44835	44741
APR'07	27117	27063	314	315	26803	26748
MAY'07	118644	118407	0	0	118644	118407
JUNE'07	273161	272615	1184	1186	271977	271428
JULY'07	237415	236940	362	363	237053	236577
AUG'07	245688	245197	584	585	245104	244611
SEP'07	79285	79126	1426	1429	77859	77698
OCT'07	42324	42239	1801	1805	40523	40435
NOV'07	14884	14854	3038	3044	11846	11810
DEC'07	29719	29660	1765	1769	27954	27891
TOTAL	**1169781**	**1167441**	**12029**	**12053**	**1157752**	**1155388**
JAN'08	50364	50263	1526	1529	48838	48734
FEB'08	56537	56424	1504	1507	55033	54917
MAR'08	70455	70314	1822	1826	68633	68488
APR'08	169406	169067	600	601	168806	168466
MAY'08	393418	392631	0	0	393418	392631
JUN'08	268963	268963	544	544	268419	268419

JULY'08	275738	275738	0	0	275738	275738
AUG'08	224816	224816	264	264	224552	224552
SEP'08	110710	110710	1184	1184	109526	109526
OCT'08	34005	34005	2070	2070	31935	31935
NOV'08	35879	35879	1840	1840	34039	34039
DEC'08	36194	36194	2111	2111	34083	34083
TOTAL	**1726485**	**1725005**	**13465**	**13476**	**1713020**	**1711529**
JAN'09	31414	31414	1778	1778	29636	29636
FEB'09	49479	49479	1455	1455	48024	48024
MAR'09	88113	88113	897	897	87216	87216
APR'09	174293	174293	584	584	173709	173709
MAY'09	372840	372840	291	291	372549	372549
JUN'09	260470	259949	596	597	259874	259352
JULY'09	304384	304384	583	583	303801	303801
AUG'09 (till 1st September 2009)	275281	275281	281	281	275000	275000
TOTAL	**1556274**	**1555753**	**6465**	**6466**	**1549809**	**1549287**
GRAND TOTAL	**4452540**	**4448199**	**31959**	**31995**	**4420581**	**4416204**

A comparison of the estimated emission reduction and the emission reduction achieved has been tabulated below:

PLF		**UICUL**	**KNC**	**HMIPL**
Estimated		20	23	20
Actual	**2007**	14.96	3.55	10.70
	2008	20.74	21.22	15.85
	2009 (upto 1st September 2009)	30.11	22.41	21.52

For the year 2009, the generation for the peak season {April 2009-August 2009 (till 1st September 2009), as can be observed from the electricity generation data} has been accounted in the current monitoring period. However, when the same is computed for the entire year, the PLF would be close to the estimated value.