

BUNDLE-V BUNDLED GRID CONNECTED WIND POWER PROJECT IN THE STATE OF GUJARAT



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Summary:

M/s Resurge Energy Private Limited has commissioned the TÜV NORD JI/CDM Certification Program to carry out the verification of the project - "Bundle-V bundled grid connected wind power project in the state of Gujarat", in India with regard to the requirements of VCS, v3.1.

The project activity generates electricity which will be supplied to the NEWNE Grid of India and then distributed to connect end users, thus achieves GHG emission reduction.

Monitoring period: From 2007-06-01 to 2009-05-25 (incl. both days)

A risk based approach has been followed to perform this verification. In the course of the verification 01 Corrective Action Requests (CAR) and 02 Clarification Requests (CR) were raised and successfully closed out. No Forward Action Request (FAR) was raised during the VCS validation.

The verification is based on the draft monitoring report, revised monitoring report and the monitoring plan as set out in the validated PD, the validation report, emission reduction calculation spreadsheet and supporting documents made available to the TÜV NORD JI/CDM CP by the project participant.

As the result of the 1st periodic verification, the verifier confirms that the GHG emission reductions are calculated without material misstatements in a conservative and appropriate manner. TÜV NORD JI/CDM CP herewith confirms that the project has achieved emission reductions in the above mentioned reporting period as follows:

Emission reductions 38,563 t CO2 equivalents

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1 INTRODUCTION

The M/s Resurge Energy Private Limited has commissioned the TÜV NORD JI/CDM Certification Program to carry out the verification of the project:

“Bundle-V bundled grid connected wind power project in the state of Gujarat”

with regard to the relevant requirements of the Voluntary Carbon Standard v3.1^{/VCS/}. The verifiers have reviewed the implementation of the monitoring plan (MP) in the registered VCS project for the monitoring period 2007-06-01 to 2009-05-25 (incl. both days),

The applied monitoring methodology is ACM 0002, version 09 - “Consolidated Methodology for grid connected electricity generation from renewable sources”.

1.1 Objective

The purpose of this verification, by independent checking of objective evidence, is as follows:

- to verify that the project is implemented as described in the project design document;
- to assess the implementation of the monitoring plan (MP) content in the VCS-PD;
- to assess the project’s compliance with other relevant rules, including the host country (India) legislation;
- to confirm that the monitoring system is implemented and fully functional to generate voluntary emission reductions (VERs / VCUs) without any double counting; and
- to establish that the data reported are accurate, complete, consistent, transparent and free of material error or omission by checking the monitoring records and the emissions reduction calculation.

1.2 Scope and Criteria

The verification of this project is based on the validated project design document ^{/VCS-PD/}, the monitoring report^{/MR2/}, emission reduction calculation spreadsheet^{/XLS2/}, supporting documents made available to the verifier and information collected through performing interviews and during the on-site assessment. Furthermore publicly available information was considered as far as available and required.

The TÜV NORD JI/CDM CP has employed a risk-based approach in the verification, focusing on the identification of significant risks and reliability of project monitoring and generation of emission reductions.

1.3 Level of assurance

The verification has been planned and organized to achieve a

- Reasonable level of assurance

Limited level of assurance

1.4 Summary Description of the Project

a. Project Characteristics:

Essential data of the project is presented in the following Table.

Table: Project Characteristics

Item	Data			
Project title	Bundle-V bundled grid connected wind power project in the state of Gujarat			
Project owner	M/s Resurge Energy Private Limited			
Any specific project categories	<input type="checkbox"/>	Mega project (> 10 ⁶ t CO _{2eq} / a)		
	<input type="checkbox"/>	Micro project (< 5000 t CO _{2eq} / a)		
	<input type="checkbox"/>	AFOLU project		
	<input checked="" type="checkbox"/>	Grouped project		
	<input type="checkbox"/>	No specific project category		
VCS PD dated	Draft:	2009-03-23	Final:	2009-05-14
Applied Methodology	ACM 0002, ver09 "Consolidated Methodology for grid connected electricity generation from renewable sources"			
Project starting date	2007-05-26			
Crediting period	<input type="checkbox"/>	Renewable Crediting Period (7 y)		
	<input checked="" type="checkbox"/>	Fixed Crediting Period (10 y)		
Start of crediting period	2007-06-01			

b. Project Location:

The details of the project location are given in the table below:

Table: Project Location

No.	Project Location
Host Country	India
Region:	Gujarat

No.	Project Location
Project location address:	Has been provided in detail for each WEG in the table below
Latitude:	Has been provided for each WEG in the table below
Longitude:	Has been provided for each WEG in the table below

Name of Client	Capacity (MW)	WEG Loc.	Land Survey No.	Village	Taluka	District	Latitude	Longitude
1. O.P. Enterprises	1.5	SEL/1500/07-08/0612	275/1	Suthri	Abdasa	Kutch	23° 04' 04.7" N	68° 54' 23.3" E
2. O.P. Enterprises	1.5	SEL/1500/07-08/0610	521/1	Suthri	Abdasa	Kutch	23° 03' 04.2" N	68° 56' 03.0" E
3. O.P. Enterprises	1.5	SEL/1500/07-08/0611	599	Suthri	Abdasa	Kutch	23° 03' 16.3" N	68° 57' 39.7" E
4. Chaphalkar Brothers – Pune	1.5	SEL/1500/07-08/0831	285	Moti Sindholi	Abdasa	Kutch	23° 05' 47.3" N	68° 47' 16.2" E
5. Govindram Shobharam & Co.	1.5	SEL/1500/07-08/0674	67	Moti Sindholi	Abdasa	Kutch	23° 06' 35.3" N	68° 47' 40.2" E
6. Cinemax India Ltd.	0.6	SEL/600/07-08/1169	731/p	Visawada	Porbandar	Porbandar	21° 45' 18.8" N	69° 27' 05.1" E
7. Raj International Ltd. (Earlier Raj International Pvt. Ltd.)	0.6	SEL/600/07-08/0907	1119/p	Kuchhdi	Porbandar	Porbandar	21° 41' 10.9" N	69° 31' 55.4" E
8. Brindavan Beverages Pvt. Ltd.	0.6	VRRB/600/07-08/722	345/2	Khumbhariya	Bachhau	Kutch	23° 18' 07.5" N	70° 40' 33.8" E
9. Brindavan Beverages Pvt. Ltd.	0.6	VRRB/600/07-08/723	354/2	Khumbhariya	Bachhau	Kutch	23° 18' 11.8" N	70° 40' 39.5" E
10. Brindavan Beverages Pvt. Ltd.	0.6	VRRB/600/07-08/724	349	Khumbhariya	Bachhau	Kutch	23° 18' 20.4" N	70° 41' 21.18" E
11. Brindavan Beverages Pvt. Ltd.	0.6	VRRB/600/07-08/725	373	Khumbhariya	Bachhau	Kutch	23° 20' 12.7" N	70° 42' 40.7" E
12. Brindavan Beverages Pvt. Ltd.	0.6	VRRB/600/07-08/726	340/1	Khumbhariya	Bachhau	Kutch	23° 20' 22.4" N	70° 42' 10.0" E
13. Brindavan	0.6	VRRB/600/0	238	Khumbha	Bachhau	Kutch	23° 20'	70° 42'

Name of Client	Capacity (MW)	WEG Loc.	Land Survey No.	Village	Taluka	District	Latitude	Longitude
Beverages Pvt. Ltd.		7-08/727		riya			31.7" N	11.1" E
14.Brindavan Beverages Pvt. Ltd.	0.6	VRRB/600/0 7-08/728	268/2	Chandrod i	Bachhau	Kutch	23° 20' 17.8" N	70° 41' 56.2" E
15.Brindavan Beverages Pvt. Ltd.	0.6	VRRB/600/0 7-08/729	267	Chandrod i	Bachhau	Kutch	23° 20' 25.3" N	70° 41' 38.5" E
16.Brindavan Beverages Pvt. Ltd.	0.6	VRRB/600/0 7-08/730	386/2	Khumbha riya	Bachhau	Kutch	23° 20' 10.5" N	70° 42' 04.9" E
17.Brindavan Beverages Pvt. Ltd.	0.6	VRRB/600/0 6-07/522	250/1	Khodasar	Bachhau	Kutch	23° 19' 44.4" N	70° 41' 20.3" E
18.Brindavan Beverages Pvt. Ltd.	0.6	VRRB/600/0 6-07/523	294/2	Chandrod i	Bachhau	Kutch	23° 19' 36.7" N	70° 41' 28.5" E
19.Brindavan Threads Pvt. Ltd.	0.6	VRRB/600/0 6-07/524	291/3	Chandrod i	Bachhau	Kutch	23° 18' 39.7" N	70° 41' 27.7" E
20.Cauvery Aqua Pvt. Ltd.	0.6	VRRB/600/0 6-07/544	282/1	Chandrod i	Bachhau	Kutch	23° 18' 33.3" N	70° 41' 04.3" E
21.South India Beverages Pvt. Ltd.	0.6	VRRB/600/0 6-07/551	282/2	Chandrod i	Bachhau	Kutch	23° 18' 41.4" N	70° 40' 58.3" E

c. Technical Project Description:

The proposed project utilizes wind power for electricity generation. Total installed capacity is 17.1 MW (5*1.5 MW & 16*0.6 MW) by means of which 42.57 GWh of net electricity is supplied to the NEWNE grid during this monitoring period from 2007-07-01 to 2009-05-25. This project is equipped with the latest model WEGs developed by Suzlon make S-82 for the 1.5 MW and S-52 for the 0.6 MW and Vestas RRB of type PS-600 kW for power generation.

Supporting documents like purchase orders^{/PO/} of the WTGs by every investor were made available to the TÜV NORD JI/CDM CP. It was found that the purchase order^{/PO/} issued by the suppliers of the WTGs specifies the technical details for the respective WTG. Information was also collected through performing interviews with the PP and during the on-site assessment.

The key parameters of the project are given in the table below:

Table: Technical data of the project

Technical Specification of Suzlon S-52/600 kW WEG	
ROTOR	
Diameter	52 m
No. of Rotor Blade	3
Orientation	Upwind/Horizontal Axis
Rotational Direction	Clockwise
Rotor Blade Material	GRP
Swept Area	2124 m ²
Hub Height	75 m
Regulation	Pitch Regulated
OPERATIONAL DATA	
Cut in wind speed	3.5 m/s
Rated wind speed	12 m/s
Cut off wind speed	25 m/s
GEARBOX	
Type	Integrated 3 Stage 1 planetary and 2 helical
Gear ratio	1:63.633
Manufacturer	Winergy
Nominal load	660 Kw
Type of cooling	Oil cooling system, forced lubrication
GENERATOR	
Type	Asynchronous 4 pole
Rotation speed	1500 RPM
Rated output	600 kW
Rated voltage	690 V
Frequency	50 Hz

Technical Specification of Suzlon S-52/600 kW WEG	
Insulation	Class "H"
Enclosure Class	IP 56
Cooling system	Air cooled
OPERATING BRAKES	
Aerodynamic Brake	3 independent systems with blade pitching
YAW DRIVE	
Method of operation	2 active electrical yaw motors
Bearing type	Polyamide slide bearing
SAFETY SYSTEMS	
Brake system	Automatic application by synchronous hydraulic control of the blade pitching in case of: <ul style="list-style-type: none"> • Vibration or shock loading • Over temperature of the gearbox or generator failure of the thyristors and control in the case of excessive wind speed • Variation in the frequency range • Asymmetric phasing • Line interruption with automatic reconnect
Brake system	Spring applied hydraulically released disk brake
TOWER	
Type	Free standing, lattice tower, hot dip galvanized
Tower height	To suit hub height
Construction	Bolted
Erection	With crane
Design	GL special class

Technical Specification of Suzlon S-82/1500 kW WEG	
Rotor diameter	82 m
Installed electrical output	1500 kW

Technical Specification of Suzlon S-82/1500 kW WEG	
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 pole
Rated output	1500 kW
Rotational speed	1511 RPM
Operating voltage	690 V
Frequency	50 Hz
Protection	IP54
Insulation class	H
Cooling system	Air-cooled
Gearbox	3-stage gear box, 1 planetary and 2 helical
Manufacturer	Winergy
Gear ratio	1:95.09
Nominal load	1650 kW
Type of cooling	Oil cooling system
Yaw drive system	4 active electrical yaw motors
Yaw bearing	Polyamide slide bearing
Safety system	
Aerodynamic brake	3 times independent pitch regulation
Mechanical brake	Spring powered disc brake, hydraulically released fail safe
Control Unit	Microprocessor controlled, indicating actual operating conditions, UPS backup system

Technical Specification of Suzlon S-82/1500 kW WEG	
Design standards	As per GL/IEC

Technical specifications for Vestas RRB PS-600 kW WEGs	
Overall Data	
Cut in wind 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 / 65 m
Nacelle tilt angle	5°
Regulation	Pitch
Gearbox	
Type	Planetary / Helical
Gear Ratio	1 : 58.2
No of steps	3
Generator	
Rated power output	600 kW
Type	Single Wound Asynchronous
Voltage	690 V
Revolutions	1527 rpm
Frequency	50 Hz
Tower	
Type	Lattice
Height (Optional)	48.1 m / 63.1 m
Material	Steel
Sections	6/9

Technical specifications for Vestas RRB PS-600 kW WEGs	
Nacelle Cover	Fiber glass Reinforced Polyester
Rotor	
No of blades	3
Diameter	47m
Swept area	1735 m ²
Power regulation	Pitch regulated
Brake System	
Aerodynamics	Full feathering of blade
Mechanical	Disc Brake
Yaw System	Slewing system with gear motors yawing
Controls	Microprocessor based

d. Parameters confirmed during verification:

During the monitoring period (2007-06-01 to 2009-05-25) the project activity has exported a total net electricity of 42,573,230.14 kWh and thus the total baseline emission comes to 38,563 tCO_{2e}.

The on-site visit was carried out on 2009-07-12 & 2009-07-13. Two members of the Verification team attended the site visit.

During the on-site visit, the monitoring parameters provided under section 9 of the monitoring report^{/MR2/} and under sub-section 3.3 of the validated PD^{/PD/} were verified for each WEG along with their respective 'Certificate for share of electricity by the windfarm' i.e, joint meter reading^{/JMR/} report which have been duly signed by the representatives of GEDA. The monitoring parameters are found to be in line with the monitoring plan^{/PD/ & /MR2/} & the PPA^{/PPA1-PPA10/} signed for the project and are deemed to be OK.

As per Article 7, Clause 7.2, point (v) of the PPA signed between PP and the GEDA, there were no divergence in the monthly joint meter readings taken between main and the check meters by GEDA personal in the presence of PP, which were beyond permissible limits. The registered PD, under section 3.4 of 'Meter Test Checking for all the WEGs' contains part of Clause 7.2 of the PPA. Since the monthly meter readings for the entire monitoring period from both the meters in this project were within the permissible limits there was no scope for calibration of the meters every annual. The meters in this project activity are calibrated at least once in three years. This is in accordance with section 12-c, page No. 3, Annex 20 of EB 41 which states that the Measuring equipment should be certified to national or IEC standards and calibrated according to the national standards and reference points or IEC standards and recalibrated at appropriate intervals according to manufacturer's specifications, but at least once in three years. Hence, test reports of the energy meters carried out by GEDA covering the reported monitoring period were verified^{/Test/}. Test reports of all installed meters were found OK.

Responsibilities related to monitoring are executed as defined in the monitoring plan^{/PD/& /MR2/} and were assessed and found to be OK.

Parameters confirmed during verification

Name of Investor	WEG Loc.	Site	Capacity (MW)	Meter No. & Meter Make	Feeder	Substation	Testing dates
O.P. Enterprises	SEL/1500 /07-08/0612	Suthri	1.5	GJB00671 & GJB 00673-from 1 st June 2007 to 24 th October 2007	Suzlon Feeder No. 1	33 X 220 KV Suthri	GJB00671 and GJB006734 th - November 2006 & 19 th June 2009
O.P. Enterprises	SEL/1500 /07-08/0610	Suthri	1.5		Suzlon Feeder No. 2	33 X 220 KV Suthri	GJB00676-19 th June 2009
O.P. Enterprises	SEL/1500 /07-08/0611	Suthri	1.5	GJB00676, GJB00671 & GJB 00673-from 25 th October 2007 to 24 th January 2008 MSE64370 & GJB00669- from 25 th January 2008 to 25 th May 2009	Suzlon Feeder No. 2	33 X 220 KV Suthri	MSE64370-20 th August 2007, 18 th November 2008 & 6 th July 2009 GJB00669-17 th August 2007, 18 th November 2008 & 6 th July 2009
Chaphalkar Brothers-Pune	SEL/1500 /07-08/0831	Suthri	1.5	GJB00667- from 24 th December 2007 to 24 th January 2008	Suzlon Feeder No. 12	33 X 220 KV Suthri	GJB00667-19 th June 2009
				MSE64370, GJB00669- from 25 th Jan 2008 to 25 th May 2009			MSE64370-20 th August 2007, 18 th November 2008 & 6 th July 2009 GJB00669-17 th August 2007, 18 th November 2008 & 6 th July 2009
Govindram Shobharam & Co.	SEL/1500 /07-08/0674	Suthri	1.5	GJB00591, GJB00592- from 25 th August 2007 to 25 th June 2008	Suzlon Feeder No. 10	33 X 220 KV Suthri	GJB00591-12 th February 2006
				MSE64370, GJB00669- from			GJB00591 and GJB00592-29 th November 2008 MSE64370-20 th August

				26th June 2008 to 25 th May 2009			2007, 18 th November 2008, 6 th July 2009 and GJB00669- 17 th August 2007, 18 th November 2008, 6 th July 2009
Cinemax India Ltd.	SEL/600/ 07- 08/1169	Kuchhdi	0.6	GJU004625, GJU004626- from 28 th March 2008 to 25 th May 2009	Suzlon Feeder No. 2	33 X 66 KV Kuchhdi	GJU004625 and GJU004626- 6 th February 2009
Raj Internationa l Ltd.	SEL/600/ 07- 08/0907	Kuchhdi	0.6		Suzlon Feeder No. 1	33 X 66 KV Kuchhdi	
Brindavan Beverages Pvt. Ltd.	VRRB/60 0/07- 08/722	Surajbari	0.6	GJB00731 and GJB00730	RRB Feeder No. 3	33 X 66 KV Chandrodi	7 th April 2007 and 14 th May 2009
Brindavan Beverages Pvt. Ltd.	VRRB/60 0/07- 08/723	Surajbari	0.6		RRB Feeder No. 3	33 X 66 KV Chandrodi	
Brindavan Beverages Pvt. Ltd.	VRRB/60 0/07- 08/724	Surajbari	0.6		RRB Feeder No. 3	33 X 66 KV Chandrodi	
Brindavan Beverages Pvt. Ltd.	VRRB/60 0/07- 08/725	Surajbari	0.6		RRB Feeder No. 3	33 X 66 KV Chandrodi	
Brindavan Beverages Pvt. Ltd.	VRRB/60 0/07- 08/726	Surajbari	0.6		RRB Feeder No. 3	33 X 66 KV Chandrodi	
Brindavan Beverages Pvt. Ltd.	VRRB/60 0/07- 08/727	Surajbari	0.6		RRB Feeder No. 2	33 X 66 KV Chandrodi	
Brindavan Beverages Pvt. Ltd.	VRRB/60 0/07- 08/728	Surajbari	0.6		RRB Feeder No. 5	33 X 66 KV Chandrodi	
Brindavan Beverages Pvt. Ltd.	VRRB/60 0/07- 08/729	Surajbari	0.6		RRB Feeder No. 5	33 X 66 KV Chandrodi	
Brindavan Beverages Pvt. Ltd.	VRRB/60 0/07- 08/730	Surajbari	0.6		RRB Feeder No. 3	33 X 66 KV Chandrodi	
Brindavan Beverages Pvt. Ltd.	VRRB/60 0/06- 07/522	Surajbari	0.6		RRB Feeder No. 3	33 X 66 KV Chandrodi	
Brindavan Beverages Pvt. Ltd.	VRRB/60 0/06- 07/523	Surajbari	0.6		RRB Feeder No. 3	33 X 66 KV Chandrodi	
Brindavan Threads Pvt. Ltd.	VRRB/60 0/06- 07/524	Surajbari	0.6		RRB Feeder No. 2	33 X 66 KV Chandrodi	
Cauvery Aqua Pvt. Ltd.	VRRB/60 0/06- 07/544	Surajbari	0.6		RRB Feeder No. 2	33 X 66 KV Chandrodi	
South India Beverages Pvt. Ltd	VRRB/60 0/06- 07/551	Surajbari	0.6		RRB Feeder No. 4	33 X 66 KV Chandrodi	

It was verified in the course of this verification that the actual project activity was implemented in accordance with the Validated PD^{PD/}.

e. Appointment of team members and technical reviewer:

On the basis of a competence analysis and individual availabilities a verification team was appointed. Furthermore also the personnel for the technical review and the final approval were determined.

The list of involved personnel, the tasks assigned and the qualification status are summarized in the table below.

Table: Involved Personnel

	Name	Company	Function ¹⁾	Qualification Status ²⁾	Scheme competence	Technical competence ⁴⁾	Host country Competence	Team Leading competence
<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms.	Ma.Paa.Puratc hikkanal	TUV INDIA Private Ltd.	TL	SA	<input checked="" type="checkbox"/>	T	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<input type="checkbox"/> Mr. <input checked="" type="checkbox"/> Ms.	Sahana C.A	TUV INDIA Private Ltd.	TM	A	<input checked="" type="checkbox"/>	-	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Mr. <input checked="" type="checkbox"/> Ms.	Manjari Chandra	TUV INDIA Private Ltd.	TM	A	<input checked="" type="checkbox"/>	-	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms.	Kewat Shailendra	TUV INDIA Private Ltd.	TM	A	<input checked="" type="checkbox"/>	T	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms.	Heiner Lenzian	TN CERT GmbH	TR ³⁾	A	<input checked="" type="checkbox"/>	T	<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms.	Ingo Klein	TN CERT GmbH	FA ³⁾	SA	<input checked="" type="checkbox"/>	T	<input type="checkbox"/>	<input checked="" type="checkbox"/>

¹⁾ TL : Team Leader; TM : Team Member, TR: Technical review; FA: Final approval;

²⁾ GHG Auditor Status: A : Assessor; E : Expert; SA: Senior Assessor; T : Trainee; TE Technical Expert

³⁾ No team member

⁴⁾ As per S01-MU03 or S01-VA070 A2 (such as A, B, C.....)

2 VALIDATION PROCESS, FINDINGS AND CONCLUSION

2.1 Validation Process

There was no gap validation of the project conducted during this monitoring period. Verification of this project is based on already validated project design document ^{/VCS-PD/} dated 20/05/2009, Validation report dated 25/05/2009^{/FValR/} and the Validation statement ^{/VCS-STa/} dated 28/05/2009.

2.2 Validation Findings

2.2.1 Gap Validation

NA

2.2.2 Methodology Deviations

NA

2.2.3 New Project Activity Instances

NA

2.3 Validation Conclusion

Please refer Validation report dated 25/05/2009^{/FValR/}.

3 VERIFICATION PROCESS

3.1 Method and Criteria

The verification of the project consisted of the following steps:

- Contract review
- Appointment of team members and technical reviewers
- Publication of the monitoring report
- Desk review of the Monitoring Report^{/MR1/} submitted by the client and additional supporting documents.
- Verification planning,
- On-Site assessment,
- Background investigation and follow-up interviews with personnel of the project developer and its contractors,
- Draft verification reporting
- Resolution of corrective actions (if any)
- Final verification reporting
- Technical review

- Final approval of the verification.

The sequence of the verification is given in the table below:

Table: Verification sequence

Topic	Time
Assignment of verification	2009-03-23
On-site visit	2009-07-12 & 2009-07-13
Draft reporting finalised	2009-12-23
Technical review on draft reporting finalised	2009-12-30
Final reporting finalised	2011-09-28
Technical review on final reporting finalised	2011-09-28
Final corrections	2011-09-28

3.2 Document Review

The VCS PD ^{/PD/} and supporting background documents related to the project design and baseline were reviewed.

Furthermore, the verification team used additional documentation by third parties like host party legislation, technical reports referring to the project design or to the basic conditions and technical data.

The references used in the course of this verification are summarized in section 6.

3.3 Interviews

The verification team has carried out interviews in order to assess the information included in the project documentation and to gain additional information regarding the compliance of the project with the relevant criteria applicable for the VCS.

During verification, the verification team has performed interviews to confirm selected information and to resolve issues identified in the document review. The main topics of the interviews are summarized in Table below.

Table: Interviewed persons and interview topics

Interviewed Persons / Entities	Interview topics
1. Projects & Operations	<ul style="list-style-type: none"> - General aspects of the project - Project design, Commissioning and implementation

Interviewed Persons / Entities	Interview topics
<p>Personnel- /IM01/</p> <p>2. Consultants- /IM02/</p>	<ul style="list-style-type: none"> - Technical equipment and operation of the project - Performance of the project - Involved personnel and responsibilities - Training and practice of the operational personnel - Implementation of the monitoring plan - Monitoring and measurement equipment - QA/QC Testing and calibration procedures - Monitored data management - Data quality, archiving and reporting procedures - Desk review findings - Bundling criteria - Applicability of chosen methodology - Data uncertainty and residual risks - GHG calculation - Procedural aspects of the validation

A comprehensive list of all interviewed persons is part of section 6 'References'.

3.4 Site Inspections

During on-site inspection, following tasks were carried out;

a. Review of Performance Records:

As most essential part of the verification exercise it is indispensable to carry out an inspection on site in order to verify that the project is implemented in accordance with the applicable criteria. Furthermore the on-site assessment is necessary to check the monitoring data with respect to accuracy to ensure the calculation of emission reductions. The main tasks covered during the site visit include, but are not limited to:

- The on-site assessment included an investigation of whether all relevant equipment is installed and works as anticipated.
- The operating staff was interviewed and observed in order to check the risks of inappropriate operation and data collection procedures.
- Information processes for generating, aggregating and reporting the selected monitored parameters were reviewed.
- The duly calibration/testing of all metering equipment was checked.
- The monitoring processes, routines and documentations were audited to check their proper application.
- The monitoring data were checked completely.
- The data aggregation trails were checked via spot sample down to the level of the meter recordings.

Responsibilities related to monitoring are executed as defined in the monitoring plan^{/PD/ & /MR2/} and were assessed and found to be OK.

The on-site audit was carried out on 2009-07-12 & 2009-07-13. Two members of the Verification team attended the site visit.

b. Information on Collection of Measurements:

The parameters monitored in this project activity are electricity exported to the grid, electricity imported from the grid and net electricity generated.

The evacuation facility of the project activity to deliver the power to grid is maintained by the state utility (GEDA).

In the project activity total electricity generated is being measured by energy meter, which is jointly monitored by the project participant and GEDA. The measuring devices are well known and state of the art.

The meter readings are recorded once in every month for all the WEGs.

The Net electricity generated from the Windfarms in this project activity is calculated based on the difference of electricity exported to the grid and imported from the grid. The transmission loss for this net electricity generated from the windfarms is calculated by taking the difference between electricity export and import with the sum of individual WEG generation (WEGs of supplier Suzlon Infrastructure Services Ltd) or group generation by the WEGs (WEGs of supplier Vestas RRB Energy Limited) every month.

Apportioning of transmission loss for the WEGs is done as the percentage of electricity generated by the WEG out of total generated electricity from the windfarms. The 'Certificate for share of electricity by the windfarm' i.e, joint meter reading^{/JMR/} reports provided by GEDA every month gives details of electricity generated by the WEGs owned by every individual investor after accounting the transmission losses for the WEGs.

During the on-site visit the information above was verified by the joint meter reading^{/JMR/} reports provided by the PP, which have been duly signed by the representatives of GEDA. This was found to be in line with the monitoring plan^{/PD/ & /MR2/} & the PPA^{/PPA1-PPA10/} signed for the project and deemed to be OK. No significant, lack of evidence and missing data were detected.

c. Observation of established practices and testing of the accuracy of monitoring equipment:

All required instruments and operating procedures for the same have been implemented in an appropriate manner. Responsibilities related to monitoring are executed as defined in the monitoring plan^{/PD/ & /MR2/}.

Calibration and testing of the energy meters are carried out by GEDA. Calibration procedures of all online energy meters covering the reported monitoring period were are verified for its frequency and traceability to industry standards. Calibration of the energy meters was done in accordance with the PPA^{/PPA1-PPA10/}. As per Article 7, Clause 7.2, point (v) of the PPA signed between PP and the GEDA, there was no divergence in the monthly joint meter readings taken between main and the check meters by GEDA personal in the presence of PP, which were beyond permissible limits. The registered PD, under section 3.4 of 'Meter Test Checking for all the WEGs' contains part of Clause 7.2 of the PPA. Since the monthly meter readings for the entire monitoring period from both the meters in this project were within the

permissible limits there was no scope for calibration of the meters every annual. The meters in this project activity are calibrated at least once in three years. This corroborates with the requirement of calibration to be done once in three years as per section 12-c, page No. 3, Annex 20 of EB 41¹. Hence, test reports^{/Test/} of all installed meter were checked and found OK. The monitoring system is in compliance with the applied monitoring methodology (ACM 0002, version 9).

3.5 Resolution of Any Material Discrepancy

Material discrepancies identified in the course of the verification are addressed either as CARs, CLs or FARs.

A **Corrective Action Request (CAR)** is established where:

- mistakes have been made in assumptions, application of the methodology or the project documentation which will have a direct influence the project results,
- the requirements deemed relevant for verification of the project with certain characteristics have not been met or
- there is a risk that the project would not be registered or that emission reductions would not be able to be verified and certified.

A **Clarification Request (CL)** will be issued where information is insufficient, unclear or not transparent enough to establish whether a requirement is met.

A **Forward Action Request (FAR)** will be issued when certain issues related to project implementation should be reviewed during the first verification.

A detailed list of the CARs, CLs and FAR raised and discussed in the course of this verification is included in the next section 4 of this report.

4 VERIFICATION FINDINGS

In this section the assessments and findings from the desk review of the VCS PD, site visit, interviews and supporting documents as well as the final assessments are summarised. Table below includes an overview of all raised CARs, CLs and FARs.

Table: Overview of CARs, CLs and FARs issued

No.	Topic / Chapter	CAR	CL	FAR
4.1	Project implementation status	1	1	-
4.2	Accuracy of GHG emission reduction or removal calculations	-	1	-
4.3	Quality of evidence to determine GHG emission reductions or removals	-	-	-

¹ http://cdm.unfccc.int/EB/041/eb41_repan20.pdf

4.4	Management and operational system	-	-	-
-	SUM	1	2	0

4.1 Project Implementation Status

Description

The project utilizes wind power for electricity generation by 21 WEGs. Total installed capacity of the project activity is 17.1 MW (5*1.5 MW & 16*0.6 MW) by means of which 42.57 GWh of net electricity is supplied to the NEWNE grid during this monitoring period from 2007-07-01 to 2009-05-25 and thus the total baseline emissions comes to 38,563 tCO_{2e}.

The reporting ^{/MR2/ /XLS2/} is in line with the requirements of the validated monitoring plan as well as with the applied methodology ACM 0002, version 09 ^{/ACM 0002/}. The reporting procedures reflect the requirements of the monitoring plan ^{/PD/}.

The parameters to monitor are electricity exported to the grid, electricity imported from the grid and net electricity generated.

In the project activity total electricity generated is being measured by energy meter, which is jointly monitored by the project participant and GEDA. Data regarding the electricity exported to grid and imported from grid is obtained from the 'Certificate for share of electricity by the windfarm' i.e, joint meter reading ^{/JMR/} reports provided by the GEDA. These reports have been submitted by the PP to the DOE for the entire monitoring period. The joint meter reading ^{/JMR/} report give details of electricity generated by the WEGs owned by every individual investor after accounting the transmission losses for the WEGs. This is in line with the requirements of the registered monitoring plan ^{/PD/} & the PPA signed for the project by every investor.

The power is measured with a high accuracy and duly tested class 0.2 power meters. These meters are tested by GEDA before commissioning. At the time of commissioning the meter is sealed by the GEDA Officials. The meter readings are carried out once in a month by GEDA. No significant, lack of evidence and missing data were detected during this monitoring period.

Responsibilities related to monitoring are executed as defined in the monitoring plan ^{/PD/ & /MR2/} and were assessed and found to be OK.

There are no remaining issues or any material discrepancy from previous validation. All raised CARs and CRs were successfully closed during the Validation of the project design. The Verification has been carried out based on the Validated PD ^{/PD/}, Monitoring report ^{/MR1/, /MR2/}, Validation report ^{/VR/}, Emission reduction calculation sheet ^{/XLS1/, /XLS2/} and supporting documents.

It was verified in the course of this verification that the actual project activity was implemented in accordance with the Validated PD.

Related Findings

- No CARs, CLs or FARs have been identified in this context
- The following finding(s) have been addressed:

Finding:	4.1-1		
Classification	<input type="checkbox"/> CAR	<input checked="" type="checkbox"/> CL	<input type="checkbox"/> FAR
Description of finding <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	Please provide clarification on shifting from Vanku and Nani Sindhodi sub-stations to Suthri sub-station and the corresponding feeder lines to which some of the WEGs of this project activity have been connected.		
Corrective Action #1 <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	<p>The reasons for the shift in substations and corresponding feeder lines are:</p> <ol style="list-style-type: none"> As the wind installation site grows, the load on the existing feeders increase and thus there is a need to shift the old WEGs to a new feeder so as to keep the maximum load on a feeder within permissible limits. The new WEGs are added to the feeder based on their geographical location. The feeder nearest to a WEG is preferred and thus there is re-allocation of WEGs to different feeders and thus substations. The change in feeders is also warranted by the fact that power evacuation infrastructure shifts to incorporate newer WEGs, as the wind farm expands. 		
DOE Assessment #1 <i>The assessment shall encompass all open issues. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	Since new installation of wind projects are coming up in the state of Gujarat, re-working on the capacity of the feeder lines and to lessen the load on the prevailing feeder lines, inter-changes in the substations occur in GEDA. Hence, the explanation provided is acceptable. CL 4.1-1 is closed.		
Conclusion <i>Tick the appropriate checkbox</i>	<input type="checkbox"/> To be checked during the first periodic verification <input type="checkbox"/> Appropriate action was taken <input checked="" type="checkbox"/> Project documentation was corrected correspondingly <input type="checkbox"/> Additional action should be taken <input checked="" type="checkbox"/> The project complies with the requirements		

Final Assessment

The allocation of the WEGs of this project activity from two sub-stations viz., Vanku and Nani Sindhodi sub-stations to Suthri sub-station and the corresponding feeder lines is acceptable and it is as per the practice followed in GEDA to distribute the load on all the feeder lines due to new capacity additions. This was checked and confirmed during on-site visit. Hence is found to be OK.

- CL 4.1-1 is closed.

Finding:	4.1-1		
Classification	<input checked="" type="checkbox"/> CAR	<input type="checkbox"/> CL	<input type="checkbox"/> FAR
Description of finding <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	Technical details of monitoring equipments such as make, type, PF, current, voltage range, year of manufacturing, etc., are not presented in the Monitoring report		
Corrective Action #1 <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	The Monitoring report has been modified to include the technical details of the monitoring equipment		
DOE Assessment #1 <i>The assessment shall encompass all open issues. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	The technical details of all the meters connected to different sub-stations in this project activity such as make of the meters, type, year of manufacturing, current, voltage range are provided under Table 3 of Section 6 in the revised monitoring report. This has been verified and found to be OK.		
Conclusion <i>Tick the appropriate checkbox</i>	<input type="checkbox"/> To be checked during the first periodic verification <input type="checkbox"/> Appropriate action was taken <input checked="" type="checkbox"/> Project documentation was corrected correspondingly <input type="checkbox"/> Additional action should be taken <input checked="" type="checkbox"/> The project complies with the requirements		

Final Assessment

During the site visit, the details of energy meter such as make, accuracy class, date of commissioning of WEGs, meter number, substation details were recorded. The details w.r.t energy meters provided in the revised monitoring report were verified with their respective Test reports^{/Test/} and are found to be in line. Hence CAR 4.1-1 is closed.

CAR 4.1-1 is closed.

4.2 Accuracy of GHG Emission Reduction or Removal Calculations

Description

The value of the emission reductions depends on the net electricity exported by the project activity. The baseline emissions reductions are based on the net electricity supplied by the project, which is the difference between the electricity exported and the amount of electricity imported due to the project activity. The project emissions are zero as there is no use of any fossil fuel. Therefore the baseline emission equals the Emission Reductions. The total net electricity supplied by the 21 WEGs during the monitoring period of 2007-07-01 to 2009-05-25 is 42,573,230.14 kWh. The baseline emission factor has been fixed ex-ante as 0.90618 (tCO₂/MWh) based on the CEA data base version 4.0 for NEWNE Grid^{/CEA/}. Based on the net electricity supplied and the emission factor the baseline emissions are

38,563 tCO_{2e}.

The Verification team has checked the input values as well as the computation in the emission reduction spreadsheet^{/XLS2/}. The emission reduction has been computed in a transparent and conservative manner.

Nevertheless, the following CL has been raised and closed successfully.

Related Findings

No CARs, CLs or FARs have been identified in this context

The following finding(s) have been addressed:

Finding:	4.2-1		
Classification	<input type="checkbox"/> CAR	<input checked="" type="checkbox"/> CL	<input type="checkbox"/> FAR
Description of finding <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	1. The emission reductions provided in the VER Calculation sheet for the year 2007 is found to be entered manually. Need to present the emission reductions for the year 2007 along with the algorithm. 2. Emission reductions have to be rounded down for every year during the Monitoring period		
Corrective Action #1 <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	1. The emission reduction calculation for the year 2007 in the VER calculation sheet has been modified to present the algorithm. 2. The total annual emission reductions have been rounded down for every year during the monitoring period in the revised VER calculation sheet.		
DOE Assessment #1 <i>The assessment shall encompass all open issues. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	The VER calculation sheet has been verified to check the emission reductions of the year 2007 and for rounding down of annual VERs every year during this monitoring period. Corrections have been carried out in accordance to the clarification raised and are found to be OK.		
Conclusion <i>Tick the appropriate checkbox</i>	<input type="checkbox"/> To be checked during the first periodic verification <input checked="" type="checkbox"/> Appropriate action was taken <input checked="" type="checkbox"/> Project documentation was corrected correspondingly <input type="checkbox"/> Additional action should be taken <input checked="" type="checkbox"/> The project complies with the requirements		

Final Assessment

Revised VER calculation sheet has been submitted by the project proponent that presents the emission reductions achieved during this monitoring period in a transparent manner and annual

emission reductions for each year during the monitoring period have been rounded down. Hence, this is acceptable.

CL 4.2-1 is closed.

4.3 Quality of Evidence to Determine GHG Emission Reductions or Removals

Description

Proper data management including data acquisition and aggregation, data management system is being followed for the project activity.

The net electricity exported to the grid is taken from the joint meter reading^{/JMR/} reports which forms the basis for emission reduction calculations. The amount of electricity generated from the project activity and dispatched to the grid is continuously metered by GEDA energy meter. The meters are Tri-vector energy meters with an accuracy class of 0.2 which can measure both import and export. The energy meter readings are noted in presence of officials from both WEG owners and GEDA. The data provided by GEDA are authentic based on which project proponent raises the invoices. The meters are tested by state electricity board ensuring error free measurements. Also, the log books that are maintained by the Operation & Maintenance personnel (Suzlon Infrastructure Services Limited or Vestas Wind Technology India Private Limited) have been verified by the site in-charge of the respective WEG and the same is forwarded to the project promoter. If any major deviation between those values the same would be informed to GEDA for further action.

All records needed for monitoring are archived in line with the requirements of the validated monitoring plan^{/PD/}. No significant, lack of evidence and missing data were detected during on-site verification.

Related Findings

No CARs, CLs or FARs have been identified in this context

The following finding(s) have been addressed:

4.4 Management and Operational System

Description

The allocation of responsibilities is documented in a written form and has been verified. Routines for the archiving of data are defined and documented.

The authority of the project site is given to the O&M personnel of M/s. Suzlon Infrastructure Services Limited & M/s. Vestas RRB India Limited for their respective WEGs. The organizational structure includes site manager who is responsible for O & M monitoring and coordinating with EPC contractor of the O & M team for smooth functioning of WEGs. He is

also responsible for recording the required monitored parameters along with the GEDA officials and to report the monitoring results to the project proponent.

The monitoring personnel at site are well trained and follow reproducible routines as was evident during the site visit. Members of monitoring team were interviewed during the on-site visit. Procedure for training and maintenance of critical equipments were also discussed. Day to day operation is supervised by the technically qualified site engineers and have adequate knowledge. They have the responsibility to supervise various technical staff for around the clock who engage in operation and maintenance of project activity. Training records for the monitoring personnel were reviewed during site visit. The training would be provided to the concern personnel as required. Thus, they are competent to carry out the relevant tasks with sufficient accuracy. All necessary monitored and measured raw data were checked during on-site verification.

All internal data are subjected to QA/QC measures. All monitored data are archived in Physical and Electronic form. The data will be stored for 2 years after the end of crediting period or till the last issuance of VERs for this project activity whichever occurs later.

The QA/QC measures were found acceptable by verifying the daily generation log books and also in the electronic form for individual machines. The daily generation details were also verified through each customer database by the DOE.

Related Findings

- No CARs, CLs or FARs have been identified in this context
- The following finding(s) have been addressed:

Final Assessment

The allocation of responsibilities is documented in a written form and is followed as described in the validated PD^{/PD/}. Calculations laid down in the monitoring report are in line with validated PD^{/PD/}. The monitoring personnel are well trained and follow reproducible routines. Thus, they have the necessary competence to carry out the relevant tasks with sufficient accuracy. The training schedules for the monitoring personnel's were checked by the verification team during the on-site verification. Day to day operation is supervised by the site manager. He has the responsibility to supervise the O&M personnel for around the clock operation and maintenance of the WEGs.

During on-site visit the verification team confirmed that the monitoring and reporting are carried out consistently and are in line with established procedures as mentioned in the monitoring plan of the validated PD^{/PD/}.

5 VERIFICATION CONCLUSION

M/s Resurge Energy Private Limited has commissioned the TÜV NORD JI/CDM Certification Program to carry out the verification of the project - “Bundle-V bundled grid connected wind power project in the state of Gujarat”, in India with regard to the requirements of VCS v3.1.

The project activity generates electricity which will be supplied to the NEWNE Grid of India and then distributed to connect end users, thus achieves GHG emission reduction.

Reporting period: From 2007-06-01 to 2009-05-25 (incl. both days)

A risk based approach has been followed to perform this verification. In the course of the verification one (01) Corrective Action Requests (CAR) and two (02) Clarification Requests (CL) were raised and successfully closed out. No Forward Action Request (FAR) was raised during the VCS validation.

The verification is based on the draft monitoring report, revised monitoring report, the monitoring plan as set out in the validated PD, the validation report, emission reduction calculation spreadsheet and supporting documents made available to the TÜV NORD JI/CDM CP by the project participant.

In detail the conclusions can be summarised as follows:

- all operations of the project are implemented and installed as planned and described in the validated project description.
- the monitoring plan is in accordance with the applied approved methodology ,ie, ACM 0002, version 09 - “Consolidated Methodology for grid connected electricity generation from renewable sources”
- the installed equipment essential for measuring parameters required for calculating emission reductions is calibrated appropriately.
- the monitoring system is in place and functional. The project has generated GHG emission reductions.

As the result of the 1st periodic verification, the verifier confirms that the GHG emission reductions are calculated without material misstatements in a conservative and appropriate manner. TÜV NORD JI/CDM CP herewith confirms that the project has achieved emission reductions in the above mentioned reporting period as follows:

Monitoring Period	Total achieved VCUs
June 2007 to December 2007	4285
Total for the year 2007	4285
Jan 2008 to December 2008	26276
Total for the year 2008	26276
Jan 2009 to May 2009	8002

Total for the year 2009	8002
TOTAL (tCO₂e)	38,563

Project emissions 0 t CO2 equivalents
 Baseline emissions 38,563 t CO2 equivalents
 Leakage 0 t CO2 equivalents
Net GHG Emission reductions or removals 38,563 t CO2 equivalents

Bangalore, 2011-09-28

Essen, 2011-09-28




Ma.Paa.Puratchikkanal
 TÜV India Pvt Ltd
 Verification Team Leader

Ingo Klein
 TÜV NORD JI/CDM Certification Program
 Final Approval

6 REFERENCES
Table 6-1: Documents provided by the project participant

Reference	Document
/Test/	Calibration reports for all the energy meters in the project activity
/CR1/	Commissioning certificates dated 30.06.2007 & 28.07.2007 of 3x1.50 MW (SEL/1500/07-08/0611, SEL/1500/07-08/0610 & SEL/1500/07-08/0611) turbines at Suthri Village from the GEDA
/CR2/	Commissioning certificate dated 17.01.2008 of 1x1.50 MW (SEL/1500/07-08/0831) turbines at Moti Sindholi Village from the GEDA
/CR3/	Commissioning certificate dated 26.09.2007 of 1x1.50 MW (SEL/1500/07-08/0674) turbines at Moti Sindholi Village from the GEDA
/CR4/	Commissioning certificate dated 29.03.2008 of 1x0.60 MW (SEL/1500/07-08/1169) turbines at Visawada Village from the GEDA
/CR5/	Commissioning certificate dated 29.03.2008 of 1x0.60 MW (SEL/1500/07-08/0907) turbines at Kuchhdi Village from the GEDA
/CR6/	Commissioning certificates dated 05.01.2008, 03.10.2007, 02.10.2007 & 07.02.2008 of 1x0.60 MW (VRRB/600/07-08/722, VRRB/600/07-08/723, VRRB/600/07-08/724, VRRB/600/07-08/725, VRRB/600/07-08/726, VRRB/600/07-08/727, VRRB/600/07-08/728, VRRB/600/07-08/729 & VRRB/600/07-08/730) turbines at Kumbhariya & Chandrodi Villages from the GEDA
/CR7/	Commissioning certificates dated 26.05.2007 of 1x0.60 MW (VRRB/600/07-08/522 & VRRB/600/07-08/523) turbines at Khodasar & Chandrodi Villages from the GEDA
/CR8/	Commissioning certificate dated 26.05.2007 of 1x0.60 MW (VRRB/600/07-08/524) turbines at Chandrodi Village from the GEDA
/CR9/	Commissioning certificate dated 26.05.2007 of 1x0.60 MW (VRRB/600/07-08/544) turbines at Chandrodi Village from the GEDA
/CR10/	Commissioning certificate dated 26.05.2007 of 1x0.60 MW (VRRB/600/07-08/551) turbines at Chandrodi Village from the GEDA
/TD/	Technical specification of the WTGs.

Reference	Document
/PPA1/	Power Purchase Agreements between GEDA and M/s. O.P. Enterprises for the WTGs SEL/1500/07-08/0611, SEL/1500/07-08/0610 & SEL/1500/07-08/0611 dated 16.10.2007
/PPA2/	Power Purchase Agreement between GEDA and M/s. Chaphalkar Brothers-Pune for the WTG SEL/1500/07-08/0831 dated 10.10.2008
/PPA3/	Power Purchase Agreement between GEDA and M/s. Govindram Shobharam & Co. for the WTG SEL/1500/07-08/0674 dated 21.01.2008
/PPA4/	Power Purchase Agreement between GEDA and M/s. Cinemax India Ltd. for the WTG SEL/1500/07-08/1169 dated 27.08.2008
/PPA5/	Power Purchase Agreement between GEDA and M/s. Raj International Ltd. for the WTG SEL/1500/07-08/0907 dated 26.08.2008
/PPA6/	Power Purchase Agreements between GEDA and M/s. Brindavan Beverages Pvt. Ltd. for the WTG VRRB/600/07-08/722, VRRB/600/07-08/723, VRRB/600/07-08/724, VRRB/600/07-08/725, VRRB/600/07-08/726, VRRB/600/07-08/727, VRRB/600/07-08/728, VRRB/600/07-08/729 & VRRB/600/07-08/730 dated 03.12.2007
/PPA7/	Power Purchase Agreements between GEDA and M/s. Brindavan Beverages Pvt. Ltd. for the WTG VRRB/600/07-08/522 & VRRB/600/07-08/523 dated 28.05.2007
/PPA8/	Power Purchase Agreement between GEDA and M/s. Brindavan Threads Pvt. Ltd. for the WTG VRRB/600/07-08/524 dated 28.05.2007
/PPA9/	Power Purchase Agreement between GEDA and M/s. Cauvery Aqua Pvt. Ltd. for the WTG VRRB/600/07-08/544 dated 28.05.2007
/PPA10/	Power Purchase Agreement between GEDA and M/s. South India Beverages Pvt. Ltd for the WTG VRRB/600/07-08/551 dated 28.05.2007
/PO/	Purchase orders for all the 21 WTGs by all the 9 investors
/JMR/	Joint meter reading reports for all the 21 WTGs
/O&M/	Operation & Maintenance agreement for all the 21 WTGs between all the investors and the WTG suppliers M/s. Suzlon Infrastructure Services Ltd. and M/s. Vestas RRB Energy Limited

Reference	Document
/UD-LET/	Undertaking letter from Resurge Energy PVT.LTD, the project participant of “Bundle-V bundled grid connected wind power project in the state of Gujarat” regarding claim for VER/VCU under VCS standard.
/ER/	<ul style="list-style-type: none"> • Emission reduction calculation spread sheet, version 01 • Emission reduction calculation spread sheet, version 02
/MR/	<ul style="list-style-type: none"> • Monitoring report, version 01 “Bundle-V bundled grid connected wind power project in the state of Gujarat”, dated 06/07/2009 • Monitoring report, version 02 “Bundle-V bundled grid connected wind power project in the state of Gujarat”, dated 08/02/2010 • Monitoring report, version 03 “Bundle-V bundled grid connected wind power project in the state of Gujarat”, dated 21/09/2011
/PD7/	VCS PD for M/s. Resurge Energy Private Limited dated at 14/05/2009, Version 7
FVaIR	Final validation report dated 25/05/2009
/VCS-STAI	VCS validation statement

Table 6-2: Background investigation and assessment documents

Reference	Document
/ACM 0002/	Indicative simplified baseline and monitoring methodologies for selected large-scale CDM project activity categories (Version 9)
/ACM 0002/	Tool for the demonstration and assessment of additionality (Version 05.2)
/ACM 0002/	Tool to calculate the emission factor for an electricity system (Version 01.1)
/IPPC-RM/	1996 IPCC Guidelines for National Greenhouse Gas Inventories: work book 2006 IPCC Guidelines for National Greenhouse Gas Inventories: work book

Table 6-3: Websites used

Reference	Link	Organisation
/cd4cdm/	www.cd4cdm.org	UNEP Riso Centre
/ipcc/	www.ipcc-nggip.iges.or.jp	IPCC publications
/vcs/	www.v-c-s.org	VCSA
/unfccc/	http://cdm.unfccc.int	UNFCCC

Table 6-4: List of interviewed persons

Reference		Name	Organisation / Function
/IM01/	<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms.	Amol Potdar	Engineer, M/s.Vestas RRB Energy Limited
/IM01/	<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms.	Malhar Desai	Senior Manager, M/s. Suzlon Infrastructure Services Ltd
/IM01/	<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms.	Bipin Modi	Senior Engineer, M/s. Suzlon Infrastructure Services Ltd
/IM02/	<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms.	Parish Gupta	Head, Business Development, Resurge Energy Private Limited
/IM02/	<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms.	M.P. Dhruv	Director, Resurge Energy Private Limited
/IM02/	<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms.	J.H. Savalia	Director, Resurge Energy Private Limited

¹⁾ Means of Interview: (Telephone, E-Mail, Visit)