

VALIDATION AND VERIFICATION REPORT FOR TEJUVA – CHANDGARH WIND PROJECT



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Summary:

A description of the project:

The project activity is a new facility (Greenfield) and it plans to utilize wind energy to generate electricity and supply it to distribution licences which is a part of the NEWNE (Northern, Eastern, Western and North-Eastern) grid of India. The project activity envisages implementation of a total of 192.8 MW wind power project which is using Suzlon make (2.1 MW) S97 model WTG at Tejuva site and Gamesa make (2.0 MW) G97 & G114 model WTG at Chandgarh site in India.

A description of the validation and verification:

The “CLP Wind Farms (India) Private Limited” (hereinafter called CLP) has commissioned URS Verification Private Limited (URS) for the validation and verification of GHG project: “Tejuva – Chandgarh Wind Project”, with regard to the relevant requirements of the VCS Guidelines/VCSA Rules for project activities, as well as criteria for consistent project operations, monitoring and reporting. The project activity is located at two wind sites viz. Tejuva site in Jaisalmer district in the state of Rajasthan and Chandgarh site in the state of Madhya Pradesh in India. The project activity involves implementation of a total of 192.8 MW wind power project which is using Suzlon make (2.1 MW) S97 WTG model at Tejuva site and Gamesa make (2.0 MW) G97 and G114 WTG model at Chandgarh site in India. The project activity utilises wind power to generate clean power with a view to bring in Greenhouse Gas Emission Reductions.

The purpose and scope of validation and verification:

The purpose of a joint validation and verification is to have an independent third party assessment of the project design, monitoring plan and achieved GHG emission reductions. In particular, the project's baseline, monitoring plan and the project's compliance with relevant VCS criteria are validated and GHG emission reduction are verified in order to confirm that the project design and achieved GHG emission reductions, as documented, are sound and reasonable and meets the identified criteria. The

Joint Validation & verification is a requirement for all VCS projects and is seen as necessary to provide assurance to stakeholders of the quality of the project and its intended generation of Verified Carbon Units (VCUs).

The validation & verification scope is defined as an independent and objective review of the joint project description & monitoring report. The Joint PD & MR is reviewed against the relevant criteria (see below) and decisions by the VCS Board, including the approved baseline and monitoring methodology. The joint validation & verification is not meant to provide any consulting towards the project proponents. However, stated requests for clarifications and/or corrective actions may have provided input for improvement of the project design.

The scope of the joint validation & verification is the independent and objective review and ex-post determination of the monitored reductions in GHG emission by the project activity. The joint validation & verification is based on the Joint PD & MR. The project is assessed against the requirements of the VCS standard 3.5 and guidance.

The method and criteria used for validation and verification:

The validation and verification consists of the following three phases:

- I) a desk review of the Joint Project Description & Monitoring Report and ER spreadsheet with all supportive documents.
- II) on-site visit and follow-up interviews with project stakeholders.
- III) the resolution of outstanding issues and the issuance of the final Joint Validation and Verification report and opinion.

The project compliance is checked against VCS Standard version 3.5, VCS Validation & Verification Manual version 3.1, VCS Program Guide version 3.5 and other VCS rules.

Any findings, restrictions of uncertainties related to the validation and verification:

There are no restrictions of uncertainties related to this joint validation and verification. There were 7 CARs and 0 CLs raised which were closed satisfactorily. The details of the findings (CARs & CLs) are provided in Appendix I.

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1 INTRODUCTION

1.1 Objective

CLP Wind Farms (India) Private Limited has commissioned an independent joint validation & verification by URS Verification Private Limited (URS) of its VCS project activity “Tejuva – Chandgarh Wind Project”.

The objective of joint validation & verification is to have an independent third party assessment of the project design, actual monitoring systems & procedures and achieved GHG emission reductions. In particular the project's baseline, the monitoring plan and the project's compliance with

- VCS Standard (version 3.5) dated 25/03/2015 /24/
- VCS Validation & Verification manual (version 3.1) dated 08/10/2013 /24/
- VCS Program Guide (version 3.5) dated 08/10/2013 /24/
- VCS Program Definitions (version 3.5) dated 08/10/2013 /24/
- VCS Registration and Issuance process (version 3.6) dated 25/03/2015 /24/
- ACM0002 (version 17) dated 13/05/2016 /25/
- Other relevant rules, including the host country legislation

The project is jointly validated & verified in order to confirm that the VCS project design, actual monitoring systems & procedures and achieved GHG emission reductions as documented is sound and reasonable and meets the stated requirements and identified criteria. Validation and Verification is seen as necessary to provide assurance to stakeholders on the quality of the project and its intended generation of Verified Carbon Units (VCUs).

1.2 Scope and Criteria

The joint validation and verification scope is to have an independent and objective review of the project design, actual monitoring systems & procedures, achieved GHG emission reductions against the criteria as stated in VCS Standard (version 3.5) dated 25/03/2015 /24/ and relevant decisions by CDM EB including the large scale consolidated methodology ACM0002, version 17 /25/. It also includes evaluation of the GHG emission reduction data and expresses a conclusion with a reasonable level of assurance about whether the reported GHG emissions reduction data is free from material misstatement and to verify that the reported GHG emissions data is sufficiently supported by evidence. The joint validation & verification scope is given as a thorough independent and objective assessment of the project design, actual monitoring systems & procedures and achieved GHG emission reductions including especially the correct application of the methodology, the project's baseline study, additionality justification, stakeholder involvement,

environmental impacts and monitoring plan, achieved GHG emission reductions which are included in the Joint PD & MR and other relevant supporting documents, to ensure that the proposed VCS project activity meets all relevant and applicable criteria mentioned in VCS Standard (version 3.5) dated 25/03/2015. The joint validation and verification consists of the following phases

- desk review of the VCS Joint PD & MR /01/, project financials /03/, emission reductions excel spreadsheet /02/ and the associated documents
- site visit /29/
- follow-up interviews with project proponent and the stakeholders /29/
- resolution of issues and the issuance of the final joint validation & verification report and opinion.

The information included in the VCS Joint PD & MR /01/ and the supporting documents were reviewed and assessed against the requirements as set out by the VCS standard v 3.5. Project compliance is checked against VCS Standard version 3.5, VCS Validation & Verification Manual version 3.1, VCS Program Guide version 3.5 and other VCS rules /24/.

The joint validation and verification is based on the information made available to validation & verification team and on the contract conditions. The validation and verification is not meant to provide any consulting to the project participants. However, stated requests for clarifications and/or corrective actions may provide input for improvement of the project design and accuracy of the achieved GHG emission reductions.

1.3 Level of Assurance

The joint validation and verification has been carried out by reviewing the VCS Joint PD & MR, project financials, emission reductions spreadsheet and supporting documents made available to the assessment team and information collected through performing interviews and document review. Based on review of above mentioned documents, the assessment team is of the opinion that level of assurance is reasonable and that the GHG assertions and achieved GHG emission reductions are free of material errors, omissions and misrepresentations. The joint validation and verification opinion is assured provided the credibility of all above document.

1.4 Summary Description of the Project

The project activity is a wind power project set-up at two different wind sites viz. Tejuva site in Jaisalmer district in the state of Rajasthan, India and Chandgarh site in the state of Madhya Pradesh, India. The total capacity of the project activity is 192.8 MW /06/. The project activity has been implemented in two phases - the first phase i.e. Tejuva site with capacity of 100.8 MW (48 * 2.1 MW) using Suzlon make (2.1 MW), S97 WTGs has been installed at Dilawar ka gaon, Ishaniyo ki basti, Chattrei villages in the district. of Jaisalmer, Rajasthan and second phase i.e. Chandgarh site with capacity of 92 MW (46 * 2 MW) using Gamesa make (2.0 MW) G97 and

G114 WTGs has been installed at Agrod, Amona, Bardu, Bercha, Bhayagaion, Bhikhedhi, Chandgarh, Chayan hazam, Guradiya Surdas, Jamodi, Mohammed kheda, Raheli, Rranayalkala and Samgi villages in the district of Dewas and Shajapur, Madhya Pradesh.

The project activity utilises wind power to generate clean power with a view to bring in greenhouse gas emission reductions. The first machine under this project activity was commissioned on 29/03/2015 /11/ and last machine was commissioned on 29/12/2015 /11/.

The project activity is a new facility (Greenfield) and it plans to utilize wind energy to generate electricity and supply it to distribution licences which is a part of the NEWNE (Northern, Eastern, Western and North-Eastern) grid of India. In the absence of project activity, quantity of the electricity that would be delivered to the NEWNE grid would be sourced from the existing grid-connected fossil fuel based power plants and future capacity additions to meet the growing electricity requirements.

The latitude and longitude as provided in the VCS Joint PD & MR is cross checked by the URS assessment team at the project site during the site visit to the project locations and found correct.

The date of commissioning as provided in the VCS Joint PD & MR were verified with commissioning certificates of the project activity and found to be correct. The technical specifications of WTGs mentioned in VCS Joint PD & MR were verified with the technical specifications provided by the equipment suppliers and found to be correct. The description of the project mentioned by the PP in the Joint PD & MR was found to be accurate and complete.

The validation and verification team confirms that the technology implemented reflects the current good practice in the host country. Implementation of the project activity doesn't involve any technology transfer from Annex-1 countries to host country. The technology given in the VCS Joint PD & MR is consistent with the actual planning and implementation of the project activity.

The project activity is expected to supply 368.856 GWh of electricity to the NEWNE Grid of India each year. This is expected to result in emission reductions of 364,244 tCO₂e per year of operation.

URS is able to verify all the documented evidence listed above in relevant sections during the joint validation & verification process and is able to confirm that data and considerations are complete and accurate. Moreover URS confirms that the description of the proposed VCS project activity, as contained in the VCS Joint PD & MR sufficiently covers all relevant elements, is accurate and complete and that it provides the reader with a clear understanding of the nature of the proposed VCS project activity.

2 VALIDATION AND VERIFICATION PROCESS

2.1 Method and Criteria

The joint validation & verification was conducted using URS procedures in line with the requirements as specified in CDM M&P, VCS Standard (version 3.5) dated 25/03/2015, VCS Validation & Verification manual (version 3.1) dated 08/10/2013 and relevant decision of CDM EB by applying standard auditing techniques:

The joint validation and verification consists of the following phases:

- a. desk review of the VCS Joint PD & MR, Project financials, Emission reductions spreadsheet and the associated documents.
- b. site visit.
- c. follow-up interviews with project proponent and the stakeholders.
- d. resolution of issues and the issuance of the Joint Validation & Verification Report and opinion.

2.2 Document Review

The initial VCS Joint PD & MR for the project activity “Tejuva – Chandgarh Wind Project” version 01 dated 23rd August 2016, subsequent versions and final VCS Joint PD & MR version 03 dated 23/09/2016 were reviewed. The document review includes the assessment of relevant section of the VCS Joint PD & MR and the emission reduction calculations provided in the form of excel spread sheet.

The following documents were assessed or referenced as part of joint validation & verification:

Sl. No	Name of the Document
/01/	- VCS Joint PD & MR (ver 01) dated 10/08/2016 for the project activity “Tejuva – Chandgarh Wind Project”. - VCS Joint PD & MR (ver 02) dated 19/09/2016 for the project activity “Tejuva – Chandgarh Wind Project”. - VCS Joint PD & MR (ver 03) dated 23/09/2016 for the project activity “Tejuva – Chandgarh Wind Project”.
/02/	Excel spread sheets for Emission Reduction calculations and Grid Emission Factor corresponding to VCS Joint PD & MR (ver 01) dated 10/08/2016, VCS Joint PD & MR (ver 02) dated 19/09/2016 and VCS Joint PD & MR (ver 03) dated 23/09/2016.
/03/	- Excel spread sheets for Investment analysis and sensitivity analysis for the project activity corresponding to VCS Joint PD & MR (ver 01) dated 10/08/2016. - Excel spread sheets for Investment analysis and sensitivity analysis for the project activity corresponding to VCS Joint PD & MR (ver 02) dated 19/09/2016. - Excel spread sheets for Investment analysis and sensitivity analysis for the project activity corresponding to VCS Joint PD & MR (ver 03) dated 23/09/2016.
/04/	Board Resolution dated 09/01/2012 for the project site at Tejuva of the project activity

Sl. No	Name of the Document
	Board Resolution dated 10/12/2014 for the project site at Chandgarh of the project activity
/05/	Declaration dated 12/09/2016 on CLP being sole project proponent, sole right of use of emissions reductions, no binding limits on GHG emission, not part of any compliance market & emission trading program, not rejected by any other GHG program.
/06/	- Technical specifications for the WTG S97 (Suzlon, 2.1 MW capacity each) installed at Tejuva site in Rajasthan, India. - Technical specifications for the WTG G114 (Gamesa, 2 MW capacity each) installed at Chandgarh site in Madhya Pradesh, India. - Technical specifications for the WTG G97 (Gamesa, 2 MW capacity each) installed at Chandgarh site in Madhya Pradesh, India.
/07/	Wind Energy Assessment report by Third party
/08/	- Proposal from technology supplier (Suzlon) dated 26/07/2011. - Proposal from technology supplier (Gamesa) dated 26/09/2014
/09/	- Purchase Order/MoU/Agreement for the WTGs installed at Tejuva - Purchase order dated 11/01/2012 to Suzlon Energy Limited from CLP Wind Farms (India) Private Limited for supply of S97 Suzlon 2100 kW WTGs. - Purchase order dated 11/01/2012 to Suzlon Energy Limited from CLP Wind Farms (India) Private Limited for supply of Tubular tower. - Purchase order dated 11/01/2012 to Suzlon Energy Limited from CLP Wind Farms (India) Private Limited for supply of Transformers. - Purchase order dated 11/01/2012 to Suzlon Gujarat Wind Park Limited from CLP Wind Farms (India) Private Limited for undertaking Electrical works. - Purchase order dated 11/01/2012 to Suzlon Gujarat Wind Park Limited from CLP Wind Farms (India) Private Limited for undertaking Civil works. - Memorandum of Understanding dated 11/01/2012 between Suzlon Gujarat Wind Park Limited and CLP Wind Farms (India) Private Limited for availing Land for the project activity. - Agreement dated 11/01/2012 between Suzlon Power Infrastructure Limited and CLP Wind Farms (India) Private Limited for Power Acquisition. - Purchase Order dated 11/01/2012 to Suzlon Gujarat Wind Park Limited from CLP Wind Farms (India) Private Limited for Erection, Installation and Commissioning of the WTGs. - Purchase Order dated 11/01/2012 to Suzlon Energy Limited from CLP Wind Farms (India) Private Limited for Rotor Blades. - Agreement dated 11/01/2012 between Suzlon Energy Limited and CLP Wind Farms (India) Private Limited for Operation & Maintenance services. - Agreement dated 11/01/2012 between Suzlon Energy Limited and CLP Wind Farms (India) Private Limited for Maintenance of (Parts & Consumables).
/10/	- Purchase Order/MoU/Agreement for the WTGs installed at Chandgarh - Wind Power Project Agreement (development, supply and erection and commissioning agreement) dated 15/12/2014 between Gamesa Wind Turbines Private Limited and CLP Wind Farms (India) Private Limited. - Operation and Maintenance Agreement dated 15/12/2014 between Gamesa Wind Turbines Private Limited and CLP Wind Farms (India) Private Limited.

Sl. No	Name of the Document
/11/	- Commissioning Certificate (Date of Commissioning-29/03/2015) for the WTGs with WTG ID as TJW 36, TJW 22, TJW 04, TJW 05, TJW 06, TJW 15, HBR 34, HBR 35, TJW 03, TJW 10, TJW 14, HBR 36 - Commissioning Certificate (Date of Commissioning-30/06/2015) for the WTGs with WTG ID as HBR 20, HBR 21, HBR 22, TJW 35, TJW 37, TJW 38, TJW 39, TJW 17, TJW 18 - Commissioning Certificate (Date of Commissioning-06/08/2015) for the WTGs with WTG ID as TJW 19, TJW 20, TJW 21, TJW 29, TJW 30, TJW 31, TJW 42, TJW 43, TJW 45, HBR 23, HBR 24, HBR 25, HBR 27, HBR 28, HBR 29, TJW 02 - Commissioning Certificate (Date of Commissioning-14/08/2015) for the WTGs with WTG ID as TJW 33, TJW 40, TJW 41, TJW 07 - Commissioning Certificate (Date of Commissioning-28/08/2015) for the WTGs with WTG ID as HBR 30, HBR 31, HBR 32, HBR 33, HBR 37, TJW 34, TJW 01 - Commissioning Certificate (Date of Commissioning-31/03/2015) for the WTGs with WTG ID as R-1, R-4, R-17N, R-70, R-89, R-97, R-109, R-111, R-112, R-113, R-115, R-121 - Commissioning Certificate (Date of Commissioning-31/03/2015) for the WTGs with WTG ID as R-1, R-4, R-17N, R-70, R-89, R-97, R-109, R-111, R-112, R-113, R-115, R-121 - Commissioning Certificate (Date of Commissioning-30/06/2015) for the WTGs with WTG ID as R-16N, R-24N, R-54N, R-40, R-42, R-94N2, R-69N1, R-108, R-103N - Commissioning Certificate (Date of Commissioning-30/10/2015) for the WTGs with WTG ID as R-79, R-84N, R-85N, R-87, R-101N, R-106, R-35N, R-47, R60N, R-104N - Commissioning Certificate (Date of Commissioning-29/12/2015) for the WTGs with WTG ID as R-62, GCH-30, GCH-160, GCH-156, GCH-196, GCH-185N, GCH-191N1, GCH-147, GCH-220A1, GCH-157, GCH-224N, GCH-248, GCH-222A3, GCH-250N, GCH-252
/12/	- Power Purchase Agreement dated 18/03/2015 between CLP India Pvt. Ltd. and Jodhpur Vidyut Vitaran Nigam Limited - Power Purchase Agreement dated 07/08/2015 between CLP India Pvt. Ltd. and Madhya Pradesh Power Management Company Limited
/13/	Communication (E-mail dated 02/12/2015) from technology supplier to PP on change in the WTG installed capacity at Chandgarh project site.
/14/	- Calibration Certificate (23/01/2015) for the Electricity meters for the WTGs installed at Tejuva location of the project activity. - Calibration Certificate (26/03/2015) for the Electricity meters for the WTGs installed at Chandgarh location of the project activity.
/15/	- Communication dated 05/09/2014 to CLP India Pvt. Ltd. on the Insurance cost for the installed WTGs corresponding to the Chandgarh site of the project activity. - Insurance Quote dated 17/11/2011 to CLP India Pvt. Ltd. for the installed WTGs corresponding to the Tejuva site of the project activity.
/16/	- Invitations and Notices/Advertisement for conducting the local stakeholder consultation meeting on 22/02/2012 for the Tejuva project site under the project activity. - Attendance sheet for the local stakeholder consultation meeting held on 22/02/2012 for the Tejuva project site under the project activity. - Photographs for the local stakeholder consultation meeting held on 22/02/2012 for

Sl. No	Name of the Document
	the Tejuva project site under the project activity. • Invitations and Notices/Advertisement for conducting the local stakeholder consultation meeting on 08/09/2016 for the Chandgarh project site under the project activity. • Attendance sheet for the local stakeholder consultation meeting held on 08/09/2016 for the Chandgarh project site under the project activity. • Photographs for the local stakeholder consultation meeting held on 08/09/2016 for the Chandgarh project site under the project activity.
/17/	• Quotation received from K M Dastur Reinsurance Brokers Pvt. Ltd. dated 18/11/2011 • Quotation received from K M Dastur Reinsurance Brokers Pvt. Ltd. Dated 05/09/2014
/18/	• RERC Tariff Order dated 14/12/2011 http://www.erc.rajasthan.gov.in/TariffOrders/Order120.pdf • CERC Tariff Order dated 14/12/2011 http://www.cercind.gov.in/2010/November/Signed_Order_256-2010_RE_Tariff_FY_11-12.pdf • MPERC Tariff Order dated March 2013 http://www.mperc.nic.in/26032013-Wind-tariff-order.pdf • CERC Tariff order dated 27/03/2012 http://www.cercind.gov.in/2012/orders/RE_35_2012.pdf • MNRE GBI Guidelines dated 17/12/2009 http://www.inwea.org/others/OPERATIONAL_GUIDELINES.pdf • MNRE GBI Guidelines dated 04/09/2013 http://mnre.gov.in/file-manager/grid-wind/gbi-scheme.pdf
/19/	• Indian IT Act for Financial Year 2011-12 http://indiabudget.nic.in/ub2010-11/bh/bh1.pdf http://indiabudget.nic.in/ub2010-11/fb/bill91.pdf • Indian IT Act for Financial Year 2014-15 http://taxguru.in/income-tax/income-tax-rate-chart-assessment-year-201516-financial-year-201415.html http://indiabudget.nic.in/budget2013-2014/ub2013-14/fb/bill31.pdf • Companies Act Schedule XIV http://www.mca.gov.in/Ministry/latestnews/Explanatory_Statement_alongwith_Schedule_XIV_4dec2008.pdf

Sl. No	Name of the Document
	Appendix IA of IT Rules http://www.incometaxindia.gov.in/charts%20%20tables/depreciation%20rates.htm
/20/	Central Electricity Authority: CO₂ Baseline data base for the Indian Power Sector User Guide Version 10 of Central Electricity Authority dated December 2014. http://cea.nic.in/reports/others/thermal/tpece/cdm_co2/user_guide_ver10.pdf used as a reference in Baseline Scenario
/21/	- Ministry of Environment & Forests, Govt. of India.- Environmental Impact Assessment Amendment notification (http://moef.nic.in/downloads/rules-and-regulations/3067.pdf%20dated%2001/12/2009) - Ministry of Environment & Forests, Govt. of India.- Environmental Impact Assessment notification dated 14/09/2006 (http://envfor.nic.in/legis/eia/so1533.pdf) - Notification dated 24/12/2013 (http://envfor.nic.in/sites/default/files/ia-24122013.pdf) given by the Ministry of Environment and Forests under the Environment (Protection) Act 1986
/22/	Ministry of New and Renewable Energy: Guideline for Generation Based Incentive for Grid Connected Wind Power Projects dated 16/12/2011 (http://www.pib.nic.in/newsite/erelease.aspx?relid=78829)
/23/	CEA Notification (No. 502/70/CEA/DP&D) dated 17/03/2006 for regulations on regulating the installation and operation of meters.
/24/	- Voluntary Carbon Standard: Validation and Verification Manual version 3.1 dated 08/10/2013 http://database.v-c-s.org/program-documents - Voluntary Carbon Standard: VCS Standard version 3.5 dated 25/03/2015 http://database.v-c-s.org/program-documents - Voluntary Carbon Standard: VCS Program Guide version 3.5 dated 08/10/2013 http://database.v-c-s.org/program-documents
/25/	Large Scale Consolidated Methodology (ACM0002) – “Grid-connected electricity generation from renewable sources” version 17.0 dated 13/05/2016. http://cdm.unfccc.int/methodologies/DB/8W400U6E7LFHHYH2C4JR1RJWWO4PVN
/26/	Tool for the demonstration and assessment of additionality, Version-07, Annex-08 of EB 70 Report https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-01-v7.0.0.pdf
/27/	Methodological tool for Investment analysis, Version-06, Annex-12 of EB 85 Report https://cdm.unfccc.int/Reference/tools/index.html
/28/	Tool to calculate the emission factor for an electricity system Version 05.0.0, Annex 9 of EB 87 Report http://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-07-v5.0.pdf
/29/	- DOE Site visit on 07/09/2016 and 09/09/2016 for Tejuva site, Rajasthan and Chandgarh site, Madhya Pradesh, India - Attendance sheet based on the Interviews of Project Proponent and Local Stakeholders of the project activity. - Follow-up interviews with project proponent and the stakeholders

Sl. No	Name of the Document
/30/	- Credit subdivision of Energy issued by the O&M contractor for the months including the monitoring period from 29/03/2015 to 31/07/2016 for the Tejuva site in the project activity. - Credit report issued by the O&M contractor contractor for the months including the monitoring period from 29/03/2015 to 31/07/2016 for the Chandgarh site in the project activity. - Invoices for the for the months including the monitoring period from 29/03/2015 to 31/07/2016 for the Tejuva and Chandgarh site in the project activity.

2.3 Interviews

The DOE assessment team has carried out interviews with operational staff and project proponents 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 VCS.

During joint validation & verification, the assessment team has performed site visit and interviews to confirm selected information and to resolve issues identified in the document review. The main topics of the interviews are summarized in table 1.

Table 1: Interviewed persons and interview topics during the site visit of the project activity – "Tejuva – Chandgarh Wind Project" located in Jaisalmer district of Rajasthan and Dewas & Shajapur district of Madhya Pradesh, India. The site visit was carried out on 07/09/2016 for Jaisalmer site and 09/09/2016 for Dewas & Shajapur site of the project activity /29/:

	Date	Name and Role	Organization	Topic
/1/	07/09/2016	Amit Deboriya, Dy. Manager	CLP Wind Farms Ltd., Tejuva site	- Project conception, initial discussions, investment decision, project technical details, monitoring system, calibration practice and frequency - Detailed check of monitoring report and ER sheet against the supporting documents (Credit report, invoices) - Check of installation of WTG and metering provision for electricity exported to grid. - Check of calibration record of meters - Check of procedures and implementation of O&M schedules - Check of all the supporting documents (commissioning certificates, wind energy
/2/	07/09/2016	Prateek Soni, Asst. Manager	CLP Wind Farms Ltd., Tejuva site	
/3/	07/09/2016	Rajeev K. Saxena, Sr. Manager	SGSL, Tejuva site	
/4/	07/09/2016	V Mohan, Asst. Manager	SGSL, Tejuva site	
/5/	09/09/2016	Sandip Saha, DM	CLPWF, Chandgarh site	
/6/	09/09/2016	Abhishek Kasyap, Trainee Engineer	JAAC, Chandgarh site	
/7/	09/09/2016	Kajal Rout, Manager	CLPWF, Chandgarh site	
/8/	09/09/2016	Bidhan Swan, Sr. Engineer	Gamesha, Chandgarh site	
/09/	09/09/2016	Hreeday Kumar Paul, Engineer	Gamesha, Chandgarh site	

	Date	Name and Role	Organization	Topic
				purchase agreement, internal audit reports, operation and maintenance agreement, training certificates, daily generation reports etc.).

2.4 Site Inspections

On 07/09/2016 & 09/09/2016 /29/, Mr. Amit Ranjan Mandal (Lead Assessor) visited the project site in Jaisalmer district in Rajasthan state and Dewas & Shajapur district in Madhya Pradesh state of India respectively to resolve question and issues identified during offsite review of documents and to gain additional information regarding the compliance of the project with the relevant criteria applicable for VCS. The assessment team has carried out interviews with operational staff and project proponents in order to assess the information included in the project documentation.

2.5 Resolution of Findings

During joint validation & verification, assessment team considered the following steps to resolve the material discrepancy.

1) Handling Nonconformities

Nonconformities raised during the joint validation & verification can either be seen as a non-fulfilment of criteria ensuring the proper implementation of a project or where a risk to deliver high quality emission reductions is identified.

A **Corrective Action Request (CAR)** will be 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 validation & verification of the project with certain characteristics have not been met or
- There is a risk that the project would not be registered by the VCS 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 next verification.

For a detailed list of all CARs, CLs and FARs raised in the course of the validation, please refer the Appendix-I.

2) Draft Joint Validation & Verification Report

After reviewing all relevant documents and taken all other relevant information into account, the assessment team issued all findings in the course of a draft validation & verification report and submitted this report to the project proponent in order to respond on the issues raised and to revise the project documentation accordingly.

3) Final Joint Validation & Verification Report

Based on the project proponent replies & revised documents, the requests are “closed out” by the assessment team in case the response is assessed as sufficient. In case of raised FARs the project proponent has to respond on this, identifying the necessary actions to ensure that the topics raised in this finding are likely to be resolved at the latest during the subsequent verification. The assessment team has to assess whether the proposed action is adequate or not.

In case the findings from CARs and CLs cannot be resolved by the project proponent or the proposed action related to the FARs raised cannot be assessed as adequate, no positive validation & verification opinion can be issued by the assessment team.

4) Technical review

Before submission of the final joint validation & verification report to VCS board, a technical review of the whole validation & verification procedure will be carried out. The technical reviewer is a competent qualified person being appointed for the scope this project falls under. The technical reviewer will not be considered to be part of the assessment team and thus not involved in the validation & verification.

As a result of the technical review process, the validation & verification opinion and the topic specific assessments as prepared by the validation & verification team leader may be confirmed or revised. Furthermore reporting improvements might be achieved.

5) Final approval

After successful technical review of the final report, the request for registration & issuance can be started (in case of a positive opinion).

Considering the above mentioned technique, validation team found 07 Corrective Action Requests (CARs) and 0 Clarifications (CLs) as inconsistencies during the document review and site visit. The CARs and CLs raised by validation & verification team are provided in Appendix 1 of this report.

2.5.1 Forward Action Requests

In this project activity, no forward action request has been raised by the validation & verification team.

3 VALIDATION FINDINGS

3.1 Project Details

- Project type, technologies and measures implemented, and eligibility of the project**

The project activity involves implementation of 192.8 MW wind power project consisting of Suzlon make (S97 model) 48 WTGs of individual capacity 2.1 MW in Rajasthan, India and Gamesa make 45 numbers of WTGs of G97 model and 1 number of WTG of G114 model of individual capacity 2.0 MW in Madhya Pradesh, India by CLP Wind Farms (India) Private Limited /06/.

The electricity generated by the project will be exported to the NEWNE electricity grid. The project will therefore displace an equivalent amount of electricity which would have otherwise been generated by fossil fuel dominant electricity grid. The project proponent plan to avail the VCS benefits for the project activity.

The technical details of the technologies are as mentioned below /06/:

Turbine model	Suzlon S-97
Operating Data	
Rated power	2.1 MW
Cut-in wind speed	4.0 m/s
Rated wind speed	11 m/s
Cut-out wind speed	20 m/s
Wind Class	IIIA
Blade	
Length	47.3 m
Types of aerodynamic brake	Pitch/full brake
Rotor	
Speed at rated power	15.46 rpm
Power Generation	DFIG inverter system
No of poles	4
Synchronous Speed	1500 rpm
Generator	
Type	Asynchronous 3 phase induction generator with slip rings operated with rotor circuit inverter system (DFIG)
Frequency	50Hz
Tower	
Type	Welded steel plate according to EN10025
Hub heights	90m

Turbine model	Gamesa G97
Operating Data	
Rated power	2.0 MW

Cut-in wind speed	3 m/s
Cut-out wind speed	25 m/s
Wind Class	IIA/ IIIA
Blade	
Length	47.5 m
Material	Composite material with fiberglass, carbon fiber and pre-peg.
Rotor	
Rotor diameter	97 m
Swept area	7389.8 m ²
Rotational speed	9.6 – 17.8 rpm
Control	Variable pitch and speed
Hub	
Material	Nodular cast iron
Generator	
Type	Doubly-fed with coil rotor and slip rings
Voltage (Vac)	690
Tower	
Type	Tubular truncated cone
Height	Height of 45 WTGs is 104 meter and one WTG of 93 meter
Gearbox	
Type	1 stage planetary / 2 parallel
Ratio	1:106.8 (50Hz)/ 1:127.1 (60Hz)

Turbine model	Gamesa G114
Operating Data	
Rated power	2.0 MW
Blade	
Length	56 m
Rotor	
Rotor diameter	114 m
Swept area	10207 m ²
Rotational speed	13.97 rpm
Hub	
Material	Nodular cast iron
Generator	
Type	Doubly-fed with coil rotor and slip rings
Nominal power (kW)	2,070 (stator + rotor)
Voltage (Vac) 690	Voltage (Vac) 690
Tower	
Type	Conical barrel tube
Height	93 m
Gearbox	
Type	1 stage planetary / 2 parallel

The above technical description has been verified by the DOE during the site visit as well as document review i.e. purchase order /09/ and manufacturer's technical specifications /06/. All the WTGs installed in the project activity are already commissioned and details have been verified by the DOE and found correct. The project activity falls under "large project" scale category with sectoral scope as 01 - Energy Industry (Renewable/Non Renewable Sources). The capacity of the project activity is 192.8 MW. The project has applied the large scale consolidated methodology "*Grid-connected electricity generation from renewable sources*" (version 17) /25/.

- **Project Proponent and other entities involved in the project**

CLP Wind Farms (India) Private Limited is the project proponent for this project activity. This has been verified from the purchase orders and commissioning certificates. The project activity does not involve any other entities as part of the project activity. The right of use of PP for this project activity has been confirmed through the purchase orders and commissioning certificates of the WTGs installed under the project activity.

- **Project start date**

The first WTG machine under this project activity was commissioned on 29/03/2015 /11/ and it started emission reductions as part of the project activity. The last WTG machine was commissioned on 29/12/2015 /11/. The start date of project activity considered as 29/03/2015 has been found correct. The same has been confirmed through the commissioning certificate of the WTGs and found appropriate.

- **Project crediting period**

The project has stated generating GHG emission reductions from 29/03/2015 i.e. earliest date of commissioning of the WTG. Hence, the crediting period for VCS project begins on 29/03/2015 and ends on 28/03/2025 i.e. 10 years crediting period which can be renewed for maximum 2 times.

- **Project scale and estimated GHG emission reductions or removals**

The expected GHG emission reductions of this project activity are 3,64,244 tCO₂e per year /02/, which is greater than 3,00,000 tCO₂e/year. Hence it comes under "Large project" scale as per version 3.5 of VCS standard.

- **Project location**

The project activity is implemented in 2 phases. Phase-I i.e. Tejuva site with capacity of 100.8 MW (48 * 2.1 MW) has been installed at Dilawar ka gaon, Ishaniyo ki basti, Chattrei villages in the district of Jaisalmer, Rajasthan, India. Phase-2 i.e. Chandgarh site with capacity of 92 MW (46 * 2 MW) has been installed at Agrod, Amona, Bardu, Bercha, Bhayagaion, Bhikhedhi, Chandgarh, Chayan hazam, Guradiya Surdas, Jamodi, Mohammed kheda, Raheli, Rranayalkala and Samgi villages in the district of Dewas and Shajapur, Madhya Pradesh, India. The total capacity of the project activity is 192.8 MW.

The geo-coordinates and commissioning date of WTGs under the project activity has been checked by the DOE. Validation and Verification team has checked the location of WTGs during physical site visit and geographical coordinates are checked through GOOGLE EARTH and found to be correct.

- **Conditions prior to project initiation**

The project activity is a Greenfield activity and involves the installation of 192.8 MW wind energy based power plant for electricity generation. In the absence of the project activity, the equivalent power generation would have taken place from the fossil fuel dominated NEWNE Grid. Prior to implementation of this project activity, there was no project activity by the CLP Wind Farms (India) Private Limited at the location where the current project is located. Same amount of electricity was generated from other grid connected power plant.

- **Project compliance with applicable laws, statutes and other regulatory frameworks**

The project has received necessary approvals for development and commissioning of each WTG from the state Nodal agencies and is in compliance to the local laws and regulations. The assessment team has checked the commissioning certificates and power purchase agreements of all the WTGs and found correct. The EIA /21/ is not required for the proposed project activity since it is renewable energy generation from wind resources and it is clean in nature.

- **Ownership and other programs:**

- **Right of use**

Purchase orders /09/ and the commissioning certificates were reviewed by assessment team as rights of use accorded to the project proponent (CLP Wind Farms (India) Private Limited) and it is found to be acceptable.

- **Emissions trading programs and other binding limits**

The WTGs under proposed project activity are not part of any other project activity and also not applied with any other emission trading programs. Furthermore, PPs have provided declaration letter /05/ that the project is not involved in emission trading programs and other binding limits.

- **Other forms of environmental credit sought or received and eligible to be sought or received**

The project has not sought any other form of environmental credit. The declaration /05/ provided by the PP mentions that project has not sought any other environmental credits and will not claim in future and the same is acceptable to the assessment team.

- **Participation under other GHG programs**

The project has not participated under any other GHG programs. The declaration /05/ provided by the PP mentions that project has not participated under other GHG programs and same is acceptable to the assessment team.

- **Rejection by other GHG programs**

The project has not been rejected by other GHG programs. The declaration /05/ provided by the PP mentions that project has not been rejected by any other GHG programs. The same has been accepted by the DOE.

- **Additional information relevant to the project, including:**

- **Eligibility criteria for grouped projects**

The project activity is solely installed by CLP Wind Farms (India) Private Limited. It is not a grouped project activity. The same has been confirmed through the review of the project documents and the site visit /29/ carried out the DOE assessment team.

- **Leakage management for AFOLU projects**

The project activity is not an AFOLU project. Thus same is not applicable to this project activity.

- **Commercially sensitive information**

All the information required for the VCS joint validation & verification of this project activity has been provided by the PP and thus, there is no commercially sensitive information in this project activity, which has been excluded from the public version of the VCS Joint PD & MR.

URS is able to verify all the documented evidence listed above in relevant sections during the joint validation & verification process and is able to confirm that data and considerations are complete and accurate. Moreover URS confirms that the description of the proposed VCS project activity, as contained in the VCS Joint PD & MR sufficiently covers all relevant elements, is accurate and complete and that it provides the reader with a clear understanding of the nature of the proposed VCS project activity

3.2 Participation under Other GHG Programs

The project has not participated under any other GHG programs. The declaration provided by the PP mentions that project has not participated under other GHG programs and same is acceptable to the assessment team.

3.3 Application of Methodology

3.3.1 Title and Reference

The proposed project activity is an installation of 192.8 MW grid connected wind power project in India. The project applies approved large-scale consolidated methodology titled "Grid-connected electricity generation from renewable sources" "ACM0002", version 17 /25/. DOE has checked the same and found that PP has appropriately applied the methodology for this project activity. PP has also applied the tool "Tool to calculate the emission factor for an electricity system (version 05.0.0), Annex 9 of EB 87" /28/, for calculating the grid emission factor for NEWNE grid. The "Methodological tool for Investment analysis, (version-06), Annex-12 of EB 85 Report /27/" has also been applied by the project activity. DOE has checked the same and found to be correct.

3.3.2 Applicability

The proposed project activity is an installation of 192.8 MW wind power project activity in India. The project applies approved large-scale consolidated methodology titled “Grid-connected electricity generation from renewable sources” “ACM0002” (version 17 /25/). Applicability of “ACM0002” (version 17) is illustrated as below:

Applicability Criteria No.1: This methodology is applicable to grid-connected renewable energy power generation project activities that:

- *Install a Greenfield power plant;*
- *Involve a capacity addition to (an) existing plant(s);*
- *Involve a retrofit of (an) existing operating plants/units;*
- *Involve a rehabilitation of (an) existing plant(s)/unit(s); or*
- *Involve a replacement of (an) existing plant(s)/unit(s).*

Assessment: The proposed project activity is a Greenfield, grid connected renewable energy power generation project. The project activity uses renewable wind source to generate electricity that will be fed into the NEWNE regional grid. The project activity meets this Applicability criterion. The same has been confirmed through the commissioning certificates, purchase orders and based on the site visit carried out for the project activity.

Applicability Criteria No.2: The methodology is applicable under the following conditions:

a. The project activity may include renewable energy power plant/unit of one of the following types: hydro power plant/unit with or without reservoir, wind power plant/unit, geothermal power plant/unit, solar power plant/unit, wave power plant/unit or tidal power plant/unit.

b. In the case of capacity additions, retrofits, rehabilitations or replacements (except for wind, solar, wave or tidal power capacity addition projects the existing plant/unit started commercial operation prior to the start of a minimum historical reference period of five years, used for the calculation of baseline emissions and defined in the baseline emission section, and no capacity expansion, retrofit, or rehabilitation of the plant/unit has been undertaken between the start of this minimum historical reference period and the implementation of the project activity.

Assessment: The proposed project activity is the installation of a Greenfield, wind power plant/unit. This has been confirmed through the technical specifications of the installed WTGs, purchase orders, commissioning certificates of the WTGs installed under the project activity. Hence this Applicability criterion is met by the project activity.

Applicability Criteria No.3: In case of hydro power plants, one of the following conditions shall apply:

- The project activity is implemented in existing single or multiple reservoirs, with no change in the volume of any of the reservoirs; or
- The project activity is implemented in existing single or multiple reservoirs, where the volume of the reservoir(s) is increased and the power density calculated using equation (3), is greater than 4 W/m²; or
- The project activity results in new single or multiple reservoirs and the power density, calculated using equation (3), is greater than 4 W/m²; or
- The project activity is an integrated hydro power project involving multiple reservoirs, where the power density for any of the reservoirs, calculated using equation (3), is lower than or equal to 4 W/m², all of the following conditions shall apply:
 - a) The power density calculated using the total installed capacity of the integrated project, as per equation (4), is greater than 4 W/m²;
 - b) Water flow between reservoirs is not used by any other hydropower unit which is not a part of the project activity;
 - c) Installed capacity of the power plant(s) with power density lower than or equal to 4 W/m² shall be:
 - Lower than or equal to 15 MW; and
 - Less than 10 per cent of the total installed capacity of integrated hydro power project.

Assessment: The project activity involves installation of a Greenfield wind power project. Hence this Applicability criterion is not relevant to the project activity.

Applicability Criteria No.4: In the case of integrated hydro power projects, project proponent shall:

- Demonstrate that water flow from upstream power plants/units spill directly to the downstream reservoir and that collectively constitute to the generation capacity of the integrated hydro power project; or

- *Provide an analysis of the water balance covering the water fed to power units, with all possible combinations of reservoirs and without the construction of reservoirs. The purpose of water balance is to demonstrate the requirement of specific combination of reservoirs constructed under CDM project activity for the optimization of power output. This demonstration has to be carried out in the specific scenario of water availability in different seasons to optimize the water flow at the inlet of power units. Therefore this water balance will take into account seasonal flows from river, tributaries (if any), and rainfall for minimum five years prior to implementation of CDM project activity.*

The project activity involves installation of a Greenfield wind power project. Hence this Applicability criterion is not relevant to the project activity.

Applicability Criteria No.5: The methodology is not applicable to:

- *Project activities that involve switching from fossil fuels to renewable energy sources at the site of the project activity, since in this case the baseline may be the continued use of fossil fuels at the site;*
- *Biomass fired power plants/units.*

The project activity involves installation of a Greenfield wind power project. Hence this Applicability criterion is not relevant to the project activity.

Applicability Criteria No.6: In the case the case of retrofits, rehabilitations, replacements, or capacity additions, this methodology is only applicable if the most plausible baseline scenario, as a result of the identification of baseline scenario, is "the continuation of the current situation, that is to use the power generation equipment that was already in use prior to the implementation of the project activity and undertaking business as usual maintenance".

The project activity involves installation of a Greenfield wind power project. The project does not involve any retrofits, rehabilitations, replacements, or capacity additions, hence this Applicability criteria is not relevant to the project activity.

Applicability Criteria No.7: In addition, the applicability conditions included in the tools referred to below apply.

The project activity applies the following Tools and found to be in compliant with the rules and requirements of the applied Tools as below.

- a) Tool to calculate the emission factor for an electricity system version 05.0.0, (EB 87, Annex 9) /28/
- b) Methodological tool for Investment analysis, version 06, (EB 85, Annex-12) /27/

Hence this Applicability criterion is met by the project activity.

3.3.3 Project Boundary

As per the para 22 of the applicable methodology ACM0002 (Version 17.0.0) “*The spatial extent of the project boundary includes the project power plant/unit and all power plants/units connected physically to the electricity system that the CDM project power plant is connected to*”.

The project boundary as considered for the project activity in the Joint PD & MR consists of WTGs installed, the connected substation, metering instruments and the NEWNE grid. This includes all the WTGs installed as part of the project activity and the WTGs of other project proponents connected to the sub-station, which is further connected to the network of the NEWNE grid. The project boundary also includes all the power plants physically connected to the NEWNE grid.

The greenhouse gases and emission sources included in or excluded from the project boundary is provided as below which has been assessed by the joint validation & verification team.

	Source	Gas	Included	Justification/Explanation
Baseline Scenario	CO ₂ emissions from electricity generation in fossil fuel fired power plants that is displaced due to the project activity	CO ₂	Yes	Major emission source
		CH ₄	No	Minor Emission Source. Same has been excluded from consideration for simplification.
		N ₂ O	No	Minor Emission Source. Same has been excluded from consideration for simplification.
Project Scenario	For geothermal power plants, fugitive emissions of CH ₄ and CO ₂ from non-condensable gases contained in geothermal steam	CO ₂	No	The project activity is a wind power project and not a geothermal project. Thus these emission sources are not applicable to the proposed project.
		CH ₄	No	
		N ₂ O	No	
	CO ₂ emissions from combustion of fossil fuels for electricity generation in solar thermal power plants and geothermal power plants	CO ₂	No	The project activity is a wind power project and not a geothermal project. Thus these emission sources are not applicable to the proposed project.
		CH ₄	No	
		N ₂ O	No	

Source	Gas	Included	Justification/Explanation
For hydro power plants, emissions of CH ₄ from the reservoir	CO ₂	No	The project activity is a wind power project and not a geothermal project. Thus these emission sources are not applicable to the proposed project.
	CH ₄	No	
	N ₂ O	No	

During the site visit, the project boundary was physically verified and found to be correct and in line with the applied methodology. Based on the document review and site visit, DOE assessment team confirms that the project boundary and emission sources described in the VCS Joint PD & MR are accurate and complete, and also that the selected sources and gases are justified for the proposed project activity. The joint validation & verification team further confirms that identification of project boundary is in line with selected methodology ACM0002 (version 17).

3.3.4 Baseline Scenario

As per the para 24 of ACM0002 (version 17.0), if the project activity is the installation of a Greenfield power plant, the baseline scenario is the following:

Electricity delivered to the grid by the project activity would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources, as reflected in the combined margin (CM) calculations described in the “Tool to calculate the emission factor for an electricity system”.

Since the applied methodology itself specifies the baseline scenario, hence, no further analysis is required on the identification of alternatives for the baseline scenario. DOE has also verified that the determined baseline scenario is in compliance with all the applicable legal and regulatory requirements.

Assessment team has checked all the documented evidences such as CO₂ Baseline Database for the Indian Power Sector user guide, version 10, applied methodology ACM0002 version 17, final VCS Joint PD & MR and the emission reduction calculation spreadsheet during the joint validation & verification process and confirmed that all the assumptions and data used by the project participants which are listed in the Joint PD & MR version 03 including their references and sources, the approved baseline methodology ACM0002, version 17 have been correctly applied to identify the most reasonable baseline scenario. The identified baseline scenario reasonably represents what would occur in the absence of the proposed project activity.

The assessment team confirms that the CEA database (version 10) /20/ used for the calculation of Combined Margin emission factor for the NEWNE grid of India was latest available data at the time of submission of VCS Joint PD & MR for joint validation & verification is in line with the requirement of “Tool to calculate the emission factor for an electricity system”, version 05.0 /28/ and is an official publication of the Government of India for the purpose of CDM project activities.

URS is able to verify all the documented evidence listed above during the joint validation & verification process and is able to confirm that:

- a) All the assumptions and data used by the project participants are listed in the VCS Joint PD & MR, including their references and sources;
- b) All documentation used is relevant for establishing the baseline scenario and correctly quoted and interpreted in the VCS Joint PD & MR.
- c) Assumptions and data used in the identification of the baseline scenario are justified appropriately, supported by evidence and deemed to be reasonable;
- d) The applied methodology ACM0002 (version 17) has been correctly applied to identify the most reasonable baseline scenario as the “electricity delivered to the grid by the project activity would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources”, as reflected in the combined margin (CM) calculations described in the “Tool to calculate the emission factor for an electricity system”

3.3.5 *Additionality*

The additionality of the proposed project activity has been demonstrated by applying the “*Tool for demonstration and assessment of Additionality*” (version 07.0.0) and “*Methodological tool for Investment analysis* (version 6.0)”. The selected benchmark analysis approach has been considered as appropriate, since the alternative to the project activity is the supply of the electricity from the grid. This is in line with the requirements of the “*Methodological tool for Investment analysis* (version 6.0)”. and thus acceptable to the assessment team.

The above opinion of validation & verification team to the additionality of the proposed project activity is further explicitly explained in the following sections:

As per the approved large scale consolidated methodology “ACM0002 version 17”, the baseline scenario is the electricity delivered to the grid by the project activity would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources

As per the “*Methodological tool for Investment analysis* (version 6.0)” /27/, to assess the additionality of the proposed project, the PP has selected benchmark analysis to demonstrate the additionality.

a) Choice of approach:

Project participant has selected benchmark analysis to demonstrate additionality of the VCS project activity and project participant has demonstrated that the project without carbon revenues is financially not viable. The project generates financial benefits other than carbon revenues in the form of sale of electricity. Therefore, the project participant cannot apply simple cost analysis. The alternative to the project activity is supply of electricity from the grid, hence Investment comparison analysis is also not appropriate in accordance with “*Methodological tool for Investment analysis (version 6.0)*”. Hence the project developer has appropriately chosen to apply the benchmark analysis method. PP has chosen post tax Equity Internal Rate of Return (IRR) as financial/economic indicator for demonstrating the additionality using benchmark analysis. This is also in line with the requirement of “*Methodological tool for Investment analysis (version 6.0)*”. As per the para 20 of “*Methodological tool for Investment analysis (version 6.0)*”, the value for cost of equity is selected from Table-1 of EB 85 Annex 12 for the purpose of calculating the benchmark for the benchmark analysis.

b) Benchmark selection:

The benchmark for the investment analysis of the project activity has been chosen as the expected return on equity. The PP has estimated the expected return on equity from the Appendix “Default values for the expected return on equity” of the “*Methodological tool for Investment analysis (version 6.0)*”. The “*Methodological tool for Investment analysis (version 6.0)*” provides expected return on equity for various project types and countries. The project activity falls under host country India, Group 1 (Sectoral Scope 1 - Energy Industries). Therefore, the real term value for expected return on equity is 11.1%.

As per paragraph 17 of the above mentioned document, “*In situations where an investment analysis is carried out in nominal terms, project participants can convert the real term values provided in the table below to nominal values by adding the inflation rate. The inflation rate shall be obtained from the inflation forecast of the central bank of the host country for the duration of the crediting period. If this information is not available, the target inflation rate of the central bank shall be used. If this information is also not available, then the average forecasted inflation rate for the host country published by the IMF (International Monetary Fund World Economic Outlook) or the World Bank for the next five years after the start of the project activity shall be used*”

Accordingly, PP has converted the default benchmark which is in real terms into nominal terms by using the Fisher’s equation:

$$\text{Nominal Benchmark} = \{(1 + \text{Real Benchmark}) * (1 + \text{Inflation rate})\} - 1$$

where:

- Default value for Real Benchmark i.e. 11.1%
- Inflation Rate forecast by Reserve Bank of India (RBI) (i.e. Central Bank) for India

As used by PP, the assessment team referred the book "Corporate Finance, Theory and Practice (2nd Edition, 2009) by Aswath Damodaran. In Chapter 11 of the book titled "*Investment Analysis with Inflation and Exchange Rate Risk*" on page 320, the same equation is mentioned for converting real into nominal values. Hence the validation & verification team considers the above equation as appropriate for converting real benchmark into nominal benchmark.

The project has been implemented in two phases with different decision making dates. Hence, the inflation rate has been determined separately applicable at the investment decision for each of the projects. The nominal benchmarks considering inflation rates works out using the Fisher's equation for each of the projects are mentioned above. Thus, the investment analysis has been carried out for the 2 phases separately.

For each of the Phases, the Benchmark has been calculated separately.

For Phase-1 (Tejuva wind farm in Jaisalmer District of Rajasthan)

The investment decision date for this phase of this project activity is 09/01/2012.

Table-1 of EB 85 Annex 12 specifies default value of expected return on equity in real terms for Energy Industries (Group 1) in India = 11.1%

Long Term Median Forecasts for Growth and Inflation Rate Forecast issued by RBI which was available during decision making = 6.0%
(<https://www.rbi.org.in/scripts/PublicationsView.aspx?id=14021>)

Benchmark arrives as = $\{(1+11.1\%)(1+6.0\%)\}^{-1}$
=17.77%

For Phase-2 (Chandgarh wind farm in Dewas and Shajapur, Madhya Pradesh)

The investment decision date for this phase of this project activity is 10/12/2014.

Table-1 of EB 85 Annex 12 specifies default value of expected return on equity in real terms for Energy Industries (Group 1) in India = 11.1%

Inflation Rate (median) forecast issued by RBI which was available during decision making = 4.8% (<https://www.rbi.org.in/Scripts/PublicationsView.aspx?id=16141>)

Benchmark arrives as = $\{(1+11.1\%)(1+4.8\%)\}^{-1}$
=16.43%

The inflation rates have been considered as per the publications of the Reserve Bank of India, Government of India. Reserve Bank of India (RBI) is Central Bank of India and it is India's monetary authority. The RBI is supervisor of financial system, issuer of currency and manages foreign exchange reserves of the country. Thus the inflation forecast by RBI can be considered as most authentic and also in line with *Methodological tool for Investment analysis (version 6.0)*.

The inflation forecasts are applicable at the time of decision making. Thus, validation & verification team concludes that PP has appropriately converted real term values into nominal values by applying the Fisher's equation to estimate the benchmark for this project activity.

The validation & verification team has confirmed that all data used to arrive at the benchmark were derived from the sources available to the project participant at the time of the investment decision and hence the assessment team accepted the same. Thus, the benchmark of the project activity is found to be in line with the requirement of *Methodological tool for Investment analysis (version 6.0)*".

c) Validity and Applicability of the Input Parameters:

The assessment team assessed the input values and assumptions in the investment analysis by checking the source documents as detailed in table below. It is noted that the values of the input values stated in the Joint VCS PD & MR are consistent with that of the financial calculation spreadsheet. The lifetime of the WEGs are confirmed to be 25 years in line with the tariff order issued by the respective state electricity regulatory commission and IRR calculations have been carried out for 25 years. The same has also been confirmed through the actual Power Purchase Agreements signed between CLP Wind Farms (India) Private Limited and State Utilities /12/. The *Methodological tool for Investment analysis (version 6.0)*" states that in general minimum period of 10 years and maximum period of 20 years is appropriate for determining the financial viability of the project activity and in cases where assessment period is less than the technical lifetime, a fair value (i.e. salvage value) at the end of assessment period is to be considered. Accordingly the project participant has considered a 10% salvage value at the end of 25 years. Hence the assessment team has accepted the calculations.

Thus, in line with *Methodological tool for Investment analysis (version 6.0)*", the investment analysis has been done for the period of 25 years and hence is acceptable to the assessment team.

As the PP is an equity investor in the project and decision to invest or not to invest was based on the returns generated by the equity investment after paying all the expenses and taxes. Further, sale of electricity is the only source of income of this project activity. Hence, PP has considered post tax Equity IRR as the financial indicator for this project. The assessment team has assessed the revised VCS Joint PD & MR and found that PP has appropriately identified the financial indicator for investment analysis at the time of decision making.

Also to determine the likelihood of the occurrence of a scenario other than the scenario presented for proposed project activity, a cross-check on the suitability of the assumptions used in the development of the investment analysis has been done. The detailed analysis on the assessment of the input parameters used in the investment analysis has been provided in the following table:

Assessment of input parameters for Phase-1: Tejuva wind farm in Jaisalmer district of Rajasthan, India:

Particulars	Unit	Value	Source	DOE Assessment
Capacity of WTG	MW	2.1	Proposal from technology supplier dated 26/07/2011 /08/	The capacity of WTG was verified from the Proposal from technology supplier /08/ which was applicable at the time of decision making and verified with the actual purchase order. Further it was also confirmed through the Commissioning Certificates /11/ and the physical inspection of WTG during the site visit. Since the capacity of the WTG has been sourced from the Proposal dated 26/07/2011 which was available at the time of decision making and hence it conforms to the requirements of the <i>para 11 of the "Methodological tool for Investment analysis (version 6.0)"</i>
No. of WTGs	No.	48	Proposal from technology supplier dated 26/07/2011 /08/	The number of WTGs was verified from the Proposal from technology supplier and Extracts from Minutes of Board Meeting /04/ and cross verified with the actual Purchase Order /09/. Further it was also confirmed through Commissioning Certificates /11/ and the inspection of the WTG during the site visit
Net Electricity Generation	GWh	187.80	Wind Energy Assessment report by third party (Pg. No. 42, Table 7-6) /07/	The Net Electricity Generation has been determined by the third party contracted by the project participant. The Net Electricity Generation has been sourced based on the Wind Energy Assessment report by the third party. The Net Generation of 187.80 GWh has been verified with the third party report which is found appropriate and acceptable as the same was available at the time of decision making. PP has also calculated the PLF as 21.27% based on the Net Generation determined by the third party. The DOE assessment team further cross checked the PLF with the PLF determined in the RERC Commission Order No.15 dated 14/12/2011 /18/. The PLF as per the RERC order is 21% for the Jaisalmer district in Rajasthan, India which is less than the PLF considered in the case of project activity for the Tejuva site of the project activity. Thus the Net Generation of 187.80 GWh and corresponding PLF of 21.27% has been found to be appropriate and acceptable to the DOE which is in line with the <i>para 11 of the "Methodological tool for Investment analysis (version 6.0)"</i>.

Particulars	Unit	Value	Source	DOE Assessment
Project Cost	INR Million	6105.65	Proposal from technology supplier dated 26/07/2011 /08/	The project cost has been sourced from the Proposal from technology supplier dated 26/07/2011 for the WTGs installed at Tejuva site, Jaisalmer, India. The proposal was the source of information available to the PP at the time of investment decision. Further the signed purchase order has been cross checked by the assessment team as the actual cost is available during the validation which has been used for further substantiation. The actual project cost is INR 5,536.21 Million which is 9.33% less than the project cost mentioned in the proposal which is already covered under the sensitivity analysis. DOE has further checked the equity IRR value based on the actual project cost which arrives as 11.20% which is still less than the benchmark of 17.77%. Thus the considered value for the project cost in IRR calculations is accepted by the assessment team which is in line with the <i>para 11 of the "Methodological tool for Investment analysis (version 6.0)"</i>.

Particulars	Unit	Value	Source	DOE Assessment
Tariff	INR per kWh	4.46	RERC Tariff Order dated 14 th December 2011 /18/	The electricity generated by this project activity would be exported to NEWNE grid and project developer has entered into power purchase agreement with Jodhpur Vidyut Vitaran Nigam Limited on 18/03/2015 /12/ at INR 5.64/kWh wherein the tariff is fixed for a period of 25 years. The tariff considered for the project activity is based on the Rajasthan Electricity Commission (RERC) tariff order dated 14/12/2011 which was available at the time of decision making. According to the RERC order, the tariff was INR 4.46 per kWh for the project site based in Jaisalmer district of Rajasthan, India. Assessment team has also checked the actual tariff based on the PPA signed for further substantiation as these values are available during the validation & verification stage. PPA has been signed with JVVNL on 18/03/2015 at INR 5.64/kWh wherein the tariff is fixed for a period of 25 years. Considering the same, the Equity IRR of the project activity comes out as 15.23% which is still less than the benchmark. Since the tariff is fixed for a period of 25 years, i.e lifetime of the project, revenue generation is also fixed for the entire lifetime of the project activity. Hence it is confirmed by the assessment team that the tariff assumed at the time of decision making is correct and reasonable. Thus, the tariff considered in the investment analysis is found to be appropriate. Since PP has considered those input values that were available at the time of investment decision making, considering the tariff from RERC tariff order is acceptable to the DOE assessment team which is also in line with the <i>para 11 of the "Methodological tool for Investment analysis (version 6.0)"</i>.

Particulars	Unit	Value	Source	DOE Assessment
Operation and Maintenance charges (3 rd year onwards)	INR Million/WTG	2.0	Proposal from technology supplier dated 26/07/2011	PP has considered the O&M cost from the Proposal dated 26/07/2011 submitted by the technology supplier. As per the Proposal, the O&M cost would be free for first 2 years and from 3rd year onwards, it is INR 2 Million/WTG. Thus the O&M cost comes out as INR 96 Million/annum. Same value has been used in the financial calculation as same was available during decision making and hence applicable to this project activity. Further the assessment team has checked the RERC tariff order dated 14/12/2011 which was available at the time of decision making. As per the RERC tariff order, Commission has considered O&M cost for the wind power project as 1.25% of the capital cost. The assessment team has checked the project's additionality considering the O&M cost of 1.25% (of project cost) and the equity IRR (8.80%) still arrives below the benchmark for the project activity. Since the value of O&M cost used in the IRR calculations was available at the time of investment decision and hence found correct by the assessment team which is also in line with the <i>para 11 of the "Methodological tool for Investment analysis (version 6.0)"</i>.
Operation and Maintenance Charges Escalation	%	5.0	Proposal from technology supplier dated 26/07/2011 /08/	PP has considered the escalation in the O&M charges as 5% per the year based on the Proposal from technology supplier dated 26/07/2011 in the IRR spreadsheet which was available at the time of investment decision. The escalation rate of 5% per year in the O&M cost considered in the investment analysis as per the Proposal dated 26/07/2011 is found to be correct as the consideration of escalation of O&M cost has been sourced from the Proposal and found appropriate for the project activity. Further the assessment team also checked the RERC tariff order dated 14/12/2011 which mentions O&M cost escalation as 5.72% which is higher than 5% considered as per the Proposal from the technology supplier. Thus considering the same, equity IRR comes as 8.54% which is still less than the Benchmark value. Since the value of O&M escalation based on the Proposal dated 26/07/2011 was available at the time of investment decision, hence considered as appropriate by the DOE and found correct which is in

Particulars	Unit	Value	Source	DOE Assessment
				line with the <i>para 11 of the "Methodological tool for Investment analysis (version 6.0)"</i> .
Income Tax rate	%	33.22	Indian Income Tax Act for FY 2011-12 /19/	The income tax rate is based on the Income Tax Act applicable to the financial year 2011-12, i.e., the year in which investment decision was taken. Assessment team checked the prevailing income tax rate and found correct. As the income tax rate is considered from the Indian Income Tax Act., which is the official source of Govt. of India and hence it is authentic source. Thus, it has been accepted by the assessment team which is in line with the <i>para 11 of the "Methodological tool for Investment analysis (version 6.0)"</i> .
Book Depreciation Rate	%	4.75	Companies Act Schedule XIV /19/	PP has adopted book depreciation rate prescribed in Schedule XIV of Companies Act 1956 of India for computing book depreciation. Assessment team checked the Companies Act and found the rate to be correct. As the book depreciation rate is considered from the Companies Act 1956, Govt. Of India, hence, it is authentic and acceptable to the assessment team.
IT Depreciation Rate	%	7.69	Appendix IA of IT Rules /19/	The project participant has considered the income tax depreciation rate as per the rates prescribed in IT Rules. The same has been checked by the validation & verification team and found to be correct, hence accepted. As the IT depreciation rate is considered from the Income Tax Act of India, which is an official source of Govt. of India, hence it is authentic and considered to be correct by the assessment team.
Salvage Value	%	10	CERC Tariff Order dated 14/12/2011 (Ref pg 27) /18/	The salvage value is calculated as per the CERC order dated 14/12/2011 which mentions that the salvage value of the asset shall be considered as 10% and also it is applicable at the time of decision making. Hence the same is accepted by the assessment team.
Minimum Alternate Tax (MAT)	%	19.93	Calculated as per Indian IT Act for FY11-12 /19/	The MAT rate is based on the Income Tax Act applicable to the financial year 2011-12, i.e., the year in which investment decision was taken. Assessment team checked the prevailing income tax rate and found correct. As the income tax rate is considered from the Indian Income Tax Act which is an official source of Govt. of India and hence it is authentic source. Thus, it has been accepted by the assessment team.
GBI Benefits	INR/ kWh	0.5	MNRE GBI Guidelines dated 17/12/2009 /18/	PP has considered the GBI benefits as the revenues to the project activity based on the publicly available source. The assessment team has checked the value from the MNRE GBI Guidelines dated 17/12/2009 (http://www.inwea.org/others/OPERATIONAL_GUIDELINES.pdf). Since the value is considered from Government approved guidelines, the same has been accepted by the assessment team.

Assessment of input parameters for Phase-2: Chandgarh wind farm in Dewas and Shajapur, Madhya Pradesh, India:

Particulars	Unit	Value	Source	DOE Assessment
Capacity of WTG	MW	2	Proposal from technology supplier dated 26/09/2014 /08/	The capacity of WTG was verified from the Proposal from technology supplier which was applicable at the time of decision making and verified with the actual Purchase order. Further it was also confirmed through the Commissioning Certificates and the physical inspection of WTG during the site visit. Since the capacity of the WTG has been sourced from the Proposal dated 26/09/2014 which was available at the time of decision making and hence it conforms to the para 11 of "<i>Methodological tool for Investment analysis (version 6.0)</i>" and hence acceptable to the DOE.
No. of WTGs	No.	50	Proposal from technology supplier dated 26/09/2014 /08/	The number of WTGs were verified from the Proposal from technology supplier and Extract from Minutes of Board Meeting /04/ and cross verified with the actual Purchase Order. During conceptualization of Chandgarh (phase-2) wind project, capacity of the project was considered as 100 (50*2) MW. However, after project initiation, management of CLPWF has decided to install only 92 MW out of 100 MW project capacity. However for the investment analysis purpose the capacity of the project activity has been considered as 100 MW since change in capacity took place after the investment decision which has been cross checked by the DOE. Further it was also confirmed through Commissioning Certificates and the inspection of the WTG during the site visit and hence acceptable to the DOE assessment team.

Particulars	Unit	Value	Source	DOE Assessment
Net Electricity Generation	GWh	196.80	Wind Energy Assessment report by third party (Pg. No. 30) /07/	The Net Electricity Generation has been determined by the third party contracted by the project participant. The Net Generation has been sourced based on the Wind Energy Assessment report by the third party. The Net Generation of 196.80 GWh has been verified with the third party report which is found appropriate and acceptable as the same was available at the time of decision making. PP has also calculated the PLF of 22.47% based on the Net Generation determined by the third party. The DOE assessment team further cross checked the PLF with the PLF determined in the MPERC Commission Tariff Order dated March 2013 /18/ for Procurement of Power from Wind Electric Generator. The PLF as per the MPERC order is 20% which is less than the PLF considered in the case of Chandgarh project site of the project activity. Thus the Net Generation of 196.80 GWh and corresponding PLF of 22.47% has been found to be appropriate which is in line with the para 11 of “<i>Methodological tool for Investment analysis (version 6.0)</i>” and hence acceptable to the DOE.
Project Cost	INR Million	7375.00	Proposal from technology supplier dated 26/09/2014 /08/	The project cost has been sourced from the Proposal from technology supplier dated 26/09/2014 for the WTGs installed at Chandgarh site of the project activity. The proposal was the source of information available to the PP at the time of investment decision. Further the signed purchase order has been cross checked by the assessment team as the actual cost is available during the validation & verification which has been used for further substantiation. The actual project cost is INR 7,375 Million which is the same as the project cost as mentioned in the proposal. Thus the considered value for the project cost in IRR calculations is accepted by the assessment team which is also in line with the para 11 of “<i>Methodological tool for Investment analysis (version 6.0)</i>” and hence acceptable to the DOE.

Particulars	Unit	Value	Source	DOE Assessment
Tariff	INR per kWh	5.92	MPERC Tariff Order dated March 2013 /18/	The electricity generated by this project activity would be exported to NEWNE grid and project developer has entered into power purchase agreement with Madhya Pradesh Power Management Company Limited on 07/08/2015 /12/ at same tariff rate i.e. INR 5.92/kWh wherein the tariff is fixed for a period of 25 years. The tariff considered for the project activity is based on the MPERC Tariff Order dated March 2013 which was available at the time of decision making. According to the MPERC order, the tariff was INR 5.92 per kWh for the project based in Chandgarh project site in India. Assessment team has also checked the actual tariff based on the PPA signed for further substantiation as these values are available during the assessment stage. PPA has been signed with Madhya Pradesh Power Management Company Limited on 07/08/2015 at same tariff rate i.e. INR 5.92/kWh wherein the tariff is fixed for a period of 25 years. Considering the same, the Equity IRR of the project activity is still less than the benchmark. Since the tariff is fixed for a period of 25 years, i.e lifetime of the project, revenue generation is also fixed for the entire lifetime of the project activity. Hence it is confirmed by the assessment team that the tariff assumed at the time of decision making is correct. Thus, the tariff considered in the investment analysis is found to be appropriate. Since PP has considered those input values which were available at the time of investment decision making, considering the tariff from MPERC Tariff Order dated March 2013 is acceptable to the DOE assessment team which is also in line with the para 11 of "Methodological tool for Investment analysis (version 6.0)" and hence acceptable to the DOE.

Particulars	Unit	Value	Source	DOE Assessment
Operation and Maintenance charges (3 rd year onwards)	INR Million/WTG	2.61	Proposal from technology supplier dated 26/09/2014 /08/	PP has considered the O&M cost from the Proposal dated 26/09/2014 submitted by the technology supplier. As per the Proposal, the O&M cost would be free for first 2 years and from 3rd year onwards, it is INR 2.61 Million/WTG. Thus the O&M cost comes out as INR 130.5 Million/annum. Same value has been used in the financial calculation as the same was available during decision making and hence applicable to this project activity. Further the assessment team has checked the MPERC tariff order dated March 2013 which was available at the time of decision making. As per the MPERC tariff order, Commission has considered O&M cost for the wind power project as 1.0% of the capital cost. The assessment team has checked the project's additionality considering the O&M cost of 1.0% (of project cost) and the equity IRR (13.76%) still arrives below the benchmark for the project site of the project activity. Since the value of O&M cost used in the IRR calculations was available at the time of investment decision and hence found correct by the assessment team which is also in line with the para 11 of "Methodological tool for Investment analysis (version 6.0)" and hence acceptable to the DOE.

Particulars	Unit	Value	Source	DOE Assessment
Operation and Maintenance charges escalation	%	5.0	Proposal from technology supplier dated 26/09/2014	PP has considered the escalation in the O&M charges as 5% per the year based on the Proposal from technology supplier dated 26/09/2014 in the IRR spreadsheet which was available at the time of investment decision. The escalation rate of 5% per year in the O&M cost considered in the investment analysis as per the Proposal dated 26/09/2014 is found to be correct as the consideration of escalation of O&M cost has been sourced from the Proposal and found appropriate for the project activity. Further the assessment team also checked the MPERC tariff order dated March 2013 which mentions O&M cost escalation as 5.72% which is higher than 5% considered as per the Proposal from the technology supplier. Thus considering the same, equity IRR comes as 12.57% which is still less than the Benchmark. Since the value of O&M escalation based on the Proposal dated 26/09/2014 was available at the time of investment decision, hence considered as appropriate by the DOE and found correct which is also in line with the para 11 of “<i>Methodological tool for Investment analysis (version 6.0)</i>” and hence acceptable to the DOE.
Income Tax rate	%	33.99	Indian Income Tax Act for FY 2014-15 /19/	The income tax rate is based on the Income Tax Act applicable to the financial year 2014-15, i.e., the year in which investment decision was taken. Assessment team checked the prevailing income tax rate and found correct. As the income tax rate is considered from the Indian Income Tax Act., which is the official source of Govt. of India and hence it is authentic source. Thus, it has been accepted by the assessment team.
Book Depreciation Rate	%	4.75	Companies Act Schedule XIV /19/	PP has adopted book depreciation rate prescribed in Schedule XIV of Companies Act 1956 of India for computing book depreciation. Assessment team checked the Companies Act and found the rate to be correct. As the book depreciation rate is considered from the Companies Act 1956, Govt. Of India, hence, it is authentic.
IT Depreciation Rate	%	7.69	Appendix IA of IT Rules /19/	The project participant has considered the income tax depreciation rate as per the rates prescribed in IT Rules. The same has been checked by the assessment team and found to be correct, hence accepted. As the IT depreciation rate is considered from the Income Tax Act of India, which is an official source of Govt. of India, hence it is authentic and considered to be correct by the assessment team.
Salvage	%	10	CERC Tariff	The salvage value is calculated as per the CERC

Particulars	Unit	Value	Source	DOE Assessment
Value			order dated 27/03/2012 (Ref pg no 31) /18/	order dated 27/03/2012 which mentions that the salvage value of the asset shall be considered as 10% and also it is applicable at the time of decision making. Hence the same is accepted by the assessment team.
Minimum Alternate Tax (MAT)	%	20.96	Calculated as per Indian IT Act for FY14-15 /19/	The MAT rate is based on the Income Tax Act applicable to the financial year 2014-15, i.e., the year in which investment decision was taken. Assessment team checked the prevailing income tax rate and found correct. As the income tax rate is considered from the Indian Income Tax Act which official source of Govt. of India and hence it is authentic source. Thus, it has been accepted by the assessment team.
GBI Benefits	INR/ kWh	0.5	MNRE GBI Guidelines dated 04/09/2013 /18/	PP has considered the GBI benefits as the revenues to the project activity based on the MNRE publicly available source. The assessment team has checked the value from the MNRE GBI Guidelines dated 17/12/2009 (http://www.inwea.org/others/OPERATIONAL_GUIDELINES.pdf). Since the value is considered from Government approved guidelines, the same has been accepted by the assessment team.

The assessment team confirmed that the fair value of the project activity assets at the end of the assessment period has been included as a cash inflow in the final year in the IRR calculation sheet in line with *Methodological tool for Investment analysis (version 6.0)*"

The assessment team confirmed that the depreciation value has been deducted for calculating the gross profit and has been added back to the net profit for the purpose of calculating the Equity IRR. Thus, it satisfies the requirement of *Methodological tool for Investment analysis (version 6.0)*"

The PP has submitted the all the spreadsheets used for the investment analysis for the project activity based on the input parameters available and applicable at the time of management decision and location of the WTGs. The sheets have been checked and approved by the financial expert. Further, assessment team confirmed that all the assumptions, links and formulae used in the sheet are readable and all cells are viewable and unprotected. The analysis has been presented in a transparent manner in the excel spreadsheet and is reproducible. Further assessment team has checked the correctness of computations carried out and documented by the project participants and found correct. Thus it satisfies the requirements of *Methodological tool for Investment analysis (version 6.0)*".

The assessment team further assessed the correctness of computations and documentation carried out by the project participants. The assessment involves checking the data input taken from Proposal/publically available sources, adoption of correct accounting principle and arithmetical accuracy. The assessment team has checked the documents and ensured that right input has been taken in the project cost and other parameters as described above and projections. The accounting principles adopted with respect to computation of depreciation and tax computation are found to be in order. The arithmetical accuracy is also found to be correct.

The post tax equity IRR calculations and the benchmark analysis calculations were provided in excel spreadsheet and verified by the financial expert. The assumptions used in the calculations were verified by assessment team. Considering the above mentioned input parameters the equity IRR of the project activity without carbon revenue are less than the benchmarks which are mentioned below:

Project site	Capacity (MW)	Equity IRR without Carbon Revenue (%)	Benchmark (%)
Tejuva project site	100.8	8.78	17.77
Chandgarh project site	100	12.79	16.43

d) Sensitivity Analysis

The variables, that constitute more than 20% of either total project costs or total project revenues has been subjected to variation of $\pm 10\%$ and the results of this variation is presented in the VCS Joint PD & MR and can be reproduced in the associated IRR spread sheet. The assessment team confirms that this variation $\pm 10\%$ is reasonable and appropriate in the context of the proposed project activity circumstances.

The PP has appropriately selected the following variables to conduct the sensitivity analysis.

1. Tariff Rate
2. Net Electricity Generation
3. Project Cost
4. O & M Cost

The results of the sensitivity analysis have been presented in the VCS Joint PD & MR. The results have also been presented in the excel spreadsheet in a reproducible manner. Thus, it satisfies the requirements of *Methodological tool for Investment analysis (version 6.0)*”.

The outcome of the sensitivity analysis for each of the variable along with the selected benchmark is summarized below:

Results of Sensitivity Analysis for Phase 1: Tejuva wind farm in Jaisalmer district of Rajasthan /03/

Variation %	-10%	Normal	10%	Variation required to breach benchmark
Tariff Rate	6.43%	8.76%	11.16%	36.25%
Net Generation	6.41%	8.76%	11.21%	35.25%
Project Cost	11.39%	8.76%	6.74%	-26.18%
O&M Cost	9.14%	8.76%	8.41%	-307.50%

Tariff Rate: PP has sourced the tariff rate from prevailing tariff order of Rajasthan Electricity Commission

(RERC) dated 14/12/2011. PP has also signed Power Purchase Agreement with Jodhpur Vidyut Vitaran Nigam Limited on 18/03/2015 at INR 5.64/kWh wherein the tariff is fixed for a period of 25 years. Since the tariff is fixed for a period of 25 years, i.e. lifetime of the project, revenue generation is also fixed for the entire lifetime of the project and considering this tariff rate, equity IRR is coming out 15.23%. Thus, considering this tariff rate, in any scenario, equity IRR would not cross the benchmark. Further, PP has conducted the sensitivity analysis of +10% to -10% and in both the cases equity IRR is less than the benchmark. Sensitivity analysis shows that project would cross the benchmark if electricity tariff increased by 36.25% which is not possible in as PPA has already been signed for the entire life time of the project. Thus DOE considers the selected Tariff rate as appropriate and hence acceptable.

Net Electricity Generation: PP has considered 21.27% PLF based on the Net Electricity Generation based on the Wind energy assessment report by the third party. Further, sensitivity analysis of +10% to -10% have been conducted and in both the cases equity IRR is less than the benchmark. Sensitivity analysis shows that project would cross the benchmark, if in any favorable scenario, PLF increased by 35.25%. Further, actual generation from this project site is also submitted to the DOE. During this monitoring period from 29/03/2015 to 31/07/2016 (i.e. 491 days), 200,913.225 MWh of electricity has been exported to the NEWNE grid from this site. Thus, actual PLF achieved during this monitoring period from Tejuva site is 16.19% which is 20.51% less than the envisaged value. Considering actual PLF, equity IRR is coming out 3.91% which is far behind the benchmark value.

The DOE assessment team further cross checked the PLF with the PLF determined in the RERC Commission Order No.15 dated 14/12/2011. The PLF as per the RERC order is 21% for the Jaisalmer district in Rajasthan, India which is less than the PLF considered in the case of project activity for the Tejuva site of the project activity.

Project Cost: The project cost proposed by the WTG supplier has been considered for the additionality of the project activity. According to the proposal, the project cost was INR 6,105.65 Million. If project cost decreased by -26.18%, then equity IRR would cross the benchmark. Further, as the PP has already placed the purchase orders for all the WTGs, thus, actual project cost is available. Actual project cost for this project is INR 5,536.21 Million which is 9.33% less than the project cost mentioned in proposal. Considering the actual project cost equity IRR is coming out 11.20% which is less than the benchmark. Further, sensitivity analysis of +10% to -10% have been conducted and in both the cases equity IRR is less than the benchmark. As the purchase orders are already placed, thus, the project cost is firm and further change is not possible. DOE considers the project cost considered for the project activity as appropriate and acceptable.

Operation & Maintenance Cost: The Project proponent has signed O&M agreement with Suzlon Energy Limited on 11/01/2012. According to the agreement, O&M cost is free for first two years of the commissioning of WTGs, 3rd year onwards the O&M cost would be INR 2.83 Million/WTG with 5% escalation. Hence if the O&M cost decrease by -307.50% then only project would be financially viable. Further, decrease of O&M cost more than 100% is not possible. Thus, in any scenario project will not breach the benchmark return which is acceptable to the DOE assessment team.

Results of Sensitivity Analysis for Phase 2: Chandgarh wind farm in Dewas and Shajapur, Madhya Pradesh /03/

Variation %	-10%	Normal	10%	Variation required to breach benchmark
Tariff Rate	9.86%	12.79%	15.85%	11.85%
Net Generation	9.71%	12.79%	16.05%	11.12%
Project Cost	16.26%	12.79%	10.15%	-10.44%
O&M Cost	13.19%	12.79%	12.39%	-99.10%

Tariff Rate: The electricity tariff rate has been sourced from prevailing tariff order of MPERC Tariff Order dated March 2013. Further, CLP has also signed Power Purchase Agreement with Madhya Pradesh Power Management Company Limited on 07/08/2015 at same tariff rate i.e. INR 5.92/kWh wherein the tariff is fixed for a period of 25 years. Since the tariff is fixed for a period of 25 years, i.e. lifetime of the project, revenue generation is also fixed for the entire lifetime of the project. Thus, in any scenario, equity IRR would not cross the benchmark. Further, sensitivity analysis of +10% to -10% have been conducted and in both the cases equity IRR is less than the benchmark. Sensitivity analysis shows that project would cross the benchmark if electricity tariff increased by 11.85% which is not possible in as PPA has already been signed for the entire life time of the project. Thus, the tariff rate considered for the case of the project activity is acceptable to the DOE.

Net Electricity Generation: PP has considered 22.47% as PLF to demonstrate the additionality of the project in line with the 3rd party PLF assessment report. Further, sensitivity analysis of +10% to -10% have been conducted and in both the cases equity IRR is less than the benchmark. Sensitivity analysis shows that project would cross the benchmark, if in any favorable scenario, PLF increased by 11.12%. The above sensitivity analysis is based on the capacity of 100 MW considered at the time of investment decision. Moreover the Net Electricity generation will further decrease considering the actual installed capacity of 92 MW. During the monitoring period from 29/03/2015 to 31/07/2016 (i.e. 491 days), 188,007.863 MWh of electricity has been exported to the NEWNE grid from this site. Thus, actual PLF achieved during this monitoring period from Chandgarh site is 17.34% which is 22.81% less than the envisaged value. Considering the actual achieved PLF, equity IRR is coming out 5.95% which is far behind the benchmark value. Hence the Net Electricity generation considered by the PP in the investment analysis has been considered as appropriate.

DOE assessment team further cross checked the PLF with the PLF determined in the MPERC Commission Tariff Order for Procurement of Power from Wind Electric Generator dated March 2013. The PLF as per the MPERC order is 20% which is less than the PLF considered in the case of project activity for the Chandgarh site of the project activity. Hence the PLF considered for the case of the project activity is found appropriate and acceptable to the DOE.

Project Cost: The project cost proposed by the WTG supplier has been considered additionality of the project activity. According to the proposal, to project cost was INR 7,375 Million. In line with the sensitivity analysis, if project cost decreased by -10.44%, then equity IRR would cross the benchmark. Further, sensitivity analysis of +10% to -10% have been conducted and in both the cases equity IRR is less than

the benchmark. Further, as the PP has already placed the purchase orders for all the WTGs, thus, actual project cost is available. Actual project cost for this project is INR 7,375 Million which is the same value mentioned in proposal. Hence the decrease in the project cost is not possible. Thus, the project cost considered is acceptable to the DOE assessment team.

Operation & Maintenance Cost: The O & M costs associated with the project has a major impact on the financial returns of the project. Project proponent has signed O&M agreement with Gamesa Wind Turbines Private Limited on 15/12/2014. According to the agreement, O&M cost is free for first two years of the commissioning of WTGs and after that the O&M cost would be INR 2.61 Million/WTG with 5% escalation. Thus, financial analysis predicts that if the O&M cost decrease by -99.10% then only project would be financially viable. As the agreement has already signed for operation and maintenance for this project, thus, further change is not possible and hence the O&M cost considered by the PP is acceptable to the DOE team

The above analysis has been carried out considering the project capacity of Chandgarh site as 100 MW (based on investment decision). Since the project capacity of 92 MW was only implemented after the project initiation, hence PP has further demonstrated the appropriateness of the financial calculations through the sensitivity analysis which is acceptable to the DOE.

Considering the above assessment on additionality demonstration, benchmark selection, appropriateness of parameters used and correctness of financial calculations, the assessment team concludes that the project scenario is not economically viable. Hence, assessment team confirms that carbon revenues will alleviate the investment barrier faced by the project activity.

Common Practice Analysis:

The common practice analysis has been carried out as per Methodological tool “Common Practice”, version 03.1 EB84, Annex 7”.

Step-1: PP has calculated the output capacity or range as from 96.4 MW to 289.2 MW (-50% to +50%).

Step-2: PP has considered the geographical area as India which is acceptable to the DOE as the project is located in India. The project activity being the Greenfield project activity and hence the projects with same measure and same energy source (wind power) have been identified in the analysis. The proposed project activity produces the electricity and hence the similar projects which produces electricity and output range falls under the capacity range from 96.4 MW to 289.2 M are considered in the analysis. The start date of the project activity is 29/03/2015. As Kyoto Protocol was ratified by India on 26/08/2002, therefore projects, which had started commercial operation between 26/08/2002 to 29/03/2015, have been identified.

Step-3, 4 and 5: All the projects identified in step-2 are either registered or project activities submitted for registration, or project activities undergoing validation.

Thus $N_{all} = 0$ and $N_{diff} = 0$, and $F = 1 - N_{diff}/N_{all}$ = Not defined and $N_{all} - N_{diff} = 0$; is less than 3

Thus, considering the above mentioned results, validation team concludes that the project is not a common practice in the defined boundary i.e. India.

3.3.6 Quantification of GHG Emission Reductions and Removals

The calculation and formulae for emission reductions as addressed in the approved consolidated methodology ACM0002 (version 17) have been applied. As per the para 44 of *ACM0002 version 17.0*, Baseline emissions include only CO₂ emissions from electricity generation in fossil fuel fired power plants that are displaced due to the project activity. The methodology assumes that all project electricity generation above baseline levels would have been generated by existing grid-connected power plants and the addition of new grid-connected power plants. The baseline emissions are to be calculated as follows:

$$ER_y = BE_y - PE_y$$

BE_y = Baseline emissions in year y (tCO₂)

EG_{PJ,y} = Quantity of net electricity generation that is produced and fed into the grid as a result of the implementation of the CDM project activity in year y (MWh/yr)

EF_{grid,CM,y} = Combined margin CO₂ emission factor for grid connected power generation in year y calculated using the latest version of the "Tool to calculate the emission factor for an electricity system" (tCO₂/MWh)

The emission reductions ER_y by the project activity during the crediting period is the difference between the baseline emissions BE_y and project emissions PE_y are as following:

Quantification of Baseline Emissions:

The baseline emissions for the project activity have been calculated as the product of the net electricity supplied to NEWNE grid by the WEGs and combined margin emission factor of the NEWNE grid. The combined margin (CM), consisting of the combination of operating margin (OM) and build margin (BM), has calculated to be 0.99 tCO₂/MWh for NEWNE grid which have been sourced from the Central Electricity Authority (CEA) CO₂ Baseline database (version 10.0), in line with the "Tool to calculate the emission factor for an electricity system" version 05.

PLF has been considered in Emission reduction calculation as per the PLF determination reports prepared by third party. The assessment team agrees with the PLF as it is in line with Annex 11 of EB 48.

Consideration about EF_{grid,OM,y}:

The simple OM emission factor have been calculated using the Simple OM method as the low-cost/must run resources constitute less than 50% (for year 2009-10, 2010-11, 2011-12, 2012-13, 2013-14). The ex-ante vintage data has been used for the OM calculation of the project. The latest version of CEA database available was version 10. EF_{grid,OM,y} is calculated as the most recent three years full generation weighted average of the emission factors, consequently the Operating Margin Emission Factor is determined to be 1.00 tCO₂/MWh for NEWNE grid. The EF_{grid,OM,y} is calculated and fixed ex-ante for the entire crediting period of 10 years.

Consideration about $EF_{grid, BM, y}$:

BM emission factor is calculated ex- ante based on the most recent information available at the time of submission of PP and is fixed for the entire crediting period i.e. year 2013-2014. Consequently the Build Margin emission factor is determined to be 0.95 tCO₂/MWh for NEWNE grid.

The baseline emission factor is calculated as the average of the operating margin emission factor and the build margin emission factor where the weights W_{OM} and W_{BM} , by default, are 75% W_{OM} and 25% W_{BM} . The combined margin emission factor for NEWNE India has been calculated to be 0.99 tCO₂/MWh which will be fixed ex-ante for the entire renewable crediting period of 10 years.

The PP has used official data for OM and BM published by Central Electricity Authority (CEA) CO₂ Baseline database (version 10) which is an official source of Ministry of Power, Government of India. The validation team accepted the same as this is the latest version of the database available to the project participant at the time of submission of VCS Joint PD & MR.

The ex-ante baseline emissions, which is a product of the net electricity supplied to the grid and the grid emission factor, has been calculated as follows:

The baseline emissions have been calculated as the product of the net electricity exported to NEWNE grid by the project activity and combined margin emission factor of the NEWNE grid.

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

$$EF_{grid, CM, y} = \text{Baseline emission factor}$$

$$= 0.99 \text{ tCO}_2/\text{MWh}$$

$$EG_{PJ, y} = 368,856 \text{ MWh}$$

$$BE_y = 368,856 \times 0.99 \text{ tCO}_2\text{e}$$

$$= 364,244 \text{ tCO}_2\text{e}$$

Quantification of Project emissions

The project is a renewable energy based project and hence as per para 36 of the applied methodology ACM0002 version 17, "For most renewable power generation project activities, $PE_y = 0$. Hence the project emissions have been considered as zero which is acceptable to the DOE.

Quantification of Leakage

The project is a renewable energy based project and hence as per Section 5.6 of the applied methodology ACM0002 version 17, the leakage for the project activity is Zero.

Summary of GHG emission reductions or removals:

Based on the values of baseline emissions and project emissions ex-ante annual emission reductions have been calculated as 3,64,244 tCO₂/year.

$$ER_y = BE_y$$

$$= 3,64,244 \text{ tCO}_2\text{e}$$

Based on the above assessment, the assessment team hereby confirms that:
(a) All assumptions and data used by the project participants are listed in the VCS Joint PD & MR, including their references and sources;

(b) All documentation used by project participants as the basis for assumptions and source of data is correctly quoted and interpreted in the VCS Joint PD & MR;

(c) All values used in the VCS Joint PD & MR are considered reasonable in the context of the proposed project activity;

(d) The baseline methodology has been applied correctly to calculate baseline emissions and emission reductions;

(e) All estimates of the baseline emissions can be replicated using the data and parameter values provided in the VCS Joint PD & MR.

Validation team confirms that the estimates provided in the revised VCS Joint PD & MR are reasonable and the project participant has correctly applied the methodology; the calculations are complete and transparent and the data accuracy has been verified.

Uncertainties associated with the calculation of emissions

No uncertainties associated with the calculation of emissions are found by the DOE assessment team.

3.3.7 Methodology Deviations

No methodology deviations applied to this GHG project. The same has been confirmed by the DOE.

3.3.8 Monitoring Plan

The project activity uses the approved consolidated large scale methodology, ACM0002 ver 17. The monitoring plan is in accordance with the monitoring methodology. The monitoring plan will give opportunity for real measurement of achieved emission reductions.

Assessment team has checked all the parameters presented in the monitoring plan against the requirements of the methodology; no deviations relevant to the project activity have been found in the plan.

Assessment team confirms that the monitoring arrangements described in the monitoring plan are feasible within the project design, and the means of implementation of the monitoring plan are sufficient to ensure the emission reductions achieved by/resulting from the proposed project activity can be reported ex post and verified.

a) Data and parameters available at the validation:

Baseline emission factors for NEWNE regional grids of India are established *ex-ante* based on the approved methodology ACM0002, version 17, applying combined approach consisting of 75% operating margin and 25% build margin.

	Data/Parameter	Unit	Value applied	DOE Assessment
1.	$EF_{grid,OM,y}$	tCO ₂ /MWh	1.00	Project participant has used the official published data on operating and build margin emission factors. The version of the data used is latest version as available during the validation & verification of the project activity. This data is published by Central Electricity Authority, CEA (version 10.0) /20/ who is the sole authority for the publication of such data in India. CEA has published a database of carbon dioxide emission factors for the power sector in India based on detailed authenticated information obtained from CEA on all operating power stations in the country. Project participant has applied weight factors for the OM and BM (75% & 25% respectively) as specified in the tool to arrive at the emission factor for the combined margin. The assessment team has checked the emission factor calculations from CEA database version 10.0 and the values of $EF_{grid,CM,y}$, $EF_{grid,OM,y}$ and $EF_{grid,BM,y}$ are found to be correct. The assessment team agrees to this emission factor since it is based on the official background data published by CEA.
2.	$EF_{grid,BM,y}$	tCO ₂ /MWh	0.95	
3.	$EF_{grid,CM,y}$	tCO ₂ /MWh	0.99	

The assessment team confirms that the database is an official publication of Ministry of Power, Government of India. The calculation and assumptions were verified by the assessment team and found to be correct and appropriate.

b) Data and parameters monitored:

The ex-post parameters that are mentioned in the methodology are included in the VCS Joint PD & MR and are provided in compliance with the methodology, and they will be monitored during the crediting period. The monitoring parameters are mentioned below:

Monitoring parameter for Phase-1: Tejuva wind farm in Jaisalmer district of Rajasthan

Parameter	Description/Assessment
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1.	EG BL,Tejuva,y	As the project WTGs in phase-1 (Tejuva) in Rajasthan are connected to a common feeder (a common pool where project developers under this project activity and other project developers feed electricity), O&M contractor apportioned the electricity export and import data based on individual WTGs controller reading, summation of all controller reading of WTGs connected under the common feeder and joint meter reading (based on billing meter) and provide month wise “Credit subdivision of Energy /30/” which contains electricity export, import and net export by the project WTGs under phase-1 (Tejuva site). These values would be the main source to calculate the baseline emission by this project activity. On receipt of the “Credit subdivision of Energy /30/” sheet, the project proponent raises the invoice for the electricity export to the grid and same would be cross checked with records of invoices. The assessment team checked the monitoring plan for Tejuva site of the project activity and found appropriate with the actual site practice and hence, acceptable to the assessment team.
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Monitoring parameter for Phase-2: Chandgarh wind farm in Dewas and Shajapur, Madhya Pradesh

	Parameter	Description/Assessment
1.	EG BL,Chadgadh,y	As the project WTGs in phase-2 (Chadgarh) in Madhya Pradesh are connected to a common feeder (a common pool where project developers under this project activity and other project developers feed electricity), O&M contractor apportioned the electricity export and import data based on individual WTGs controller reading, summation of all controller reading of WTGs connected under the common feeder and joint meter reading (based on billing meter) and provide month wise “Credit report” /30/ which contains electricity export, import and net export by the project WTGs under phase-2 (Chadgarh site). These values would be the main source to calculate the baseline emission by this project activity. On receipt of the “Credit report” /30/, the project proponent raises the invoice for the electricity export to the grid and same would be cross checked with records of invoices /30/. The assessment team checked the monitoring plan for Chandgarh site of the project activity and found appropriate with the actual site practice and hence, acceptable to the assessment team.

Suzlon Infrastructure Services Limited and Gamesa Wind Turbines Pvt. Ltd are the O&M contactors for Tejuva and Chandgarh site respectively. Respective O&M contractor will be responsible for the maintaining all the monitoring data on behalf of state utility in respect of the project activity. O&M contractors have implemented the management structure for managing the monitored data.

The project activity is operated by O&M contractor for the project activity and managed by the CLP. The operational and maintenance contracts for the project activity are with Suzlon Infrastructure Services Limited and Gamesa Wind Turbines Pvt. Ltd, which are an ISO 9001 certified company. O&M contractors follow the documentation practices to ensure the reliability and availability of the data for all the activities as required from the identification of the site, wind resource assessment, logistics, finance, construction, commissioning and operation of the wind power project.

The assessment team therefore is of the opinion that the project participant through the O&M agency is capable of implementing the monitoring plan in the context of the project activity.

WTG installed under this project activity is connected to a common feeder. A particular feeder may comprise of WTGs belonging to owners other than PP but belonging to the same O&M service provider. At the respective District Vidyut Vitran Nigam Ltd sub-station, the total export & import to this feeder is monitored using the main meter & the backup meter, which are electronic tri-vector meters. The total export at this meter is arrived at by multiplying the monthly meter reading to the multiplying factor of the meter concerned. The monthly meter reading is arrived at as the difference between the current meter reading and the previous meter reading. The period between these two readings is usually a period of 30 days which may vary. In a similar fashion, total import at this meter is also calculated. Additionally, O&M contractors are monitoring electricity generation by each WTG at the WTG controller by their Central Monitoring System. With the help of WTG controller readings and JMR reading O&M contractor calculates the electricity export by each WTG (by apportioning procedure) and generate the "Credit report". Based on the same, all the project investors raise the invoice for the electricity export to the grid.

The main and backup meters shall be calibrated once in a five year in line with notification issued by Central Electricity Authority, Govt of India dated the 17th March, 2006. The meters would be tested by any accredited laboratory in the presence of the parties (State Electricity Board, Project investor and the O&M Contractor) involved. Both parties shall seal main and backup meters. Defective meters shall be replaced immediately. As per the schedule, calibration of all energy meter, instruments and equipment will be carried out once in five year and recorded in calibration reports.

The responsibilities and authorities of project management, data handling and recording, measurement methods and QA/QC procedure have been systematically established and formalized and the same was verified during the site visit.

The representatives of the O&M team were interviewed at both the sites to verify the correctness of the procedure mentioned in the VCS Joint PD & MR. The assessment team confirms that the description in the VCS Joint PD & MR correctly represents the metering system available at the project activity sites and that the defined monitoring plan can be implemented in the context of the project activity. The operational and management structure along with detailed responsibilities are mentioned in VCS Joint PD & MR.

URS confirms that the monitoring plan mentioned in the latest VCS Joint PD & MR is in accordance with the requirements mentioned in the monitoring methodology and the local regulatory requirements of the state utility. The monitoring arrangements described in the monitoring plan are feasible within the project design. URS is of the opinion that the monitoring plan will give opportunity for real measurement of achieved emissions reductions.

3.4 Non-Permanence Risk Analysis

The complete and transparent monitoring plan of the project activity has been described in VCS Joint PD & MR. The monitoring plan conforms to the requirement of the applied methodology ACM0002 version 17. The same has been validated by the assessment team and it is found that there is no non-permanence risk found at this stage of the project activity.

3.5 Environmental Impact

The project activity is expected to have positive impacts and no significant adverse environmental impacts have been identified by the DOE. Since, the project activity is an electricity generation from renewable source (i.e. wind energy) therefore no negative impact are envisaged. There is no mandatory legal requirement for carrying out an environmental impact assessment. As per the Schedule 1 of the EIA notification dated 1/12/2009 /21/ and latest notification dated 24/12/2013 /21/, given by the Ministry of Environment and Forests under the Environment (Protection) Act 1986, the proposed Project activity does not fall under the list of activities requiring EIA as the environmental impacts for such project are not considered as significant by the host Party or PP. The wind power projects are not included in this list and thus an EIA study is not required.

The assessment team has verified all the statutory clearances which include commissioning certificates, Power Purchase Agreements for the WTGs. The assessment team concludes that all the clearances obtained are in accordance with the procedures required by the host party and no significant environmental impacts are expected from the project activity.

3.6 Stakeholder Comments

PP has carried out two separate stakeholder consultation for the project activity. The identified stakeholders are representatives from O&M contractor, employees of CLP Wind Farms (India) Private Limited, contractor of CLP Wind Farms (India) Private Limited and villagers from nearby villages.

For the Tejuva site in the project activity, the stakeholder's consultation meeting was carried out by CLP Wind Farms (India) Private Limited on 22/02/2012 at the Suzlon Infrastructure Services Limited office at Jaisalmer District, India /16/.

For the Chandgarh project site, the stakeholder's consultation meeting was carried out by CLP Wind Farms (India) Private Limited on 08/09/2016 at the Site office of CLP Wind Farms (India) Private Limited at Dewas, Madhya Pradesh, India /16/.

The assessment team has assessed the invitation letters, public notice, minutes of meeting /16/ of the stakeholders meetings and found correct and it is found that no adverse comment was received for the project activity. This has also been verified by assessment team during site visit by conducting a random stakeholder's meeting at the WEGs site. Further, the interviewees confirmed that there was no adverse comment about the project and this project will lead to employment generation and better environmental conditions. The assessment team hereby confirms that the process of local stakeholder consultation is observed to be adequate and credible.

4 VERIFICATION FINDINGS

4.1 Accuracy of GHG Emission Reduction and Removal Calculations

URS confirms that appropriate methods and formulae for calculating baseline emissions, project emissions and leakage have been followed, and the assumptions, emission factors and default values that are applied in the calculation have been justified.

The emission reductions ER_y by the project activity during the monitoring period is the difference between the baseline emissions, project emissions and leakage, i.e. $ER_y = BE_y - PE_y - L_y$.

Baseline emissions:

The baseline emission factor of 0.99 tCO₂/MWh is fixed ex-ante for the crediting period.

Baseline emission factor:

Particulars	Discussion and verification assessment
Verified value	0.99 tCO ₂ /MWh, Combined margin CO ₂ emission factor of NEWNE grid
Source of data	Ex-ante calculated based on the Central Electricity Authority: CO ₂ Emission Database, CEA CO ₂ Baseline database Version 10 /20/
Justification	This database is an official publication of Government of India for the purpose of CDM baseline. It is based on most recent data available to the Central

	Electricity Authority and hence considered authentic. As the calculation of baseline emission has been done ex ante its value will remain fixed for the entire crediting period.
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URS was able to confirm that the emission factor of 0.99 tCO₂/MWh has been applied in the VCS Joint PD & MR and during this current monitoring period.

Verification of monitoring parameters

The procedure for the calculation of the emission reductions has been described clearly in the VCS Joint PD & MR. The monitoring plan of the project activity has been duly implemented by the PP at the project activity site in accordance with registered monitoring plan of the project activity. The monitoring mechanism, including the data collection system, is found to be effective and reliable and it has been verified during the site visit of the project activity and through the document review.

The monitored parameters are mentioned below:

a) Quantity of net electricity supplied to the grid by phase-1 (Tejuva) site to the grid in year y

Data/Parameter	Description		
EG _{BL, Tejuva, y}	Quantity of net electricity supplied to the grid by phase-1 (Tejuva) site to the grid in year y		
Value of monitored parameter			
	Year		Value (MWh)
	2015 (29/03/2015 to 31/12/2015)		87,097.84
	2016 (01/01/2016 to 31/07/2016)		113,184.84
	Total		200,282.67
Measured/Calculated/Default	This parameter is a calculated value based on the measured values of electricity export and import.		
Source of data	Credit subdivision of Energy issued by the O&M contractor		
Monitoring Equipment	Tri-vector energy meters installed at the grid interconnection point at project site. Details of meters are mentioned below		
	Meter	Sl. No.	Accuracy
	Main Meter	RJB85058	0.2s
	Check Meter	RJB85059	0.2s
Measuring/Reading/Recording frequency	Continuous monitoring, hourly measurement and monthly recording		
Calculation method (if	The project WTGs in phase-1 (Tejuva) in Rajasthan are		

applicable)	connected to a common feeder (a common pool where project developers under this project activity and other project developers feed electricity), O&M contractor apportioned the electricity export and import data based on individual WTGs controller reading, summation of all controller reading of WTGs connected under the common feeder and joint meter reading (based on billing meter) and provide month wise "Credit subdivision of Energy /30/" which contains electricity export, import and net export by the project WTGs under phase-1 (Tejuva site). These values would be the main source to calculate the baseline emission by this project activity.
QA/QC procedures	The Calibration frequency of the Energy meters is once in a five year /23/. The data will be archived both in electronic and paper format for crediting period + 2 years

a) Quantity of net electricity supplied to the grid by phase-2 (Chandgarh) site to the grid in year y

Data/Parameter	Description		
EG _{BL,Chadgadh,y}	Quantity of net electricity supplied to the grid by phase-2 (Chandgarh) site to the grid in year y		
Value of monitored parameter			
	Year		Value (MWh)
	2015 (29/03/2015 to 31/12/2015)		55,197.98
	2016 (01/01/2016 to 31/07/2016)		132,288.07
	Total		187,486.05
Measured/Calculated/Default	This parameter is a calculated value based on the measured values of electricity export and import		
Source of data	Credit report issued by the O&M contractor /30/		
Monitoring Equipment	Tri-vector energy meters installed at the grid interconnection point at project site. Details of meters are mentioned below		
	Meter	Sl. No.	Accuracy
	Feeder-I (Main Meter)	XB587800	0.2s
	Feeder-I (Check Meter)	XB587799	0.2s

	Feeder-II (Main Meter)	XB587797	0.2s
	Feeder-II (Check Meter)	XB587798	0.2s
Measuring/Reading/Recording frequency	Continuous monitoring, hourly measurement and monthly recording		
Calculation method (if applicable)	As the project WTGs in phase-2 (Chadgarh) in Madhya Pradesh are connected to a common feeder (a common pool where project developers under this project activity and other project developers feed electricity), O&M contractor apportioned the electricity export and import data based on individual WTGs controller reading, summation of all controller reading of WTGs connected under the common feeder and joint meter reading (based on billing meter) and provide month wise "Credit report" which contains electricity export, import and net export by the project WTGs under phase-2 (Chadgarh site). These values would be the main source to calculate the baseline emission by this project activity.		
QA/QC procedures	The Calibration frequency of the Energy meters is once in a five year /23/. The data will be archived both in electronic and paper format for crediting period + 2 years		

URS confirms that

- The monitoring plan as mentioned in the VCS Joint PD & MR is in accordance with the actual monitoring plan followed at the project site.
- All parameters stated in the monitoring plan of VCS Joint PD & MR have been sufficiently monitored and correctly listed. The monitored data for required parameters have been verified and found complete and consistent by checking the whole procedure for information aggregation.

Accuracy of Equipment

URS verified the accuracy and monitoring of equipment used in the project activity by checking the calibration reports of the monitoring meter, monitoring procedures and cross verified the same during the site inspection and confirms that:

1. Monitoring results are consistently recorded as per the approved frequency.
2. Quality assurance and quality control procedures as per the monitoring plan of the VCS Joint PD & MR.

As per the VCS Joint PD & MR, the calibration shall be carried out once in five years in line with the notification issued by Central Electricity Authority, Government of India dated the 17th March, 2006.

A) Tejuva Location

Sl. No.	Meter Identification No	Meter Make	Accuracy Class	Calibration Date	Calibration Validity Date
1	RJB85058 (Main Meter)	Secure Meter	0.2s	23/01/2015	22/01/2020
2	RJB85059 (Check Meter)	Secure Meter	0.2s	23/01/2015	22/01/2020

B) Chandgarh Location

Sl. No.	Feeder No	Meter Identification No	Meter Make	Accuracy Class	Calibration Date	Calibration Validity Date
1	Feeder-I	XB587800 (Main Meter)	Secure Meter	0.2s	26/03/2015	25/03/2020
		XB587799 (Check Meter)	Secure Meter	0.2s	26/03/2015	25/03/2020
2	Feeder-II	XB587797 (Main Meter)	Secure Meter	0.2s	26/03/2015	25/03/2020
		XB587798 (Check Meter)	Secure Meter	0.2s	26/03/2015	25/03/2020

The verification team has onsite checked the meter readings, calibration certificates, and installation and confirmed that the monitoring has been carried out in accordance with the registered monitoring plan. The parameter required by the monitoring plan has been listed and verified by the assessment team as correct and conservative.

The net power supplied by the project to grid was determined by the electricity exported to the grid minus the electricity imported from the grid. The input data for the net electricity exported by the project in the ER calculation spreadsheet were taken from Credit Sub-division of Energy/Credit Report issued by Contractor and cross-checked with the invoices. The net electricity supplied by the project to the grid for the monitoring period is calculated as 387,768.72 MWh.

The net electricity exported to the grid by the project is shown in the following table:

Month	Quantity of net electricity supplied to the grid by phase-1 (Tejuva) site to the grid in year y (MWh)	Quantity of net electricity supplied to the grid by phase-2 (Chandgarh) site to the grid in year y (MWh)	Total Net Electricity Export by the Project (MWh)
	EG _{BL,Tejuva,y}	EG _{BL,Chandgarh,y}	EG _{PJ,y}
March-15	-1.76	0.00	-1.76
April-15	2,376.00	1,454.84	3,830.84
May-15	6,304.00	4,401.22	10,705.22
June-15	6,017.44	5,051.32	11,068.76
July-15	7,008.36	15,461.08	22,469.44
August-15	10,811.85	9,375.71	20,187.56
September-15	17,217.11	6,670.21	23,887.32
October-15	17,661.44	3,813.44	21,474.88
November-15	12,590.30	3,526.15	16,116.45
December-15	7,113.11	5,444.01	12,557.12
January-16	6,829.91	4,103.47	10,933.38
February-16	9,424.24	14,732.92	24,157.16
March-16	13,288.50	14,319.68	27,608.18
April-16	11,876.99	25,848.70	37,725.69
May-16	24,027.37	29,391.13	53,418.49
June-16	19,931.74	21,494.79	41,426.53
July-16	27,806.08	22,397.40	50,203.48
Total	200,282.67	187,486.05	387,768.72

Baseline Emissions

As per the equation 6 of the methodology ACM 0002 (Version 17.0),

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

where:

BE_y: Baseline emissions in year y (tCO₂e/yr)

EG_{PJ,y}: Quantity of net electricity generation that is produced and fed into the grid as a result of the implementation of the CDM project activity in year y (MWh/yr)

EF_{grid,CM,y}: Combined margin CO₂ emission factor for grid connected power generation in year y calculated using the latest version of the "Tool to calculate the emission factor for an electricity system" (tCO₂e/MWh)

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

Thus, $BE_y = 387,768.72 \text{ MWh} * 0.99 \text{ tCO}_2\text{e/MWh}$

$= 383,890 \text{ tCO}_2 \text{ (after rounding down)}$

Project Emissions:

Since the project activity is a renewable energy project which generates electricity using wind power and hence does not result in project emissions as per the applicable methodology ACM0002, version 17.

$PE_y = 0$

Leakage Emissions:

No leakage is considered from the project activity as per approved methodology ACM0002 version 17.

An ER calculation was prepared by the PP and presented to the assessment team. It is confirmed that the ER calculation is overall correct. The total emission reductions during the monitoring period are 383,890 tCO_{2e}.

Year	Baseline emissions or removals (tCO _{2e})	Project emissions or removals (tCO _{2e})	Leakage emissions (tCO _{2e})	Net GHG emission reductions or removals (tCO _{2e})
2015 (29/03/2015 to 31/12/2015)	140,872.00	0.00	0.00	140,872.00
2016 (01/01/2016 to 31/07/2016)	243,018.00	0.00	0.00	243,018.00
Total	383,890.00	0.00	0.00	383,890.00

No significant reporting risks have been identified for the data reported. The operational procedures for emergency preparedness, maintenance and calibration of monitoring equipments, monitoring measurements and reporting, record handling are available at the plant. All the monitored data are archived in electronic form. The data will be kept for the whole crediting period and additional 2 years thereby meeting the requirement of the VCS Joint PD & MR.

4.2 Quality of Evidence to Determine GHG Emission Reductions and Removals

The reported values, notations, units and sources in the Joint PD & MR and the ER calculation sheet for all the monitoring parameters have been checked with monthly Credit subdivision of Energy issued by the O&M contractor/Credit report issued by the O&M contractor and cross checked with electricity invoices and it is found to be consistent with the emission reduction sheet and with Joint PD & MR. The data is cross verified with the reading mentioned in the Joint PD & MR, the procedure for data monitoring and compilation was also verified and found in compliance with the requirement of the monitoring plan.

Furthermore, the cross checks have been performed during site inspection on the continuous operation of the monitoring equipment and procedures.

Emission factor of the grid electricity of the NEWNE grid is 0.99 tCO_{2e}/MWh. The ex-ante parameter has been derived from CO₂ Baseline Database for the Indian Power Sector, User Guide (Version 10) and Govt. of India.

Management and Operational System and Quality Assurance

Suzlon Infrastructure Services Limited and Gamesa Wind Turbines Pvt. Ltd are the O&M contractors for Tejuva and Chandgarh site respectively. Respective O&M contractor will be responsible for the maintaining all the monitoring data on behalf of state utility in respect of the project activity. O&M contractors have implemented the management structure for managing the monitored data.

This approved monitoring methodology requires monitoring of the “Net electricity supplied from the project activity”. While Emission factor of the project activity is fixed ex ante hence no further monitoring of this parameter is required. As per ACM0002, version 17, leakage need not be considered hence leakage has not been considered for the project activity. Hence, the sole parameter for monitoring is the net electricity supplied by the project activity to the grid.

The project activity is operated by O&M contractor for the project activity and managed by the CLP. The operational and maintenance contracts for the project activity are with Suzlon Infrastructure Services Limited and Gamesa Wind Turbines Pvt. Ltd, which are an ISO 9001 certified company. O&M contractors follow the documentation practices to ensure the reliability and availability of the data for all the activities as required from the identification of the site, wind resource assessment, logistics, finance, construction, commissioning and operation of the wind power project.

URS verified that the emission calculations are based on the authentic data. The source and reliability of the baseline ER sheet used to calculate the monthly emission reduction was checked and found to be correct.

5 VALIDATION AND VERIFICATION CONCLUSION

URS Verification Private Ltd (URS) has been contracted by CLP Wind Farms (India) Private Limited to perform the joint validation & verification of the emission reductions reported for the VCS project “Tejuva – Chandgarh Wind Project” in the period 29/03/2015 to 31/07/2016 (both days inclusive).

The joint validation & verification activity is with regards to the relevant requirements of VCS Standard (version 3.5), VCS Joint PD & MR for this project activity. The scope of this engagement covers the joint validation & verification and certification of greenhouse gas emission reductions generated by the above project during the mentioned period as above, as reported in the Joint PD & MR for the project activity “Tejuva – Chandgarh Wind Project”, version 03, dated on 23/09/2016.

The management of the CLP Wind Farms (India) Private Limited is responsible for the preparation, calculation and determination of GHG emission reductions from the project. The development and maintenance of records and reporting procedures are in accordance with the VCS Joint PD & MR.

It is the responsibility of URS to express an independent GHG joint validation & verification opinion on the GHG emissions and on the calculation of GHG emission reductions from the project for the period (29/03/2015 to 31/07/2016 (both days inclusive)) based on the reported emission reductions in the Joint PD & MR version 03, dated on 23/09/2016 for the same period.

Based on documented evidences and corroborated by an on-site assessment URS Verifications confirms that:

- The project activity has been implemented and operated as per the description provided in the VCS Joint PD & MR. Project description has been appropriately described and justified and project remains in compliance with VCS rules.
- The approved monitoring plan is in place as per the applied large scale consolidated methodology ACM0002, “Grid-connected electricity generation from renewable sources” version 17.
- The VCS Joint PD & MR, data and calculation of the GHG emission reduction and other supporting documents provided are complete, verifiable and supports the emission reductions being claimed;
- The monitoring complies with the monitoring plan as described in the VCS Joint PD & MR;
- The project complies with the VCS verification criteria for projects and their GHG emission reductions or removals set out in VCS Standard (version 3.5);

The assessment team confirms that the claimed emission reductions are free from material errors, omissions or misstatements, with a reasonable level of assurance. URS confirms that the project is implemented as described in the VCS Joint PD & MR. The GHG emission reduction stated in the Joint PD & MR version 03, dated on 23/09/2016 for the project "Tejuva – Chandgarh Wind Project" for the period 29/03/2015 to 31/07/2016 (both days inclusive) are fairly stated.

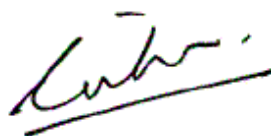
Based on the information evaluated, we confirm the following:

Verification period: From 29/03/2015 to 31/07/2016 (both days inclusive)

Verified GHG emission reductions and removals in the above verification period:

Year	Baseline emissions or removals (tCO ₂ e)	Project emissions or removals (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Net GHG emission reductions or removals (tCO ₂ e)
2015 (29/03/2015 to 31/12/2015)	140,872.00	0.00	0.00	140,872.00
2016 (01/01/2016 to 31/07/2016)	243,018.00	0.00	0.00	243,018.00
Total	383,890.00	0.00	0.00	383,890.00

Date: 18/10/2016



Mukesh Singhal

CEO

URS Verification Private Limited

APPENDIX I: RESOLUTION OF CORRECTIVE ACTION REQUESTS AND CLARIFICATION AND FORWARD ACTION REQUESTS

Summary of Findings	CAR	CL	FAR
	07	00	NA

<u>Date:</u>	12/09/2016	<u>Raised by:</u>	Amit Ranjan Mandal		
<u>Type of Finding</u>	CAR	<u>S. No. of Finding</u>	1	<u>Reference</u>	VCS Project Description, version 01, dated 10/08/2016 & MR dated 17/08/2016
<u>Details of the Finding:</u>			12/09/2016		
1) PP is requested to provide the combined PD and monitoring report for the project as the activity is inclusive of both validation and verification. 2) During conceptualization of Chandgarh (phase-2) wind project, capacity of the project was considered as 100 (50*2) MW as available in board resolution. However, Only 92MW is installed at site. PP is requested to justify the same.					
<u>Project Participant Response</u>			19/09/2016		
1) Combined project description and monitoring report for the project has now been submitted. 2) During conceptualization of Chandgarh wind project, capacity of the project was considered as 100 (50*2) MW. However, management has decided not to go ahead with 4 locations (i.e. 8 MW) due to land issue. Same has been also confirmed by the Gamesa by an email dated 02/12/2015. Thus, capacity of the Chandgarh site has been reduced to 92 MW from 100 MW.					
<u>Documents/ information provided by the Project Participant:</u>					
1) Email communication confirming acceptance of capacity reduction dated 02/12/2015 (Aattachment-01).					
<u>Reasoning for acceptance or non-acceptance:</u>			22/09/2016		

1. PP has now provided the Joint Project Description and Monitoring Report for the project activity. However the following issues have been identified based on the submitted document. • PP has provided the baseline scenario under Section 1.1 of the Joint PD &MR. As per the <i>"Instructions for completing the joint project description and monitoring report"</i>, PP is requested to indicate the <i>"description of the scenario existing prior to the implementation of the project activity"</i>. In case if both are same, PP is requested to indicate the same in the Joint PD & MR. • In line with the <i>"Instructions for completing the joint project description and monitoring report"</i>, PP is requested to indicate yearly <i>"Estimated GHG emission reductions or removals"</i> (e.g 2015 etc.) under Section 1.7 of the Joint PD & MR. • Under the Section <i>"Conditions Prior to Project Initiation"</i>, PP has provided the baseline scenario, however PP is further requested to indicate the conditions prior to the project initiation. In case if both the scenarios are same, please indicate the same under Section 1.10. • For the Applicability Criteria No:2, PP has indicated that the said criteria is not applicable. The project is a wind power project, hence please clarify as why the Criteria No.2 is not applicable to the project activity.	
2. PP has now clarified on the change in the capacity from 100 MW to 92 MW for the Chandgarh wind power project. PP has submitted the email dated 02/12/2015 from Gamesa for the same. The issue is now closed.	
CAR 01 is open.	
Project Participant Response	23/09/2016
• Description of the scenario existing prior to the implementation of the project activity has been incorporated in the revised Joint PD & MR. Prior to implementation of this project, there was no project activity by the CLPWF. Same amount of electricity was generated from other grid connected power plant. • Yearly estimated GHG emission reductions or removals already incorporated in section 1.7 of joint PD & MR. • Description of the scenario existing prior to project initiation has been incorporated in the section 1.10 of revised Joint PD & MR. Prior to implementation of this project activity, there was no project activity. • Applicability criteria no. 2 has been revised considering this project.	
Documents/ information provided by the Project Participant:	
Revised Joint PD & MR.	
Reasoning for acceptance or non-acceptance:	26/09/2016

1. The DOE assessment for these issues are as follows:

- PP has now provided the description of the scenario existing prior to the implementation of the project activity in the Section 1.1 of the Joint PD & MR. The issue is closed.
- PP has now provided the yearly estimate of the GHG emission reductions or removals under Section 1.7 of the Joint PD & MR. The issue is closed.
- PP has now provided description on the conditions prior to the project activity under Section 1.10 of the Joint PD & MR. The issue is closed.
- PP has now revised the justification provided for the Applicability criteria no. 2 in the Joint PD & MR. The issue is closed.

CAR 01 is closed.

Close out by Lead Assessor

26/09/2016

Date:	12/09/2016	Raised by:		Amit Ranjan Mandal	
<u>Type of Finding</u>	CAR	<u>S. No. of Finding</u>	2	<u>Reference</u>	VCS Project Description, version 01, dated 10/08/2016 & MR dated 17/08/2016
Details of the <u>Finding</u>:			12/09/2016		
1) PP is requested to provide the commissioning certificate for all WTGs for both the locations. PP is also requested to provide the declaration for the location of the projects (for latitude and longitude details). 2) Purchase orders of the project activity issued by CLP Wind Farms (India) Private Limited. 3) PP is requested to provide the declaration letter against the description mentioned for section 1.12.1, 1.12.2, 1.12.3, 1.12.4, 1.12.5 of the VCS-PD.					
Project Participant Response			19/05/2016		
1) Commissioning certificates of WTGs installed at Tejuva and Chandgarh sites have been attached with this submission. 2) Purchase orders of the project activity have been attached with this submission. 3) Declaration letter pertaining to clause no 1.12.1, 1.12.2, 1.12.3, 1.12.4, 1.12.5 of the VCS-Combined PD & MR has been attached with this submission.					
Documents/ information provided by the Project Participant:					
1) Commissioning certificates of WTGs installed at Tejuva site (Aattachment-02). 2) Commissioning certificates of WTGs installed at Chandgarh site (Aattachment-03). 3) Purchase orders for WTGs installed at Tejuva site (Aattachment-04) 4) Purchase orders for WTGs installed at Chandgarh site (Aattachment-05) 5) Declaration letter (Aattachment-06)					

Reasoning for acceptance or non-acceptance:	22/09/2016
1. PP has now submitted the Commissioning Certificates for the WTGs installed at Tejuva and Chandgarh sites of the project activity. However the Commissioning date for the WTG (WTG ID: R-106, installed at Chandgarh, Dewas, MP) in the PD does not match with the actual date available in the Commissioning date of the WTG (30/10/2015). 2. PP has now submitted the Purchase Orders of the WTGs installed under the project activity. The issue is closed. 3. PP has now provided the Declaration letter pertaining to the clause no. 1.12.1, 1.12.2, 1.12.3, 1.12.4, 1.12.5 of the VCS Combined PD & MR. The issue is closed. CAR 02 is open.	
Project Participant Response	23/09/2016
Commissioning date of R-106 was on 30/10/2015. Same has been corrected.	
Documents/ information provided by the Project Participant:	
Revised joint PD & MR	
Reasoning for acceptance or non-acceptance:	26/09/2016
1. PP has now corrected the commissioning date for the WTG with WTG ID: R-106 in the Joint PD & MR. The issue is closed. CAR 02 is closed.	
Close out by Lead Assessor	26/09/2016

<u>Date:</u>	12/09/2016	<u>Raised by:</u>	Amit Ranjan Mandal		
<u>Type of Finding</u>	CAR	<u>S. No. of Finding</u>	3	<u>Reference</u>	VCS Project Description, version 01, dated 10/08/2016 & MR dated 17/08/2016
<u>Details of the Finding:</u>			12/09/2016		
The description against the applicability condition 1 and 2 is not transparently discussed. PP is requested to justify the applicability condition 1 and 3 appropriately in the VCS-PD.					
<u>Project Participant Response</u>			19/09/2016		
Justification against the applicability condition 1, 2 & 3 are now revised in line with this project activity.					
<u>Documents/ information provided by the Project Participant:</u>					
Revised combined VCS-PD & MR					
<u>Reasoning for acceptance or non-acceptance:</u>			22/09/2016		
The project activity is a Greenfield wind power project and PP has indicated that the Applicability Criteria No.2 is not met by the project activity. Hence please clarify as why this Applicability criteria is not met by the project activity.					
<u>Project Participant Response</u>			23/09/2016		

Description of the scenario existing prior to project initiation has been incorporated in the revised Joint PD & MR. Prior to implementation of this project, there was no project activity at site. Thus, applicability criteria no. 2 has been revised accordingly.	
Documents/ information provided by the Project Participant:	
-	
Reasoning for acceptance or non-acceptance:	26/09/2016
PP has now corrected the description on the justification provided for the Applicability Criteria No. 2 of the applied methodology in the revised Joint PD & MR. The issue is now closed.	
CAR 03 is closed.	
Close out by Lead Assessor	26/09/2016

<u>Date:</u>	12/09/2016	<u>Raised by:</u>		Ashok Kumar	
<u>Type of Finding</u>	CAR	<u>S. No. of Finding</u>	4	<u>Reference</u>	VCS Project Description, version 01, dated 10/08/2016 & MR dated 17/08/2016
Details of the <u>Finding:</u>			12/09/2016		
1) The project boundary diagram is not clear to the validation team. PP is requested to describe it transparently in the PD.					
2) The justification of baseline emission is also not clear in the VCS-PD.					
Project Participant Response			19/09/2016		
1) WTG belongs to CLP and other project proponent has now been separately demarked in the Project boundary diagram for better clarity.					
2) Baseline emissions for CH4 and N2O have been excluded from consideration for simplification in this project. Same has been mentioned in the combined VCS PD & MR for better clarity.					
Documents/ information provided by the Project Participant:					
Revised combined VCS-PD & MR					
Reasoning for acceptance or non-acceptance:			22/09/2016		
1. PP has now clearly described the project boundary diagram in the Section 2.3 of the VCS Joint PD & MR. The issue is closed.					
2. PP has now clearly described the exclusion of the CH ₄ and N ₂ O from the baseline emissions from consideration for simplification. The issue is closed.					
CAR 04 is closed.					
Close out by Lead Assessor			22/09/2016		

Date:	12/09/2016	Raised by:	Ashok Kumar		
Type of Finding	CAR	S. No. of Finding	5	Reference	VCS Project Description, version 01,

					dated 10/08/2016 & MR dated 17/08/2016
Details of the Finding:				12/09/2016	
1. The quarterly balance of outstanding amount calculated for first year in workbook Interest is not correct in both IRR spread sheet.					
2. The offer letter date from Suzlon Energy Ltd is not consistently mentioned in IRR and VCS PD. Similary the date of offer letter from Gamesa is not provided in VCS PD/IRR spreadsheet.					
3. The salvage value considered for Tejuva site IRR sheet is 10% of total project cost, while 100% equipment cost is depreciated, hence salvage value plus total depcriciated asset is more than total project cost, justification required.					
4. Appropriate source of reference is not provided for all values used for investment analysis in VCS PD/IRR spread sheet.					
5. In IRR spreadsheet of Chandgarh site the 100% project cost is depreciated which includes land cost and civil cost as well is not correct as per applicable rule.					
6. Justification for why particular paramter will not vary to breach the benchmark value under sensitivity analysis is not provided in VCS PD given the actual PPA signed for Tejuva site at higher rate than considered for IRR calculation.					
PP is requested to justify the above.					
Project Participant Response				19/09/2016	
1) The quarterly balances of outstanding amount for first year in "Interest" workbook have been corrected in both IRR spread sheets.					
2) The date of offer letter submitted by Suzlon Energy Ltd for Tejuva site is 26/07/2011 and the date of offer letter submitted by Gamesa for Chandgarh site is 26/09/2014. Same have been now consistently mentioned in IRR and VCS PD.					
3) Estimation of depreciable amount for Tejuva site is now revised and 90% of the project cost has been considered as depreciable in line with CERC Tariff Order dated 14/12/2011 (Ref pg 27).					
4) Appropriate source of reference are now included for all values used for investment analysis and same have been consistently incorporated in VCS PD.					
5) Estimation of depreciable amount for Chandgarh site is now revised and 90% of the project cost has been considered as depreciable in line with CERC Tariff Order dated 27/03/2012 (Ref pg no 31).					
6) Justification for respective favorable variation of parameters (considered under sensitivity analysis) to breaching point of benchmark are now incorporated in the combined VCS PD & MR. Variations of equity IRR considering actual project cost, actual PLF, actual electricity tariff and actual O&M cost also included in the in the combined VCS PD & MR.					
Documents/ information provided by the Project Participant:					
1) Revised IRR sheet for Tejuva site					
2) Revised IRR sheet for Chandgarh site					
3) Revised combined VCS PD & MR					

Reasoning for acceptance or non-acceptance:	22/09/2016
1) The PP has corrected the calculation of quarterly balances of outstanding amount for first year in "Interest" workbook in both IRR spread sheets, the revised calculation is found correct. Hence this issue is resolved. 2) The PP has corrected the offer letter date for Tejuva site in revised IRR/VCS PD, also incorporated offer letter date for Gamesa WTGs. The dates of offer letter mentioned in revised IRR sheet and VCS PD is consistent and correct as per source. Hence this issue is resolved. 3) The PP has corrected the calculation of depreciation in Tejuva site IRR spreadsheet and taken depreciable amount as 90% of project cost in line with CERC Tariff Order dated 14/12/2011 (Ref pg 27). The calculation is found correct and hence issue is resolved. 4) The source of references is now included for all values used for investment analysis and it is also consistently incorporated in VCS PD. Hence this issue is resolved. 5) The PP has corrected the calculation of depreciation in Chandgarh site IRR spreadsheet site and taken depreciable amount as 90% of project cost in line with CERC Tariff Order dated 27/03/2012 (Ref pg no 31). The calculation is found correct and hence issue is resolved. 6) PP has included sensitivity analysis, including justification for not breaching the benchmark value with reasonable variation of parameter considered. The sensitivity analysis is checked along with justification and source of reference, the same is found correct and acceptable. Hence this issue is resolved.	
CAR 05 is closed.	
Close out by Lead Assessor	22/09/2016

<u>Date:</u>	12/09/2016	<u>Raised by:</u>		Ashok Kumar	
<u>Type of Finding</u>	CAR	<u>S. No. of Finding</u>	6	<u>Reference</u>	VCS Project Description, version 01, dated 10/08/2016 & MR dated 17/08/2016
<u>Details of the Finding:</u>			12/09/2016		
PP is requested to provide the following documents: Documentary evidence for Stakeholder meeting dated 22/02/2012. Invitation letter & Newspaper advertisement dated 10/02/2012 and stakeholder feedback documents.					
<u>Project Participant Response</u>			19/09/2016		
Documentary evidences for Stakeholder meeting at Tejuva site are now attached with this submission. Further, a separate stakeholder meeting was conducted for Chandgarh site. Description of the same are also included in revised combined VCS PD & MR.					
<u>Documents/ information provided by the Project Participant:</u>					
1) Documentary evidences for Stakeholder meeting at Tejuva site (Attachment-07)					
2) Documentary evidences for Stakeholder meeting at Chandgarh site (Attachment-08)					

Reasoning for acceptance or non-acceptance:	22/09/2016
1. PP has now provided the documentary evidences for the stakeholder's meeting carried for the Tejuva site. As per the Section 6 of the Joint PD & MR, stakeholders were also invited through the personal invitation letters, however as per the "Section D (mode of communication)" of the submitted document (Stakeholder Consultation Report), the mode of communication with stakeholders was only through the Advertisement in Newspaper and Notice placed at public places. Hence please clarify on the discrepancies observed. 2. For the local stakeholder consultation for the Chandgarh project site, PP is requested to provide stakeholder comments received during the meeting. CAR 06 is open.	
Project Participant Response	23/09/2016
1) Section 6 of the Joint PD & MR has been corrected and public notice has been incorporated as another mode of communication for Tejuva site. 2) Brief description of comments received at Chandgarh site has been now included in section 6 of Joint PD & MR.	
Documents/ information provided by the Project Participant:	
Revised Joint PD & MR.	
Reasoning for acceptance or non-acceptance:	26/09/2016
1. PP has now clarified on the mode of communication for the local stakeholder's consultation meeting carried out for the Tejuva site of the project activity. The issue is closed. 2. For the local stakeholder consultation for the Chandgarh project site, PP has now incorporated the stakeholder comments in Section 6 of the Joint PD & MR. The issue is closed. CAR 06 is closed.	
Close out by Lead Assessor	26/09/2016

<u>Date:</u>	12/09/2016	<u>Raised by:</u>	Ashok Kumar		
<u>Type of Finding</u>	CAR	<u>S. No. of Finding</u>	7	<u>Reference</u>	VCS Project Description, version 01, dated 10/08/2016 & MR dated 17/08/2016
<u>Details of the Finding:</u>			12/09/2016		
1) The calibration frequency as mentioned in the MR and PD is once in five years whereas the calibration certificate as provided has a validity of one year. PP is requested to justify the same. 2) PP is requested to provide the calibration certificate covering the complete monitoring period from 29/03/2015 to 31/07/2016.					
<u>Project Participant Response</u>			19/09/2016		
1) The accuracy of the monitoring parameter is ensured by adhering to the calibration frequency and testing of metering equipment. In Rajasthan and Madhya Pradesh, state utilities are responsible for conducting calibration of all energy meters located at grid interface in line with para 18.1.b of notification issued by Central Electricity Authority dated 17th March, 2006					

(http://www.aegcl.co.in/Metering_Regulations_Of_CEA_17_03_2006.pdf). Further, energy meters have been inspected every month during Joint Meter Reading. Energy meters are replaced immediately if the same is found faulty during monthly inspection. In line with the above notification, all interface energy meters shall be tested at least once in five years. The PP can only request the state utilities to conduct calibration of meters at the scheduled time but cannot by any means force the state utilities to conduct calibration. However, as the Central Regulatory of Authority enforces the state utilities for the calibration check once in five year, thus, state utilities are bound to do the calibration in that frequency. Thus, same frequency has been mentioned in combined VCS PD & MR.

As the calibration of energy meters done by 3rd party accredited laboratory, thus, validity is mentioned as once in a year. However, as the invoicing of the generated electricity is based on these energy meters and same energy meters are inspected during monthly Joint Meter Reading, this automatically implies that energy meters are working satisfactorily after the stipulated timeline mentioned in calibration certificates. As the calibration of energy meter is the responsibility of state utility, thus, same is beyond the control of project proponent.

- 2) Initial calibration was conducted on 23/01/2015 for Tejuva site and 26/03/2015 on Chandgarh site. As per the calibration frequency mentioned in combined VCS PD & MR (once in five years) last calibration would be valid upto 2020. Thus, same calibration is covering the entire monitoring period starting from 29/03/2015 to 31/07/2016. Same calibration is attached with this submission.

Documents/ information provided by the Project Participant:

Calibration reports (Attachment-09)

Reasoning for acceptance or non-acceptance:

22/09/2016

1. The para 18.1.b of the notification issued by Central Electricity Authority dated 17th March 2006 has been checked and found that "All interface meters shall be tested at least once in five years". The justification provided by the PP on the calibration frequency is found ok and the issue is closed.

2. PP has now submitted the calibration records for both the sites the issue is closed.

CAR 07 is closed.

Close out by Lead Assessor

22/09/2016

APPENDIX II: PROJECT LOCATION AND COMMISSIONING DETAILS

Phase 1: Tejuva wind farm in Jaisalmer district of Rajasthan /11//29/

SI No	WTG ID	Geo Co-ordinates		Commissioning Dates
		Latitude (North)	Longitude (East)	
1	HBR-020	27° 06' 39.2040" N	70° 37' 52.3200" E	30-Jun-2015
2	HBR-021	27° 06' 58.5360" N	70° 37' 32.5920" E	30-Jun-2015
3	HBR-022	27° 07' 09.7320" N	70° 37' 20.4960" E	30-Jun-2015
4	HBR-023	27° 07' 13.4040" N	70° 36' 59.2200" E	6-Aug-2015
5	HBR-024	27° 07' 28.5960" N	70° 36' 44.6040" E	6-Aug-2015
6	HBR-025	27° 07' 36.0840" N	70° 36' 24.4080" E	6-Aug-2015
7	HBR-027	27° 06' 21.1680" N	70° 37' 05.2320" E	6-Aug-2015
8	HBR-028	27° 06' 03.6720" N	70° 38' 10.7520" E	6-Aug-2015
9	HBR-029	27° 05' 55.3920" N	70° 38' 29.0760" E	6-Aug-2015
10	HBR-030	27° 05' 32.1360" N	70° 39' 26.6040" E	28-Aug-2015
11	HBR-031	27° 05' 19.7160" N	70° 39' 53.6400" E	28-Aug-2015
12	HBR-032	27° 04' 46.9200" N	70° 40' 10.0200" E	28-Aug-2015
13	HBR-033	27° 04' 54.3000" N	70° 39' 55.0080" E	28-Aug-2015
14	HBR-034	27° 05' 06.4320" N	70° 39' 30.1680" E	29-Mar-2015
15	HBR-035	27° 05' 18.3120" N	70° 38' 56.2560" E	29-Mar-2015
16	HBR-036	27° 05' 18.6720" N	70° 38' 32.4240" E	29-Mar-2015
17	HBR-037	27° 05' 29.1480" N	70° 38' 04.7400" E	28-Aug-2015
18	TJW-001	27° 05' 21.5160" N	70° 37' 02.8200" E	28-Aug-2015
19	TJW-002	27° 05' 05.1000" N	70° 37' 41.0520" E	6-Aug-2015
20	TJW-003	27° 04' 51.3840" N	70° 37' 55.9920" E	29-Mar-2015

SI No	WTG ID	Geo Co-ordinates		Commissioning Dates
		Latitude (North)	Longitude (East)	
21	TJW-004	27° 04' 42.2760" N	70° 38' 29.1840" E	29-Mar-2015
22	TJW-005	27° 04' 42.3120" N	70° 39' 05.6520" E	29-Mar-2015
23	TJW-006	27° 04' 26.2560" N	70° 39' 25.5600" E	29-Mar-2015
24	TJW-007	27° 04' 55.8480" N	70° 37' 02.4240" E	14-Aug-2015
25	TJW-010	27° 04' 24.8520" N	70° 38' 05.7840" E	29-Mar-2015
26	TJW-014	27° 03' 57.0240" N	70° 37' 56.5680" E	29-Mar-2015
27	TJW-015	27° 03' 59.2200" N	70° 38' 20.4720" E	29-Mar-2015
28	TJW-017	27° 04' 05.8800" N	70° 39' 02.8800" E	30-Jun-2015
29	TJW-018	27° 03' 42.6960" N	70° 39' 23.7960" E	30-Jun-2015
30	TJW-019	27° 03' 05.5800" N	70° 39' 26.9640" E	6-Aug-2015
31	TJW-020	27° 03' 17.5680" N	70° 39' 01.0800" E	6-Aug-2015
32	TJW-021	27° 03' 22.9320" N	70° 38' 37.8600" E	6-Aug-2015
33	TJW-022	27° 03' 30.1320" N	70° 38' 18.3120" E	29-Mar-2015
34	TJW-029	27° 02' 58.4520" N	70° 38' 43.6200" E	6-Aug-2015
35	TJW-030	27° 02' 47.6880" N	70° 38' 57.9840" E	6-Aug-2015
36	TJW-031	27° 02' 38.2920" N	70° 39' 24.5880" E	6-Aug-2015
37	TJW-033	27° 01' 46.0920" N	70° 39' 01.2240" E	14-Aug-2015
38	TJW-034	27° 02' 04.2720" N	70° 38' 46.7520" E	28-Aug-2015
39	TJW-035	27° 02' 13.5240" N	70° 38' 32.5680" E	30-Jun-2015
40	TJW-036	27° 02' 40.8120" N	70° 38' 23.8560" E	29-Mar-2015
41	TJW-037	27° 01' 59.6640" N	70° 37' 58.5120" E	30-Jun-2015
42	TJW-038	27° 01' 50.3400" N	70° 38' 08.9160" E	30-Jun-2015

SI No	WTG ID	Geo Co-ordinates		Commissioning Dates
		Latitude (North)	Longitude (East)	
43	TJW-039	27° 01' 37.0920" N	70° 38' 25.7280" E	30-Jun-2015
44	TJW-040	27° 01' 25.9320" N	70° 38' 38.1840" E	14-Aug-2015
45	TJW-041	27° 01' 14.5200" N	70° 38' 52.3320" E	14-Aug-2015
46	TJW-042	27° 00' 33.3720" N	70° 38' 29.6880" E	6-Aug-2015
47	TJW-043	27° 00' 50.4000" N	70° 38' 12.6240" E	6-Aug-2015
48	TJW-045	27° 01' 06.3120" N	70° 37' 37.0200" E	6-Aug-2015

Phase 2: Chandgarh Site with a total capacity of 92 MW (46 WTGs) /11/29/

SI. No	WTG ID	Geo Co-ordinates		Commissioning Date
		Latitude (North)	Longitude (East)	
1	R-1	23° 09' 17.8200" N	76° 16' 00.4800" E	31-Mar-2015
2	R-4	23° 08' 35.5560" N	76° 17' 36.8880" E	31-Mar-2015
3	R-16-N	23° 07' 53.2560" N	76° 19' 23.3040" E	30-Jun-2015
4	R-17-N	23° 08' 07.8720" N	76° 19' 02.2440" E	31-Mar-2015
5	R-24-N	23° 08' 37.2480" N	76° 18' 44.8200" E	30-Jun-2015
6	R-35-N	23° 10' 01.5240" N	76° 19' 07.5000" E	30-Oct-2015
7	R-40	23° 10' 44.4000" N	76° 20' 45.0960" E	30-Jun-2015
8	R-42	23° 10' 28.6680" N	76° 21' 11.4480" E	30-Jun-2015
9	R-47	23° 11' 30.9120" N	76° 21' 18.6480" E	30-Oct-2015
10	R-54-N	23° 12' 21.6720" N	76° 20' 14.7120" E	30-Jun-2015
11	R-60-N	23° 12' 43.1640" N	76° 20' 46.8960" E	30-Oct-2015

Sl. No	WTG ID	Geo Co-ordinates		Commissioning Date
		Latitude (North)	Longitude (East)	
12	R-62	23° 13' 08.0760" N	76° 21' 15.7320" E	29-Dec-2015
13	R-69-N1	23° 13' 42.3120" N	76° 19' 45.6240" E	30-Jun-2015
14	R-70	23° 13' 49.9080" N	76° 19' 21.5760" E	31-Mar-2015
15	R-79	23° 14' 47.1480" N	76° 19' 14.7000" E	30-Oct-2015
16	R-84-N	23° 15' 56.8080" N	76° 17' 56.4000" E	30-Oct-2015
17	R-87	23° 14' 37.2120" N	76° 18' 41.6880" E	30-Oct-2015
18	R-89	23° 08' 24.4680" N	76° 19' 05.5200" E	31-Mar-2015
19	R-94-N2	23° 13' 04.4040" N	76° 20' 10.3560" E	30-Jun-2015
20	R-97	23° 12' 15.3720" N	76° 19' 44.6160" E	31-Mar-2015
21	R-101-N	23° 13' 54.8400" N	76° 18' 53.7120" E	30-Oct-2015
22	R-103-N	23° 10' 31.6200" N	76° 20' 39.7320" E	30-Jun-2015
23	R-104-N	23° 10' 20.1000" N	76° 20' 47.5440" E	30-Oct-2015
24	R-106	23° 14' 05.8920" N	76° 19' 21.3960" E	30-Oct-2015
25	R-108	23° 13' 27.4440" N	76° 17' 53.5560" E	30-Jun-2015
26	R-109	23° 08' 41.8200" N	76° 18' 07.7760" E	31-Mar-2015
27	R-111	23° 11' 59.4600" N	76° 19' 53.4000" E	31-Mar-2015
28	R-112	23° 09' 38.4840" N	76° 17' 17.3040" E	31-Mar-2015
29	R-113	23° 10' 11.7840" N	76° 14' 47.7600" E	31-Mar-2015
30	R-115	23° 10' 38.4240" N	76° 17' 39.9480" E	31-Mar-2015
31	R-121	23° 13' 24.1320" N	76° 19' 48.8640" E	31-Mar-2015
32	Gch-30	23° 15' 47.3040" N	76° 18' 34.7760" E	29-Dec-2015
33	Gch-160	23° 11' 38.5800" N	76° 16' 09.0120" E	29-Dec-2015

Sl. No	WTG ID	Geo Co-ordinates		Commissioning Date
		Latitude (North)	Longitude (East)	
34	Gch-156	23° 08' 16.6920" N	76° 17' 23.1000" E	29-Dec-2015
35	Gch-196	23° 09' 36.7920" N	76° 14' 31.2360" E	29-Dec-2015
36	Gch-185-N	23° 07' 08.5800" N	76° 16' 36.4800" E	29-Dec-2015
37	Gch191-N1	23° 10' 54.6240" N	76° 13' 45.0840" E	29-Dec-2015
38	Gch-147	23° 09' 55.5480" N	76° 14' 46.5720" E	29-Dec-2015
39	Gch-220-A1	23° 06' 46.4400" N	76° 17' 11.3280" E	29-Dec-2015
40	Gch-157	23° 11' 24.5760" N	76° 16' 26.2200" E	29-Dec-2015
41	Gch-224-N	23° 08' 52.6560" N	76° 15' 53.6040" E	29-Dec-2015
42	Gch-248	23° 09' 33.2640" N	76° 13' 20.4600" E	29-Dec-2015
43	Gch-250-N	23° 07' 06.0960" N	76° 17' 44.1240" E	29-Dec-2015
44	Gch-222-A3	23° 06' 24.8760" N	76° 17' 14.0640" E	29-Dec-2015
45	Gch-252	23° 10' 58.5840" N	76° 16' 53.1480" E	29-Dec-2015
46	R-85-N	23° 15' 47.0520" N	76° 18' 06.1560" E	30-Oct-2015