




**Verification and certification report form for
CDM project activities
(Version 02.0)**

BASIC INFORMATION

| | |
|---|--|
| Title and UNFCCC reference number of the project activity | Wind Power Project in Tinwari, Rajasthan UNFCCC Ref.No-6160 |
| Version number of the verification and certification report | 02 |
| Completion date of the verification and certification report | 24/11/2017 |
| Monitoring period number and duration of this monitoring period | Monitoring Period: 02 Period: 01/03/2013 to 31/07/2017(both dates are included) |
| Version number of the monitoring report to which this report applies | 03 |
| Crediting period of the project activity corresponding to this monitoring period | Fixed crediting period Start date: 01/08/2012 Length: 10 years (01/08/2012 to 31/07/2022) |
| Project participants | M/s Wind World (India) Limited ¹ (India) ACT Commodities B.V. (Netherland) |
| Host Party | India |
| Applied methodologies and standardized baselines | Selected Methodology: ACM0002 Version 12.3.0 – “Consolidated baseline methodology for grid connected electricity generation from renewable sources” Selected standardized baseline: N/A |
| Mandatory sectoral scopes linked to the applied methodologies | Sectoral scope : 1- Energy industries (renewable - / non-renewable sources) |
| Conditional sectoral scope(s) linked to the applied methodologies | NA |
| Estimated amount of GHG emission reductions or GHG removals for this monitoring duration in the registered PDD | 143,336 tCO ₂ e |
| Certified amount of GHG emission reductions or GHG removals for this monitoring period | 126,076 tCO ₂ e |
| Name and UNFCCC reference number of | LGAI Technological Center, S.A. (LGAI Tech. Center S.A) |

¹ Previous name “Enercon (India) Limited”.

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| the DOE | UNFCCC Ref.No: E-0032 |
| Name, position and signature of the approver of the verification and certification report | Name: Juan Sendin Caballero Position: B.U. Systems Certification Area Manager Signature of the approver:  |

SECTION A. Executive summary

>>LGAI Technological Center, S.A. (hereafter referred to as Applus+ LGAI) has been contracted by M/s Wind World (India) Limited to perform the second periodical verification of "Wind Power Project in Tinwari, Rajasthan" (UNFCCC Ref. No. 6160) applying the methodology ACM0002 Version:12.3.0. The management of M/s Wind World (India) Limited is responsible for the preparation of the GHG emissions data and the reported GHG emission reductions.

A desk review and a site visit have been conducted to verify the data submitted in the monitoring report. Applus+ LGAI confirms the following has been reviewed:

- (a) The registered PDD/1.3/, including the monitoring plan and the corresponding validation report;
- (b) Monitoring report of previous monitoring period as well as corresponding verification report;
- (c) Monitoring report of this monitoring period;
- (d) The applied monitoring methodology;
- (e) Relevant decisions, clarifications and guidance from the CMP and the CDM Executive Board;
- (f) All information and references relevant to the project activity's resulting in emission reductions.

The project activity involves electricity generation by wind turbine generators (WTGs) and supplying the same to the NEWNE grid. This is renewable energy generation which can replace the fossil fuel dominated grid connected electricity generation. The project activity involves the installation of 25 WTGs of capacity 0.8 MW each at Salodi, Chensingh Nagar, Bari, Malunga, Bada Kotacha, Digadi Dhani, Balra & Beru villages in Jodhpur district of Rajasthan, India, reaching a total installed capacity of 20 MW. These WTGs are of Enercon make E-53. It is to be noted that name of company "Enercon India Limited" is changed as "M/s Wind World (India) Limited" from 01/01/2013 onwards, the same is verified through the name change consent issued by Government of India/3.7/.

The generated electricity is evacuated to Rajasthan state grid substation. The project activity generates power by using the kinetic energy of wind, thus resulting in zero emissions during electricity production. The power produced displaces an equivalent amount of power from the grid, which is fed mainly by fossil fuel fired power plants. Hence, it results in reduction of GHG emissions.

Applus+ LGAI confirms that the project is implemented in accordance with the registered PDD.

ACM0002 version 12.2.0 was the latest version of the methodology available at the time of registration. However editorial changes are made in the methodology and ACM0002 version 12.3.0 is available as the latest subversion of the applied methodology on UNFCCC website at the time of verification. In accordance with the paragraph 13 of EB 61 Annex 25 "Changes of an editorial nature will be published on the public website and will become applicable upon date of publication". Hence the PP has revised the version of the methodology as ACM0002 version 12.3.0 in the monitoring report. The revision in the applied methodology from version 12.2.0 to 12.3.0 includes a provision for the replacement of renewable energy plants, where the replacement units are in a different location from the existing units. In addition, the amendment incorporates changes to the baseline section on capacity additions and other minor editorial improvements.

In the project activity no replacement of renewable energy plants and capacity change is involved. Hence change in the version of the methodology does not affect the project activity in any way.

The monitoring plan complies with the applied methodology ACM0002 Version: 12.3.0 and the monitoring have been carried out in accordance with the monitoring plan. The monitoring system is in place and the emission reductions are calculated without material misstatements. Our opinion relates to the projects GHG emissions and the resulting GHG emission reductions reported and related to the valid and registered project baseline and monitoring and its associated documents. Based on the information reviewed and evaluated Applus+ LGAI confirms that the implementation of the project has resulted in 126,076 tCO₂e emission reductions during period 01/03/2013 to 31/07/2017.

SECTION B. Verification team, technical reviewer and approver**B.1. Verification team member**

| No. | Role | ⌂ | Last name | First name | Affiliation | Involvement in |
|-----|------|---|-----------|------------|-------------|----------------|
|-----|------|---|-----------|------------|-------------|----------------|

| | | | | | (e.g. name of central or other office of DOE or outsourced entity) | Desk review | On-site inspection | Interview(s) | Verification findings |
|----|--------------------------------|----|---------|-------------|--|-------------|--------------------|--------------|-----------------------|
| 1. | Team Leader / Technical Expert | OR | Ahirwar | Vivek Kumar | GCEES | Y | Y | Y | Y |
| 2. | Auditor in Trainee | OR | Soni | Ravi Kant | GCEES | Y | Y | Y | Y |

B.2. Technical reviewer and approver of the verification and certification report

| No. | Role | Type of resource | Last name | First name | Affiliation (e.g. name of central or other office of DOE or outsourced entity) |
|-----|--------------------|------------------|-----------|------------|---|
| 1. | Technical Reviewer | EI | Xue | Denny | Applus+ LGAI |
| 3. | Approver | IR | Sendin | Juan | Applus+ LGAI |

SECTION C. Application of materiality

C.1. Consideration of materiality in planning the verification

| No. | Risk that could lead to material errors, omissions or misstatements | Assessment of the risk | | Response to the risk in the verification plan and/or sampling plan |
|-----|---|------------------------|--|---|
| | | Risk level | Justification | |
| 1. | Manual adjustment of otherwise automatically recorded activity levels: This error may be due to manually recording of actual readings in-to original records. | Low | Monitoring Equipment e.g. Energy Meters have totalizer which reduce the chance of error as initial readings and final readings can be cross –check in every records /3.3/, /3.4/. The reading of JMR is being recorded in the presence of representatives of DISCOM and O&M contractor. So chances of noting down incorrect reading diminish. Monthly JMR is endorsed by state utility. | 100 per cent of the data and information was checked from monthly generation breakup sheets/3.3/, monthly generation reports sourced from online monitoring system (SCADA) and cross-checked from sold electricity invoices /3.4/ |
| 2. | Human error in the quantification of emissions. This error may be due to transfer of monitored data in-to Emission Reduction calculation sheet/4.2/ for calculation of actual emission reduction archived during monitoring period. | High | The monitoring data is transfer manually, so there is high potential risk of errors/errors, omissions or misstatements. | 100 per cent of the data and information was checked from Monthly generation breakup sheets/3.3/, monthly generation reports sourced from online monitoring system (SCADA) and cross-checked from monthly invoices raised to state utility /3.4/. |

C.2. Consideration of materiality in conducting the verification

>>The project activity is large- scale project and applicable threshold for materiality in accordance with CDM VVS for PAs Version 01.0 paragraph329(c) is 2%. All the monthly reported figures for parameter $EG_{facility,y}$ were verified with respective monthly Energy Breakup Sheets and were found to be consistent. Therefore, it can be stated that the verified value is free from any potential error / omission / misstatement. The project activity, being a wind energy project, has assumed the project emission and leakages to be zero which is in line to the applied methodology/2.3/ and is also reasonable in the opinion of assessment team. Therefore, there are no additional factors which might lead to introduction of error in emission reduction estimation.

SECTION D. Means of verification

D.1. Desk/document review

>>The Monitoring Report version 01 dated 19/08/2017/1.0/ submitted by the PP was made publicly available on the UNFCCC website before the verification activities started. The published MR was assessed based on all the relevant documents. The aim of the assessment in the desk review was to:

- verify the completeness of the data and the information presented in the MR;
- check the compliance of the MR with respect to the monitoring plan depicted in the registered PDD and verify that the applied methodology was carried out. Particular attention to the frequency of measurements, the quality of the metering equipment including calibration requirements, and the quality assurance and quality control procedures was paid;
- evaluate the data management and the quality assurance and quality control system in the context of their influence on the generation and reporting of emission reductions.

A complete list of documents reviewed or referenced is available in Appendix 3 of this report.

D.2. On-site inspection

| Duration of on-site inspection: | | | | |
|---------------------------------|---|--|------------|--|
| No. | Activity performed on-site | Site location | Date | Team member |
| 1. | Confirm the implementation and operation of the project; | WTG project site at villages: Salodi, Chensingh Nagar, Bari, Malunga, Bada Kotacha, Digadi Dhani, Balrvaand Beru. State-Rajasthan; India | 25/09/2017 | Vivek Kumar Ahirwar and Ravi Kant Soni |
| 2. | Review the data flow for generating, aggregating and reporting the monitoring parameters; | | 25/09/2017 | Vivek Kumar Ahirwar and Ravi Kant Soni |
| 3. | Confirm the correct implementation of procedures for operations and data collection; | | 25/09/2017 | Vivek Kumar Ahirwar and Ravi Kant Soni |
| 4. | Cross-check the information provided in the MR documentation with other sources; | | 25/09/2017 | Vivek Kumar Ahirwar and Ravi Kant Soni |
| 5. | Check the monitoring equipment against the requirements of the PDD and the approved methodology, including calibrations, maintenance, etc.; | | 25/09/2017 | Vivek Kumar Ahirwar and Ravi Kant Soni |
| 6. | Review the calculations and assumptions used to obtain the GHG data and ER; | | 25/09/2017 | Vivek Kumar Ahirwar and Ravi Kant Soni |
| 7. | Identify if the quality control and quality assurance procedures are in place to prevent or correct errors or omissions in the reported parameters. | | 25/09/2017 | Vivek Kumar Ahirwar and Ravi Kant Soni |

D.3. Interviews

| No. | Interviewee | | | Date | Subject | Team member |
|-----|-------------|------------|-------------|------------|--|--|
| | Last name | First name | Affiliation | | | |
| 1. | Yadav | Vikash | WWIL | 25/09/2017 | Project Activity Description, implementation and operation of the project | Vivek Kumar Ahirwar and Ravi Kant Soni |
| 2. | Sankheda | Nikki | WWIL | 25/09/2017 | Procurement Records & Consumption , Bill & Energy Bills/Records | Vivek Kumar Ahirwar and Ravi Kant Soni |
| 3. | Chsah | Hemant | WWIL | 25/09/2017 | Monitoring Data & Records Monitoring Plan, equipment , calibrations, maintenance, data records, certificates etc.; Calculations and assumptions used to obtain the GHG data and ER | Vivek Kumar Ahirwar and Ravi Kant Soni |
| 4. | Kumar | Jeetendra | WWIL | 25/09/2017 | Monitoring Data & Records Monitoring Plan, equipment , calibrations, maintenance, data records, certificates etc.; Calculations and assumptions used to obtain the GHG data and ER | Vivek Kumar Ahirwar and Ravi Kant Soni |

D.4. Sampling approach

>>Not Applicable, as all monitoring data as reported in MR and ER were verified and checked from actual records.

D.5. Clarification requests (CLs), corrective action requests(CARs) and forward action requests (FARs) raised

| Areas of verification findings | No. of CL | No. of CAR | No. of FAR |
|---|-----------|------------|------------|
| Compliance of the monitoring report with the monitoring report form | - | CAR #1 | - |
| Compliance of the project implementation with the registered PDD | - | - | - |
| Post-registration changes | - | - | - |
| Compliance of the monitoring plan with the monitoring | - | - | - |

| | | | |
|--|----------|-------------------|----------|
| methodology including applicable tool and standardized baseline | | | |
| Compliance of monitoring activities with the registered monitoring plan | - | CAR #1 | - |
| Compliance with the calibration frequency requirements for measuring instruments | - | CAR #2 and CAR #4 | - |
| Assessment of data and calculation of emission reductions or net removals | - | CAR #3 | - |
| Others (Inconsistencies/typo errors) | CL#1 | - | - |
| Total | 1 | 4 | - |

SECTION E. Verification findings

E.1. Compliance of the monitoring report with the monitoring report form

| | |
|------------------------------|---|
| Means of verification | The final Monitoring Report /1.2/ is compliant with Monitoring Report form (Version 06.0) /2.4/ and guidance as provided by UNFCCC. Applus+ LGAI considers that the attachment "Instructions for filling out the monitoring report form" at the end of template "Monitoring report form (Version 06.0)" /2.4/ has been followed. Relevant information was provided by the project participant in the applicable Monitoring Report sections. |
| Findings | CAR #1 was raised and resolved. |
| Conclusion | Applus+ LGAI confirms that the monitoring report is in compliance with the relevant valid form and instructions therein as accordance to "Clean Development Mechanism Validation and Verification Standard for Project Activity" (CDM- VVSfor PA) v01.0 §§ 355-356. |

E.2. Remaining forward action requests from validation and/or previous verifications

>>This is second periodic verification of the project. There are no pending issues from the validation or the previous verification/1.10/. This was verified and confirmed from the project documents on the UNFCCC project webpage /1.5/.

E.3. Compliance of the project implementation and operation with the registered project design document

| | |
|------------------------------|--|
| Means of verification | <p>The project activity is fully implemented according to the description presented in the registered PDD /1.3/. The assessment team confirms, through the visual inspection that all physical features of the CDM project activity including data collecting systems and storage have been implemented in accordance with the registered PDD /1.3/.</p> <p>This project activity involves generation of electricity from WTGs and supplying the generated electricity to the NEWNE grid of India. The project, located in Jodhpur district of Rajasthan state in India, has an installed capacity of 20 MW (25 WTGs x 0.8 MW/WTG). The PP has signed a PPA/3.2/ with JVVNL (Jaipur VidyutVitrان Nigam Limited)for the sale of electricity to the grid.</p> <p>The project was registered as a CDM project on 25/07/2012 and the starting date of the crediting period (fixed) is 01/08/2012. This is the second verification of the project activity covering the period from 01/03/2013 to 31/07/2017.</p> <p>The project has been implemented; equipment installed and is being operated as described in the registered PDD. The monitoring plan implemented during the current monitoring period is in compliance with the registered monitoring plan and the applied methodology. This was verified during the site visit.</p> <p>The project is located between latitude 26°,25',29.3"to26°,30',42.1"Nandlongitude72°,46',18.8"to72°,52',27.3"E. Location of the project was verified through Google Maps (https://www.gps-coordinates.net/) and found consistent with the same mentioned in the registered PDD and MR.</p> <p>The project activity WTGs have been commissioned between 30/09/2011and09/11/2011 as mentioned in the Monitoring Report. Commissioning details of the WTGs have been verified against the commissioning certificates/3.1/</p> |
|------------------------------|--|

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|-------------------|--|
| | <p>and is found to be correct.</p> <p>The line diagram of the metering system of the project activity showing metering points is indicated in section C of the MR/1.2/.</p> <p>The WTGs belongs to project activity connected to various clusters and each cluster has exclusive dedicated metering arrangement at 33kV at project site. Similarly, the WTGs of other project developers (non-project activity) are also connected to separate clusters having exclusive dedicated metering arrangement at 33kV at project site. All the cluster meters (for the project activity and non-project activity) are further connected at 132 kV Wind World sub-station (Salodi sub-station, Jodhpur) through 33 kV bus. At WWIL pooling sub-station SALODI electricity is stepped up to 132kV, wherein the backup meter (one main & one check meter) connected. From WWIL pooling sub-station electricity is transmitted to state utility (DISCOM) sub-station (PS-8 Narwa Sub-station) through 132Kv transmission line/ EHV line wherein billing meter (one main & one check meter) is connected. At EB sub-station metering is done at 132kV billing meter. From EB substation electricity is further transmitted to NEWNE grid.</p> <p>During the site visit, the assessment team verified the technology used and the capacity of WTGs implemented at the project site through physical inspection and it can be confirmed that there are no changes in the project design against the registered PDD/1.3/.</p> <p>Actual emission reductions achieved during the current monitoring period are 12.04% lesser than the same estimated in the registered CDM-PDD for comparable period. This is due to low plant load factor achieved during the current monitoring period (Kindly refer section E.8.6 of this report for further details).</p> <p>No events or situations that may impact the applicability of the methodology occurred during this monitoring period, which was confirmed by checking the operational/shut down details available at site office and interviewing the site personnel. The project was checked against the applicability criteria in the applied methodology ACM0002 Version 12.3.0 and it is confirmed that the methodology is applicable to the project activity. The data and variables provided in the Monitoring Report are the same as stated in the approved monitoring plan.</p> |
| Findings | No non-conformability was observed during assessment for implementation of project activity against the description presented in the registered PDD/1.3/. Therefore no finding was raised. |
| Conclusion | <p>Applus+ LGAI confirms that the implementation of project activity is in compliance with the CDM requirement stipulated under CDM-VVS for PA v01.0 §§ 357-359.</p> <ol style="list-style-type: none"> The implementation and operation of the project activity has been conducted in accordance with the description contained in the registered PDD. By means of an on-site inspection the verification team is able to confirm that all physical features (technology, project equipment, and monitoring and metering equipment) of the registered CDM project activity are in place and that the project participants have operated the project activity as per the registered PDD. No information with regard to data and variables was identified that may surpass the estimated quantity of ERs in the registered PDD. The emission reductions achieved during the current monitoring period are 126,076 tCO₂e within the estimated quantity (143,336 tCO₂e) in the registered PDD for the comparable period. |

E.4. Post-registration changes

E.4.1. Temporary deviations from the registered monitoring plan, applied methodologies or applied standardized baselines

>>There are no temporary deviations from the monitoring plan of registered PDD/1.3/ or applied methodology/2.3/ during the current monitoring period. It was verified and confirmed from the Monitoring Report/1.2/, registered PDD/1.3/, UNFCCC project webpage /1.5/ and on-site verification/6.1/ & /6.2/.

E.4.2. Corrections

>>There are no corrections during the current monitoring period.

E.4.3. Change to the start date of the crediting period of the project activity

>>There are no changes to the start date of crediting period identified during the current monitoring period. It was verified and confirmed from the UNFCCC project webpage /1.5/.

E.4.4. Inclusion of a monitoring plan

>>There is no inclusion of a monitoring plan identified during the current monitoring period.

E.4.5. Permanent changes from registered monitoring plan, or permanent deviation of monitoring from the applied methodologies, standardized baselines or other applied standards or tools

>>There are no permanent changes from the registered monitoring plan/1.3/ or applied methodology/2.3/ during the current monitoring period.

E.4.6. Changes to the project design

>>There is no change to project design of the registered project activity identified during the current monitoring period. It was verified and confirmed from the Monitoring Report/1.2/, registered PDD/1.3/, UNFCCC project webpage /1.5/ and on-site verification/6.1/&/6.2/.

E.4.7. Changes specific to afforestation and reforestation project activities

>>Not Applicable.

E.5. Compliance of the registered monitoring plan with the methodology including applicable tools and standardized baselines

| | |
|------------------------------|---|
| Means of verification | <p>The project has been registered with the “Consolidated methodology for grid-connected electricity generation from renewable resources” ACM0002 version 12.3.0/2.3/. The assessment team verified the revised monitoring plan against ACM0002 version 12.3.0, and confirms that the registered monitoring plan is in accordance with the approved methodology applied by the project activity.</p> <p>The monitoring parameter relevant to this project activity described in the applied methodology is:</p> <p>EG_{facility,y} – Quantity of net electricity generation supplied by the project plant/unit to the grid in year y</p> <p>However the following parameters are defined in the approved monitoring plan:</p> <ul style="list-style-type: none"> i. EG_{facility,y} – Net electricity generation supplied to the grid by the Project activity. ii. EG_{export,y} – Electricity export to the grid by the Project activity iii. EG_{import,y} – Electricity Import from grid by the Project activity. iv. EG_{JMR, Export} – Electricity export by project activity & non-project activity recorded by main meter installed at DISCOM sub-station. v. EG_{JMR, Import} – Electricity export by project activity & non-project activity recorded by main meter installed at DISCOM sub-station. vi. EG_{Controller, i} – Net electricity generation (Gross Export – Gross Import) by a WEC of project activity or non-project activity, as measured at the controller (LCS meter) at project site. Each WEC has exclusive LCS meter that records net electricity generation (Gross Export – Gross Import) from the WEC (project or non-project). <p>Where, i is any WEC between 1 to j+ k.</p> <p>j is number of WEC of project activity connected to main meter at DISCOM substation and backup meter at WWIL substation.</p> <p>k is number of WEC of non-project activity connected to main meter at DISCOM substation and backup meter at WWIL substation.</p> <ul style="list-style-type: none"> vii. $\sum EG_{Controller,i}$ – Summation of net electricity generation (Gross Export-Gross Import) by all |
|------------------------------|---|

WEC (i number of WECs) of project activity (j number of WECs) and non-project activity (k number of WECs), as measured at the controller (LCS meter) at project site, Each WEC has exclusive LCS meter that records net electricity generation (Gross Export-Gross Import) from the WEC (project or non-project).

Where,

i is any WEC between 1 to j+ k and connected to main meter (JMR/billing meter) at DISCOM substation and backup meter at Enercon substation.

j is number of WECs of project activity connected to main meter (JMR/billing meter) at DISCOM substation and backup meter at Enercon substation.

k is number of WEC of non-project activity connected to main meter (JMR/billing meter) at DISCOM substation and backup meter at Enercon substation.

- viii. $\sum EG_{\text{Controller},j}$ – Summation of net electricity generation (Gross Export – Gross Import) by all the WECs (j number of WECs) of project activity, as measured at the controller (LCS meter) at project site. Each WEC has exclusive LCS meter that records net electricity generation (Gross Export – Gross Import) from the WEC (project or non-project).

j is number of WEC of project activity connected to main meter at DISCOM substation and backup meter at WWIL substation.

In accordance with the actual practice followed at site, the parameter $EG_{\text{facility},y}$ is calculated using the parameters as listed above [(ii) to (viii)]. Hence, the PP has included these parameters in the registered monitoring plan along with the parameter $EG_{\text{facility},y}$.

The registered monitoring plan was implemented and followed during previous in previous monitoring period. This was checked from the verification available on the UNFCCC webpage of this project. Hence, it can be assured that the approved monitoring plan of the registered project is in accordance with the applied methodology.

A comparison between the requirement of the methodology, for the parameter $EG_{\text{facility},y}$, and the description of the same parameter in the registered monitoring plan is provided in the table below:

| Registered PDD Approved Methodology | Requirement in the applicable methodology and relevant EB documents | Requirement in the approved monitoring plan | Opinion |
|--|---|---|--|
| Data/Parameter | $EG_{\text{facility},y}$ | $EG_{\text{facility},y}$ | In compliance with the applicable methodology. |
| Description | Quantity of net electricity generation supplied by the project plant/unit to the grid in year y | Net electricity generation supplied to the grid by the Project activity | In compliance with the applicable methodology. |
| Measured/Calculated /Default | Directly measured | Calculated | This parameter is calculated using the directly measured values of import ($EG_{\text{JMR, import}}$), export ($EG_{\text{JMR, Export}}$) and electricity generation measured at LCS meter of each WTG[parameter (vi),(vii) and (viii) as mentioned above] as per the actual practice on site by the state utility (DISCOM), which is governed by the PPA signed specifically for this project activity. This approach has been described in the monitoring plan as outlined in the registered PDD. Hence accepted. |

CDM-VCR-FORM

| | | | | |
|---|---|---|---|---|
| | Source of data | Not Specified | Monthly Energy Breakup Sheets | This is as per the actual practice on site by the state utility, governed by the PPA signed for this project activity. Hence accepted. |
| | Monitoring equipment | Not Specified | Not Applicable since this is a calculated parameter | This parameter is calculated using the directly measured values as discussed above. Hence accepted. |
| | Measuring/Reading/Recording frequency | Hourly measurement and monthly Recording | Recording Frequency: Monthly | The Hourly measurement and monthly Recording is recommended for the directly measured $EG_{facility,y}$ as per the applicable methodology. However, this parameter is calculated as justified in the row "Measured/Calculated /Default" above, hence the monthly recording frequency is acceptable since it is as per the actual practice on site by the state utility. Hence accepted. |
| | Calculation method (if applicable) | Not Applicable | $EG_{Facility,y} = EG_{Export,y} - EG_{Import,y}$ Calculated in accordance with procedure as described in section C of the MR. | This is as per the actual practice on site by the state utility. Hence accepted. The same formula and procedure is mentioned in section B.7.2 of registered PDD and PPA as well. |
| | QA/QC procedures | Electricity supplied by the project activity to the grid. Double check by receipt of sales. | The values $EG_{facility,y}$ mentioned in the Energy Breakup Sheets will be cross-checked against values mentioned in the invoice raised on the state utility | This is in compliance with the applicable methodology. |
| In view of the above assessment, the verification team is able to confirm that the monitoring plan of the registered project is in accordance with the applied methodology. | | | | |
| Findings | CAR #4 was raised and resolved. | | | |
| Conclusion | Applus+ LGAI confirms that the monitoring plan is in accordance with the approved methodology /2.3/ and correctly applied by the registered CDM project activity and CDM-VVS for PA v01.0 §§ 360-362 have been met. | | | |

E.6. Compliance of monitoring activities with the registered monitoring plan
E.6.1. Data and parameters fixed ex ante or at renewal of crediting period

| | | | | |
|------------------------------|--|--|--|---|
| Means of verification | The following three parameters are fixed ex-ante defined in registered PDD: | | | |
| | Data/parameter: | $EF_{OM,y}$ | $EF_{BM,y}$ | $EF_{CM,y}$ |
| | Unit | tCO ₂ /MWh | tCO ₂ /MWh | tCO ₂ /MWh |
| | Description | Operating Margin Emission Factor of NEWNE Electricity Grid | Build Margin Emission Factor of NEWNE Electricity Grid | Combined Margin Emission Factor of NEWNE Electricity Grid |
| | Source of data | Central Electricity Authority: CO ₂ Baseline database Version 1.1 /6.3/ | | |
| | Value(s) applied) | 0.99431 | 0.81231 | 0.94881 |
| Findings | No non-conformability was observed about data and parameters fixed ex ante in registered PDD. Therefore, no finding was raised. | | | |
| Conclusion | Value of all 3 parameters reported in the monitoring report /1.2/ and corresponding emission reduction calculations spreadsheet /4.1/ are consistent with the registered | | | |

PDD. The applied values are correct and justified.

E.6.2. Data and parameters monitored

| | | | | |
|---|---|--|--|--|
| Means of verification | The analysis of the compliance of the actual monitoring, of the each monitoring parameter with the approved monitoring plan is provided as following: | | | |
| | (1) Net electricity Supplied to the grid by the project, $EG_{\text{facility},y}$ (MWh) | | | |
| | Monitoring Report, onsite checks Revised Monitoring Plan & Approved Methodology | Requirement in the registered monitoring plan/1.3/ | Implementation of the project | Conclusion on the compliance of the implementation with the monitoring plan |
| | Data/Parameter | $EG_{\text{facility},y}$ | $EG_{\text{facility},y}$ | In compliance |
| | Description | Quantity of net electricity generation supplied by the project plant/unit to the grid in year y | Net electricity supplied to the grid by the Project | In compliance |
| | Measured/Calculated /Default | Calculated | Calculated | In compliance |
| | Source of data | Energy Breakup Sheet and LCS meter reading | Energy Breakup Sheet and LCS meter reading | In compliance |
| | Monitoring equipment | Not Applicable since this is a calculated parameter | Not Applicable since this is a calculated parameter | In compliance |
| | Measuring/Reading/Recording frequency | Recording Frequency: Monthly | Recording Frequency: Monthly | In compliance |
| | Calculation method (if applicable) | $EG_{\text{facility},y} = EG_{\text{Export},y} - EG_{\text{Import},y}$ | $EG_{\text{facility},y} = EG_{\text{Export},y} - EG_{\text{Import},y}$ | In compliance |
| | QA/QC procedures | The values $EG_{\text{facility},y}$ mentioned in the energy breakup sheets will be cross-checked with the tariff invoices raised on the DISCOM and/or RTGS transaction or cheque copy. | The values $EG_{\text{facility},y}$ mentioned in the energy breakup sheets have been cross-checked against values mentioned in the invoice raised to the state utility and found consistent. | In compliance |
| <p>$EG_{\text{facility},y}$ is a calculated parameter, as indicated in the table above. This calculation is carried out by the PPs representative and approved by state utility (DISCOM). This was verified by interviewing the DISCOM officials during the site visit. The calculated monthly values of $EG_{\text{facility},y}$ are reported in the Energy Breakup Sheets prepared by O&M contractor (PPs representative) and endorsed by DISCOM/3.3/. The PP has correctly reported the monthly values from the Energy Breakup Sheets in the emission reduction spread sheet/4.1/. Monthly values of $EG_{\text{facility},y}$ have been cross checked with the monthly invoices/3.4/ raised by the PP and are found to be consistent.</p> <p>The monthly values of $EG_{\text{Facility}, y}$ have also been checked against the monthly generation reports/3.6/ issued by the O&M service provider (WWIL) for project WTGs. The values are found to be comparable and acceptable.</p> <p>The value of $EG_{\text{Facility}, y}$ for the current monitoring period is 132,878.683MWh. This parameter is directly used for the emission reduction calculations.</p> | | | | |
| (2) Electricity export to the grid by the Project activity $EG_{\text{export},y}$ (MWh) | | | | |

| | | | | |
|---|--|--|--|--|
| | Monitoring Report, onsite checks Revised Monitoring Plan & Approved Methodology | Requirement in the registered monitoring plan/1.3/ | Implementation of the project | Conclusion on the compliance of the implementation with the monitoring plan |
| | Data/Parameter | EG _{export,y} | EG _{export,y} | In compliance |
| | Description | Electricity export to the grid by the Project activity | Electricity export to the grid by the Project activity | In compliance |
| | Measured/Calculated/Default | Calculated | Calculated | In compliance |
| | Source of data | Energy Breakup Sheet and LCS meter reading | Energy Breakup Sheet and LCS meter reading | In compliance |
| | Monitoring equipment | Not applicable | Not applicable | In compliance |
| | Measuring/Reading/Recording frequency | Recording Frequency: Monthly | Recording Frequency: Monthly | In compliance |
| | Calculation method (if applicable) | This parameter is calculated using the measured values of EG _{JMR,Export} and calculated values of $\sum EG_{Controller,i}$ and $\sum EG_{Controller,i}$ as described in section B.7.2 of the registered PDD. | This parameter is calculated using the measured values of EG _{JMR,Export} and calculated values of $\sum EG_{Controller,i}$ and $\sum EG_{Controller,i}$ as described in section B.7.2 of the registered PDD. | In compliance |
| | QA/QC procedures | Value of EG _{Export,y} can be cross checked with the tariff invoices raised on the DISCOM and/or RTGS transaction or cheque copy. | The values EG _{Export,y} mentioned in the energy breakup sheets have been cross-checked against values mentioned in the invoice raised to the state utility and found consistent. | In compliance |
| <p>Electricity exported by each WTG is apportioned on the basis of electricity generated and recorded at the controller of each WTG and the electricity exported at the main meter and mentioned in the JMR.</p> <p>Electricity Export to the grid by the Project activity is calculated using following formula:</p> $EG_{JMR,Export} * \sum EG_{Controller, j}$ $EG_{Export,y} = \frac{\sum EG_{Controller,i}}{\sum EG_{Controller,i}}$ <p>Where,</p> <p>$\sum EG_{Controller, project,j}$ = Summation of net electricity generation (Gross Export – GrossImport) by all the WTGs (j number of WTGs) of project activity, as measured at the controller (LCS meter) at project site.</p> <p>$\sum EG_{Controller, project,i}$ = Summation of net electricity generation (Gross Export – GrossImport) by all the WTGs (i number of WTGs) of project activity or non-project activity, as measured at the controller (LCS meter) at project site.</p> | | | | |

$EG_{JMR,Export}$ = Electricity export by project and non-project WEGs recorded at respective billing meters located at Discom sub-station.

The monthly values of this parameter reported in the ER calculation sheet are verified from Energy Breakup sheets prepared by O&M contractor and approved by DISCOM/3.3/, found consistent, hence accepted. The value of $EG_{Export,y}$ for the current monitoring period is 133,056.436 MWh (After applying the error factor due to delay in calibration). This parameter is used in the calculation of $EG_{Facility,y}$.

In summary, the actual of monitoring for EG_{Export} is in compliance with the approved monitoring plan.

3. Electricity Import from the grid by the Project activity $EG_{Import,y}$ (MWh)

| Monitoring Report, onsite checks Revised Monitoring Plan & Approved Methodology | Requirement in the registered monitoring plan/1.3/ | Implementation of the project | Conclusion on the compliance of the implementation with the monitoring plan |
|--|---|---|---|
| Data/Parameter | $EG_{Import,y}$ | $EG_{Import,y}$ | In compliance |
| Description | Electricity Import from grid by the Project activity. | Electricity Import from grid by the Project activity. | In compliance |
| Measured/Calculated/Default | Calculated | Calculated | In compliance |
| Source of data | Energy Breakup Sheet and LCS meter reading | Energy Breakup Sheet and LCS meter reading | In compliance |
| Monitoring equipment | Not applicable | Not applicable | In compliance |
| Measuring/Reading/Recording frequency | Recording Frequency: Monthly | Recording Frequency: Monthly | In compliance |
| Calculation method (if applicable) | This parameter is calculated using the measured values of $EG_{JMR,Import}$ and calculated values of $\sum EG_{Controller,i}$ and $\sum EG_{Controller,i}$ as described in section B.7.2 of the registered PDD. | This parameter is calculated using the measured values of $EG_{JMR,Import}$ and calculated values of $\sum EG_{Controller,i}$ and $\sum EG_{Controller,i}$ as described in section B.7.2 of the registered PDD. | In compliance |
| QA/QC procedures | Value of $EG_{Export,y}$ can be cross checked with the tariff invoices raised on the DISCOM and/or RTGS transaction or cheque copy. | The values $EG_{Export,y}$ mentioned in the energy breakup sheets have been cross-checked against values mentioned in the invoice raised to the state utility and found consistent. | In compliance |

Electricity imported by each WTG is apportioned on the basis of electricity generated and recorded at the controller of each WTG and the electricity exported at the main meter and mentioned in the JMR.

Electricity Import to the grid by the Project activity is calculated using following formula:

$$EG_{JMR,Import} * \sum EG_{Controller,j}$$

$$EG_{Import,y} = \frac{\sum EG_{Controller,i}}{\sum EG_{Controller,i}}$$

Where,
 $\Sigma EG_{\text{Controller, project, j}}$ = Summation of net electricity generation (Gross Export – Gross Import) by all the WTGs (j number of WTGs) of project activity, as measured at the controller (LCS meter) at project site.
 $\Sigma EG_{\text{Controller, project, i}}$ = Summation of net electricity generation (Gross Export – Gross Import) by all the WTGs (i number of WTGs) of project activity or non-project activity, as measured at the controller (LCS meter) at project site.
 $EG_{\text{JMR, Import}}$ = Electricity import by project and non-project WTGs recorded at respective billing meters located at DISCOM sub-station
 The monthly values of this parameter reported in the ER calculation sheet are verified from Energy Breakup sheets prepared by O&M contractor and approved by DISCOM/3.3/, found consistent, hence accepted.

The value of EG_{import} for the current monitoring period is 177.753 MWh (After applying the error factor due to delay in calibration). This parameter is used in the calculation of $EG_{\text{facility, y}}$.

In summary, the actual of monitoring for $EG_{\text{import, y}}$ is in compliance with the approved monitoring plan.

4. Electricity export by project activity & non-project activity recorded by main meter installed at DISCOM sub-station, $EG_{\text{JMR, Export}}$ (MWh)

| Monitoring Report, onsite checks Revised Monitoring Plan & Approved Methodology | Requirement in the registered monitoring plan/1.3/ | Implementation of the project | Conclusion on the compliance of the implementation with the monitoring plan |
|--|--|--|---|
| Data/Parameter | $EG_{\text{JMR, Export}}$ | $EG_{\text{JMR, Export}}$ | In compliance |
| Description | Electricity export by project activity & non-project activity recorded by main meter installed at DISCOM sub-station | Electricity export by project activity & non-project activity recorded by main meter installed at DISCOM sub-station | In compliance |
| Measured/Calculated /Default | Measured | Measured | In compliance The assessment team has verified the monitoring approach for this parameter during the site visit. The on-site monitoring is consistent with the approach mentioned in the registered monitoring plan and the monitoring report. The verification of the meters has been covered in section E.7 of this report. |
| Source of data | Monthly JMRs | Monthly JMRs | |
| Monitoring equipment | Energy Meters (Meters are capable of continuous measurement) | Energy Meters (Meters are capable of continuous measurement) | |
| Measuring/Reading/Recording frequency | Recording Frequency: Monthly | Recording Frequency: Monthly | |
| Calculation method (if applicable) | Not applicable | Not applicable | In compliance |
| QA/QC procedures | All the billing & Backup meters are calibrated by DISCOM annually and | All the billing & Backup meters are calibrated by DISCOM and delay in | In compliance |

| | | | |
|--|--|--|--|
| | therecords are available with the representative of PP (WWIL). | calibration identified during the current monitoring period is addressed appropriately. (Please refer section E.7 of this report for further details) | |
| <p>The electricity exported by project activity & non-project activity is recorded by main meter installed at DISCOM sub-station metering point. Apart from the main meter, the metering point also consists of a check meter. Both tri-vector energy meters have the capability of continuous measurement, which was verified during the site visit.</p> <p>Joint meter reading is taken by the officials of DISCOM in the presence of the WWIL representative at the metering points. JMR records the readings of both the main and check meter. Both values have been checked and are found to be comparable. The monthly values of this parameter are directly sourced from JMRs prepared by DISCOM/3.3/. The PP has correctly reported the monthly values in the emission reduction spread sheet/4.1/.</p> <p>The value of $EG_{JMR, Export}$ for the current monitoring period is 616,743.720 MWh.</p> <p>In summary, the actual of monitoring for $EG_{JMR, Export}$ is in compliance with the approved monitoring plan.</p> <p>5. Electricity import by project activity & non-project activity recorded by main meter installed at DISCOM sub-station, $EG_{JMR, Import}$ (MWh)</p> | | | |
| Monitoring Report, onsite checks Revised Monitoring Plan & Approved Methodology | Requirement in the registered monitoring plan/1.3/ | Implementation of the project | Conclusion on the compliance of the implementation with the monitoring plan |
| Data/Parameter | $EG_{JMR, Import}$ | $EG_{JMR, Import}$ | In compliance |
| Description | Electricity import by project activity & non-project activity recorded by main meter installed at DISCOM sub-station | Electricity import by project activity & non-project activity recorded by main meter installed at DISCOM sub-station | In compliance |
| Measured/Calculated /Default | Measured | Measured | In compliance |
| Source of data | Monthly JMRs | Monthly JMRs | The assessment team has verified the monitoring approach for this parameter during the site visit. The on-site monitoring is consistent with the approach mentioned in the registered monitoring plan and the monitoring report. The verification of the meters has been covered in section E.7 of this report. |
| Monitoring equipment | Energy Meters (Meters are capable of continuous measurement) | Energy Meters (Meters are capable of continuous measurement) | |
| Measuring/Reading/Recording frequency | Recording Frequency: Monthly | Recording Frequency: Monthly | |

| | | | | |
|--|--|---|--|--|
| | Calculation method (if applicable) | Not applicable | Not applicable | In compliance |
| | QA/QC procedures | All the billing & Backup meters are calibrated by DISCOM annually and the records are available with the representative of PP (WWIL). | All the billing & Backup meters are calibrated by DISCOM and delay in calibration identified during the current monitoring period is addressed appropriately. (Please refer section E.7 of this report for further details) | In compliance |
| <p>The electricity imported by project activity & non-project activity is recorded by main meter installed at DISCOM sub-station metering point. Apart from the main meter, the metering point also consists of a check meter. Both tri-vector energy meters have the capability of continuous measurement, which was verified during the site visit.</p> <p>Joint meter reading is taken by the officials of DISCOM in the presence of the WWIL representative at the metering points. JMR records the readings of both the main and check meter. Both values have been checked and are found to be comparable. The monthly values of this parameter are directly sourced from JMRs prepared by DISCOM/3.3/. The PP has correctly reported the monthly values in the emission reduction spread sheet/4.1/.</p> <p>The value of $EG_{JMR, Import}$ for the current monitoring period is 816.480 MWh.</p> <p>In summary, the actual of monitoring for $EG_{JMR, Import}$ is in compliance with the approved monitoring plan.</p> <p>6. Net electricity generation (Gross Export – Gross Import) by a WEC of project activity or non-project activity, as measured at the controller (LCS meter) at project site. Each WEC has exclusive LCS meter that records net electricity generation (Gross Export – Gross Import) from the WEC (project or non-project). Where, i is any WEC between 1 to $j+k$.</p> <p>j is number of WEC of project activity connected to main meter at DISCOM substation and backup meter at WWIL substation.</p> <p>k is number of WEC of non-project activity connected to main meter at DISCOM substation and backup meter at WWIL substation, $EG_{Controller, i}$ (MWh)</p> | | | | |
| | Monitoring Report, onsite checks Revised Monitoring Plan & Approved Methodology | Requirement in the registered monitoring plan/1.3/ | Implementation of the project | Conclusion on the compliance of the implementation with the monitoring plan |
| | Data/Parameter | $EG_{Controller, i}$ | $EG_{Controller, i}$ | In compliance |
| | Description | Same as mentioned above | Same as mentioned above | In compliance |
| | Measured/Calculated /Default | Measured | Measured | In compliance |
| | Source of data | Monthly Generation Reports sourced from SCADA provided by O&M contractor | Monthly Generation Reports sourced from SCADA provided by O&M contractor | The assessment team has verified the monitoring approach for this parameter during the site visit. The on-site monitoring is consistent with the |
| | Monitoring | LCS or controller meters which is in-built electronic | LCS or controller meters which is in-built electronic | |

| | | | | |
|--|---|---|---|--|
| | equipment | panel installed inside the WTG tower | panel installed inside the WTG tower | approach mentioned in the registered monitoring plan and the monitoring report. |
| | Measuring/Reading/Recording frequency | Recording Frequency: Monthly | Recording Frequency: Monthly | |
| | Calculation method (if applicable) | Not applicable | Not applicable | In compliance This is a measured parameter and hence not applicable |
| | QA/QC procedures | LCS meters are auto calibrated and don't require calibration. LCS meter is microprocessor based multi-function relay (MFR) which is highly accurate and it monitors the electricity generated by each WTG. The relay runs software to sample inputs and numerically processes the information. | LCS meters are auto calibrated and don't require calibration. LCS meter is microprocessor based multi-function relay (MFR) which is highly accurate and it monitors the electricity generated by each WTG. The relay runs software to sample inputs and numerically processes the information. | In compliance The presence of the LCS meter was verified during the site visit. |
| | <p>The data is generated and recorded in the SCADA system automatically. The O&M contractor, based on recorded data in the SCADA system, prepares the daily generation reports. These daily generation reports are used to prepare monthly generation reports. The monitoring procedures were sufficiently robust to enable accurate transmission of data.</p> <p>Monthly values of $EG_{Controller,i}$ reported in the ER calculation sheet are verified with the monthly generation reports issued by O&M contractor/3.6/ and found to be consistent.</p> <p>In summary, the actual of monitoring for $EG_{Controller,i}$ is in compliance with the approved monitoring plan.</p> <p>7. Summation of net electricity generation (Gross Export-Gross Import) by all WEC (i number of WECs) of project activity (j number of WECs) and non-project activity (k number of WECs), as measured at the controller (LCS meter) at project site, Each WEC has exclusive LCS meter that records net electricity generation (Gross Export-Gross Import) from the WEC (project or non-project). Where,</p> <p>i is any WEC between 1 to j+ k and connected to main meter (JMR/billing meter) at DISCOM substation and backup meter at Enercon substation.</p> <p>j is number of WECs of project activity connected to main meter (JMR/billing meter) at DISCOM substation and backup meter at Enercon substation.</p> <p>k is number of WEC of non-project activity connected to main meter (JMR/billing meter) at DISCOM substation and backup meter at Enercon substation, $\sum EG_{Controller,i}(\text{MWh})$</p> | | | |
| Monitoring Report, onsite checks | | Requirement in the registered monitoring plan/1.3/ | Implementation of the project | Conclusion on the compliance of the implementation with the monitoring plan |
| Revised Monitoring Plan & Approved Methodology | | | | |
| Data/Parameter | | $\sum EG_{Controller,i}$ | $\sum EG_{Controller,i}$ | In compliance |

| | | | | |
|--|--|---|---|--|
| | Description | Same as mentioned above | Same as mentioned above | In compliance |
| | Measured/Calculated /Default | Measured | Measured | In compliance |
| | Source of data | Monthly Generation Reports sourced from SCADA provided by O&M contractor | Monthly Generation Reports sourced from SCADA provided by O&M contractor | The assessment team has verified the monitoring approach for this parameter during the site visit. The on-site monitoring is consistent with the approach mentioned in the registered monitoring plan and the monitoring report. |
| | Monitoring equipment | LCS or controller meters which is in-built electronic panel installed inside the WTG tower | LCS or controller meters which is in-built electronic panel installed inside the WTG tower | |
| | Measuring/Reading/Recording frequency | Recording Frequency: Monthly | Recording Frequency: Monthly | |
| | Calculation method (if applicable) | Not applicable | Not applicable | In compliance This is a measured parameter and hence not applicable |
| | QA/QC procedures | LCS meters are auto calibrated and don't require calibration. LCS meter is microprocessor based multi-function relay (MFR) which is highly accurate and it monitors the electricity generated by each WTG. The relay runs software to sample inputs and numerically processes the information. | LCS meters are auto calibrated and don't require calibration. LCS meter is microprocessor based multi-function relay (MFR) which is highly accurate and it monitors the electricity generated by each WTG. The relay runs software to sample inputs and numerically processes the information. | In compliance The presence of the LCS meter was verified during the site visit. |
| <p>The data is generated and recorded in the SCADA system automatically. The O&M contractor, based on recorded data in the SCADA system, prepares the daily generation reports. These daily generation reports are used to prepare monthly generation reports. The monitoring procedures were sufficiently robust to enable accurate transmission of data.</p> <p>Monthly values of $\sum EG_{\text{Controller},i}$ reported in the ER calculation sheet are verified with the monthly generation reports issued by O&M contractor/3.6/ and found to be consistent.</p> <p>The value of $\sum EG_{\text{Controller},i}$ for the current monitoring period is 634,321.386 MWh.</p> <p>In summary, the actual of monitoring for $\sum EG_{\text{Controller},i}$ is in compliance with the approved monitoring plan.</p> <p>8. Summation of net electricity generation (Gross Export – Gross Import) by all the WECs (j number of WECs) of project activity, as measured at the controller (LCS meter) at project site. Each WEC has exclusive LCS meter that records net electricity generation (Gross Export – Gross Import) from the WEC (project or non -project).</p> <p>j is number of WEC of project activity connected to main meter at DISCOM substation and backup meter at WWIL substation, $\sum EG_{\text{Controller}, j}$ (MWh)</p> | | | | |
| Monitoring Report, onsite checks | Requirement in the registered monitoring plan/1.3/ | Implementation of the project | Conclusion on the compliance of the implementation with the monitoring | |
| Revised | | | | |

| | | | | |
|--|--|---|---|--|
| | Monitoring Plan & Approved Methodology | | | plan |
| | Data/Parameter | $\sum EG_{\text{Controller}, j}$ | $\sum EG_{\text{Controller}, j}$ | In compliance |
| | Description | Same as mentioned above | Same as mentioned above | In compliance |
| | Measured/Calculated /Default | Measured | Measured | In compliance |
| | Source of data | Monthly Generation Reports sourced from SCADA provided by O&M contractor | Monthly Generation Reports sourced from SCADA provided by O&M contractor | The assessment team has verified the monitoring approach for this parameter during the site visit. The on-site monitoring is consistent with the approach mentioned in the registered monitoring plan and the monitoring report. |
| | Monitoring equipment | LCS or controller meters which is in-built electronic panel installed inside the WTG tower | LCS or controller meters which is in-built electronic panel installed inside the WTG tower | |
| | Measuring/Reading/Recording frequency | Recording Frequency: Monthly | Recording Frequency: Monthly | |
| | Calculation method (if applicable) | Not applicable | Not applicable | In compliance This is a measured parameter and hence not applicable |
| | QA/QC procedures | LCS meters are auto calibrated and don't require calibration. LCS meter is microprocessor based multi-function relay (MFR) which is highly accurate and it monitors the electricity generated by each WTG. The relay runs software to sample inputs and numerically processes the information. | LCS meters are auto calibrated and don't require calibration. LCS meter is microprocessor based multi-function relay (MFR) which is highly accurate and it monitors the electricity generated by each WTG. The relay runs software to sample inputs and numerically processes the information. | In compliance The presence of the LCS meter was verified during the site visit. |
| <p>The data is generated and recorded in the SCADA system automatically. The O&M contractor, based on recorded data in the SCADA system, prepares the daily generation reports. These daily generation reports are used to prepare monthly generation reports. The monitoring procedures were sufficiently robust to enable accurate transmission of data.</p> <p>Monthly values of $\sum EG_{\text{Controller}, j}$ reported in the ER calculation sheet are verified with the monthly generation reports issued by O&M contractor and found to be consistent.</p> <p>The value of $\sum EG_{\text{Controller}, j}$ for the current monitoring period is 136,962.524 MWh.</p> <p>In summary, the actual of monitoring for $\sum EG_{\text{Controller}, j}$ is in compliance with the approved monitoring plan.</p> <p>In summary based on the above assessment, the assessment team is able to confirm that all the parameters have been monitored appropriately, in accordance with the registered monitoring plan (as per measurement methods and procedures to be applied) and applied methodology. The monitoring results were recorded consistently as per the approved frequency in the monitoring plan.</p> | | | | |

| | |
|-------------------|--|
| Findings | CAR #1 was raised and resolved. |
| Conclusion | <p>Applus+ LGAI confirms that the actual monitoring activities observed on site are in compliance with the approved monitoring plan and as described in the registered PDD/1.3/ and the same is in line with the monitoring methodology /2.3/.</p> <p>The applicable parameters stated in the registered PDD monitoring plan/1.3/ and the applied methodology/2.3/ have been sufficiently monitored. The responsibilities and authorities for monitoring and reporting are in accordance with what is stated in the registered PDD monitoring plan/1.3/. The information flow (data generation, aggregation, recording, calculation and reporting) for the parameters to be monitored including its values in the final version of the MR/1.2/ have been correctly reported and confirmed. Hence, the requirement of CDM-VVS for v01.0 §§ 363-367 have been met.</p> |

E.6.3. Implementation of sampling plan

| | |
|------------------------------|--|
| Means of verification | No sampling plan is defined in the registered approved monitoring plan. All the data and information has been checked during verification assessment, thus no sampling plan has been applied in the Project. |
| Findings | Not Applicable |
| Conclusion | Not Applicable |

E.7. Compliance with the calibration frequency requirements for measuring instruments

| | | | |
|------------------------------|---|---|---|
| Means of verification | <p>As per the monitoring plan in the registered PDD/01/ the meters are to be tested and calibrated annually. The project activity metering has been physically inspected during the site visit. The details of monitoring equipment is involved in the project activity and their calibration dates are mentioned in Section C of the final MR and are summarised in the tables below. All the meters are of accuracy class of 0.2s and calibration frequency of once in a year.</p> <p>The assessment team has checked the calibration certificates/5.1/for accuracy and validity, so as to assure reliability and steadiness of monitoring results. The calibrations results have been verified as below.</p> | | |
| | Metering Point Identification | (Billing metering points) PS-8 Sub-station (DISCOM) | (Backup metering points) Salodi Sub-station (WWIL) |
| | Monitoring equipment | Trivector Energy Meter | Trivector Energy Meter |
| | Monitoring parameter | EGJMR, Export & EGJMR, import | EGJMR, Export & EGJMR, import |
| | S/N | RJB 00354(Main Meter) RJB 00356(Check Meter) | RJB 00358(Main Meter) RJB 00357 (Check Meter) |
| | Type | Secure | Secure |
| | Level | 0.2s | 0.2s |
| | Meter Testing frequency requirement | Annual | Annual |
| | Meter Testing date | <p>For both locations:</p> <p>20/12/2012,11/03/2014,21/02/2015 and 16/06/2017</p> | |

| | | |
|---|--|----------|
| Validity | One year | One year |
| Are there delays in testing/calibration? | Yes | Yes |
| Testing / Calibration Entity | DISCOM as per approved monitoring plan. | |
| Accreditation Certificate for the calibration entity | As per PPA, the periodic calibration is being done by state utility (DISCOM) and PP has no involvement in the calibration process. The calibration of the reference meter is carried out at the laboratory of The Central Power Research Institute, Government of India. The laboratories of CPRI are accredited under National Accreditation Board for Testing and Calibration of Laboratories (NABL), which is the National body for accreditation of Laboratories | |

The installation and working condition of the meters were checked during the on-site inspection and it was found to be satisfactory. These meters are duly approved, installed, tested, sealed and in the custody of the state utility. The PP has no control over the same. Accordance with the guidelines as state under section 3.2.3 of CEA Notification No. 502/70/CEA/DP&D dated 17/03/2006/6.3/ which is considered as national standard "All interface meters shall be tested at least once in five years." Hence, the calibration frequency of once in a year, mentioned in the registered PDD/1.3/ for the meters is appropriate.

Assessment on delay in calibration:
It is evident from the above table that calibration of meters installed at both the locations is not carried out as per the frequency mentioned in the registered monitoring plan.

Details of the calibration delay period is provided in below table:

| Calibration year | Date of calibration | Delayed calibration period | Remark |
|------------------|---------------------|----------------------------|--|
| 2012-2013 | 20/12/2012 | - | Due date of calibration 20/12/2013 |
| 2013-2014 | 11/03/2014 | 20/12/2013 to 10/03/2014 | Error factor is applied from December 2013 to March 2014 (entire period) |
| 2014-2015 | 21/02/2015 | No delay | Due date of calibration 21/02/2016 |
| 2015-2016 | - | - | - |
| 2016-2017 | 16/06/2017 | 21/02/2016 to 15/06/2017 | Error factor is applied from February 2016 to June 2017 (entire period) |

The assessment team has checked the latest calibration certificates of energy meters and confirmed that meter was working satisfactorily and error within the permissible limits. Accordance with the guidelines outlined under paragraph 369(a) of CDM VVS for PAs version 01.0, an error factor had to be applied for both export & import i.e. the measured values in the delayed calibration period. However, the monthly energy breakup sheets issued by the state utility only provides the calculated value of electricity exported and imported by the project activity. Hence the error factor – 0.2% is applied for export values and +0.2% for import values. The approach followed by the PP was found to be conservative and appropriate, hence accepted.

It is worthy to note that the billing cycle for the project activity starts from 1st day and ends on

| | |
|-------------------|---|
| | <p>last day of the every month, hence the error factor is applied to the export and import values for the entire month of December 2013 to March 2014 (01/12/2013 to 31/03/2014) and from February 2016 to June 2017(01/02/2016 to 30/06/2017) during the current monitoring period. The approach followed by the PP was found to be conservative and appropriate, hence accepted.</p> <p>It is verified through the registered PDD and PPA signed by the PP with state utility that the state utility is the buyer of generated electricity and sole entity responsible for calibration of meters.</p> |
| Findings | CAR #2 was raised and resolved. |
| Conclusion | Applus+ LGAI confirms that the calibration is conducted at the frequency following the relevant industry standard as specified by the methodology /2.3/ and the monitoring plan contained in the registered PDD /1.3/. Therefore, the requirement of CDM-VVS for PA v01.0 §§ 374 have been met. |

E.8. Assessment of data and calculation of emission reductions or net removals

E.8.1. Calculation of baseline GHG emissions or baseline net GHG removals by sinks

| | |
|------------------------------|---|
| Means of verification | <p>The verification team verified that</p> <ol style="list-style-type: none"> A complete set of data for the monitoring period was available for the monitoring period and the verification of each monitoring parameter is elaborated under Section E.6.2 of this report. The complete monitoring data is also presented in the corresponding ER sheet /4.1/ of final Monitoring Report /1.2/. The information provided in the monitoring report was cross checked with other sources, wherever appropriate and available, and such information is also included under Section E.6.2 of this report . The calculations of baseline emissions as presented in the corresponding ER sheet of final Monitoring Report were checked and found to be consistent with the formulae and methods described in the registered monitoring plan and the applied methodology. All assumptions used in the emission calculations were found appropriate and therefore justified Appropriate emission factors and other reference values have been correctly applied. This has also been elaborated under Section E.6.1 of this report. No standardized baseline was prescribed in the registered PDD and therefore it has not been applied. There is no pro-rate approach was applied in the current monitoring period as entire monitoring period falls into period that is after the end of first commitment period of Kyoto Protocol. <p>The baseline emissions are the product of net electricity supplied to the grid expressed in MWh of electricity produced by the renewable generating unit multiplied by the grid emission factor. Baseline emission factor is calculated as combined margin, consisting of a combination of operating margin (OM) and build margin (BM) factors.</p> $BE_y = EG_{PJ,y} * EF_{grid, CM, y}$ <p>Where:</p> <p>BE_y = Baseline emissions in year y (tCO₂/yr)</p> <p>$EG_{PJ,y}$ =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)</p> <p>$EF_{grid, CM, y}$ = 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)</p> <p>As per the applied methodology ACM0002 version 12.3.0, if the project activity is the installation of a new grid-connected renewable power plant/unit at a sitewhere no renewable power plant was operated prior to the implementation of the project activity, then:</p> $EG_{PJ,y} = EG_{facility,y}$ <p>Where,</p> |
|------------------------------|---|

| | |
|-------------------|---|
| | <p>$EG_{\text{facility},y}$ = Quantity of net electricity generation supplied by the project plant/unit to the grid in year y (MWh)</p> <p>As per the registered PDD, combined margin emission factor is 0.94881 tCO₂/MWh. Hence the baseline emissions for the project activity for the current monitoring period are as follows.</p> <p>$BE_y = EG_{\text{facility},y} * EF_{\text{grid, CM, } y}$</p> <p>$BE_y = 132,878.683 * 0.94881 = 126,076 \text{ tCO}_2\text{e}$</p> |
| Findings | No non-conformability was observed during assessment for this monitored parameter. Therefore, no finding was raised. |
| Conclusion | <p>Applus+ LGAI confirms that the requirement outlined under CDM-VVS for v01.0 §§ 377 have been met as:</p> <ul style="list-style-type: none"> • A complete set of data for the monitoring period is available. • Information on the baseline GHG emission calculation provided in the monitoring report /1.2/ has been cross-checked with other sources. • Calculations of baseline emissions have been carried out in accordance with the formulae and methods described in the monitoring plan and the applied methodology document. • Appropriate emission factor of the power grid has been correctly applied. |

E.8.2. Calculation of project GHG emissions or actual net anthropogenic GHG removals by sinks

| | |
|------------------------------|--|
| Means of verification | The registered PDD/1.3/ and applied monitoring methodology/2.3/ does not prescribe any project emissions to be considered. The onsite visit and project design also did not reveal any potential source to be considered in this regard. |
| Findings | No non-conformability was observed during assessment for this section. Therefore, no finding was raised. |
| Conclusion | No project emissions were required to be calculated. |

E.8.3. Calculation of leakage GHG emissions

| | |
|------------------------------|--|
| Means of verification | The registered PDD/1.3/ and applied monitoring methodology/2.3/ does not prescribe any leakage emissions to be considered. The onsite visit and project design also did not reveal any potential source to be considered in this regard. |
| Findings | No non-conformability was observed during assessment for this section. Therefore, no finding was raised. |
| Conclusion | No leakage emissions were required to be calculated. |

E.8.4. Summary calculation of GHG emission reductions or net anthropogenic GHG removals by sinks

| | |
|------------------------------|---|
| Means of verification | <p>As elaborated above, the entire emission reductions from the project activity were based on baseline emissions. The calculations presented in this regard in the final monitoring report and corresponding ER calculation sheet were found appropriate and complying with the provisions prescribed in the registered monitoring plan of registered PDD and applied methodology.</p> <p>The verification team confirms that an audit trail that contains the evidence and records that validated the stated figures were checked and found acceptable.</p> |
| Findings | No non-conformability was observed during assessment for this section. Therefore, no finding was raised. |
| Conclusion | <p>Applus+ LGAI confirms that the requirement outlined under CDM-VVS for PA v01.0 §§ 377 have been met as:</p> <ul style="list-style-type: none"> • A complete set of data for the monitoring period is available. • Information provided in the monitoring report /1.2/ has been cross-checked with other sources; • Calculations of baseline emissions, and project activity emissions and leakage, as appropriate, been carried out in accordance with the formulae and methods described in the monitoring plan and the applied methodology document. • There are no assumptions in emission reductions calculation. • Appropriate emission factor of the power grid has been correctly applied. |

E.8.5. Comparison of actual GHG emission reductions or net anthropogenic GHG removals by sinks with estimates in registered PDD

| | | | | |
|------------------------------|--|---|---|------------|
| Means of verification | As verified and evident from the final Monitoring Report /1.2/ and corresponding ER sheet /4.1/, the actual emission reductions achieved by the project activity in the current monitoring period were found less than the estimated quantity in the registered PDD/1.3/ for the comparable period. This is largely due to low plant load factor achieved during the current monitoring period. | | | |
| | Annual CERs estimated in the registered PDD (tCO ₂ e) | Estimated CERs for current monitoring period (395 days), tCO ₂ e | Actual CERs achieved in the current monitoring period, tCO ₂ e | Difference |
| | 32,415 | 143,336 | 126,076 | -12.04% |
| | Considering, there is no increase in ERs than the estimated amount; it was found acceptable. | | | |
| Findings | No non-conformability was observed during assessment for this section. Therefore, no finding was raised. | | | |
| Conclusion | <p>Applus+ LGAI confirms that the requirement outlined under CDM-PS for PA v01.0 §§ 268 have been met as:</p> <ul style="list-style-type: none"> A comparison of actual GHG emission reductions or net anthropogenic GHG removal of the project activity achieved during this monitoring period with the estimates in the registered PDD /1.3/ has been provided in the Monitoring Report /1.2/. The verification team confirms that the calculation of the comparison is correct. | | | |

E.8.6. Remarks on difference from estimated value in registered PDD

| | |
|------------------------------|--|
| Means of verification | The verification team has assessed the cause of any variation in the actual GHG emission reductions achieved during the current monitoring period. There is decrease of around 12.04% in the actual emission reductions achieved during the current monitoring period from that stated in the registered CDM-PDD. This is largely due to low plant load factor achieved during the current monitoring period. It is to be noted that PLF is completely governed by the availability of wind, which is natural phenomenon and it is beyond the control of PP. |
| Findings | CAR #3 was raised and resolved. |
| Conclusion | <p>Applus+ LGAI confirms that the requirement outlined under CDM-PS for PA v01.0 §§ 269 and CDM-VVS for PA v01.0 §§ 359 (d) have been met as:</p> <ul style="list-style-type: none"> The verified emission reductions are lesser than the estimated value in the monitoring period. The project participants have explained the cause of any decrease in the actual GHG emission reductions achieved during the current monitoring period, and including all information (i.e. data and/or parameters) that is different from that stated in the registered PDD /1.3/. The variation is deemed to be reasonable. |

E.8.7. Actual GHG emission reductions or net anthropogenic GHG removals by sinks during the first commitment period and the period from 1 January 2013 onwards

| | |
|------------------------------|--|
| Means of verification | Based on the assessment done in section E.8.1 to E.8.6, the verification team is able to certify that the emission reductions from the CDM project activity 6160 "Wind Power Project in Tinwari, Rajasthan" in India during the period 01/03/2013 to 31/07/2017 (including both days) is 126,076 tCO ₂ e. |
| Findings | No non-conformability was observed during assessment for this section. Therefore, no finding was raised. |
| Conclusion | Applus+ LGAI confirms that the requirement outlined under CDM-PS for PA v01.0 §§ 266 as the project participants has calculated GHG emission reductions. |

E.9. Assessment of reported sustainable development co-benefits

| | |
|------------------------------|----------------|
| Means of verification | Not applicable |
| Findings | Not applicable |
| Conclusion | Not applicable |

E.10. Global stakeholder consultation

| | |
|------------------------------|----------------|
| Means of verification | Not applicable |
| Findings | Not applicable |
| Conclusion | Not applicable |

SECTION F. Internal quality control

>>As a final step of verification, the final documentation including the verification report has to undergo an internal quality control by the Technical Reviewer. Each report has to be finally approved either by the DOE's Technical Manager or the Deputy. In case one of these two persons is part of the assessment team, the approval can only be given by the person who is not a part of the assessment team. If the documents have been satisfactorily approved, the Request for Issuance is submitted to the CDM-EB along with the relevant documents.

SECTION G. Verification opinion

>>Applus+ LGAI has been contracted by M/s Wind World (India) Limited to perform the verification of the emission reductions reported for the CDM project "Wind Power Project in Tinwari, Rajasthan" in the period 01/03/2013 to 31/07/2017.

Applus+ LGAI concludes that the CDM Project "Wind Power Project in Tinwari, Rajasthan", as described in the monitoring plan contained in the registered PDD /1.3/ (Version 5.0, 23/07/2012), and Monitoring Report /1.2/ (Version 02, 04/10/2017), meets all relevant requirements of the UNFCCC for CDM project activities including article 12 of the Kyoto Protocol, the modalities and procedures for CDM (Marrakesh Accords) and the subsequent decisions by the COP/MOP and CDM Executive Board. The verification is conducted in line with the (CDM-VVS for PA) Version 01.0 /2.1/ requirements. The Project is implemented according to selected monitoring methodology /2.3/ and the monitoring plan contained in the registered PDD /1.3/. The monitoring equipment was installed, calibrated and maintained in a proper manner. The monitoring system is in place and the Project is generating GHG emission reductions as a CDM project.

Applus+ LGAI confirms that the project is implemented in accordance with the validated and registered Project Design Document/1.3/. The monitoring system is in place and the emission reductions are calculated without material misstatements. Our opinion relates to the projects GHG emissions and the resulting GHG emission reductions reported and related to the valid and registered project baseline and monitoring and its associated documents. Based on the information seen and evaluated we confirm that the implementation of the project has resulted in 126,076 tCO₂e emission reductions during the period 01/03/2013 to 31/07/2017 (both days included).

Applus+ LGAI therefore issues the positive verification opinion expressed in the Certification statement in Section H.

SECTION H. Certification statement

>>Applus+ LGAI has been engaged by M/s Wind World (India) Limited to perform the second periodical verification of the 'Wind Power Project in Tinwari, Rajasthan' (UNFCCC Ref. No. 6160).

The management of M/s Wind World (India) Limited is responsible for the preparation of the GHG emissions data and the reported GHG emissions reductions on the basis set out within the project's Monitoring Plan in the registered PDD version 5.0 /1.3/, completed on 23/07/2012 and the applied methodology ACM0002 Version: 12.3.0 /2.3/.

Our verification approach was based on the requirements as defined under the Kyoto Protocol, Marrakesh accord, as well as those defined by the CDM Executive Board. Our approach is risk-based, drawing on an understanding of the risks associated with reporting GHG emissions data and the controls in place to mitigate these. The verification can confirm that:

- the project is operated as planned and described in the project design document approved by the EB;
- the monitoring plan is as per the applied methodology;
- the monitoring in Monitoring Report is as per the PDD and the monitoring plan approved by the EB;
- the development and maintenance of records and reporting procedures are in accordance with the registered monitoring plan;
- the installed equipment being essential for generating emission reduction runs reliably and is calibrated appropriately;

- the monitoring system is in place and generates GHG emission reductions data;
- the GHG emission reductions are calculated without material misstatements.

In our opinion, the GHG emission reductions for 'Wind Power Project in Tinwari, Rajasthan' for the monitoring period 01/03/2013 to 31/07/2017 as reported in Monitoring Report, prepared on the basis of the project's Monitoring Plan are fairly stated.

Based on the information we have seen and evaluated, we confirm the following statement:

| | |
|--|--------------------------------------|
| Reporting period: | From 01/03/2013 to 31/07/2017 |
| Verified emissions in the above reporting period: | |
| Leakage emissions | 00,000 tCO ₂ equivalents |
| Project emissions | 00,000 tCO ₂ equivalents |
| Baseline emissions | 126,076 tCO ₂ equivalents |
| Emission reductions in this monitoring period (i.e. 01/03/2013 to 31/07/2017) | 126,076 tCO ₂ equivalents |
| Emission reductions achieved during the period up to 31 December 2012 | Nil |
| Emission reductions achieved during the period from 1 January 2013 onwards. (i.e. 01/03/2013 to 31/07/2017) | 126,076 tCO ₂ equivalents |

Appendix 1. Abbreviations

| Abbreviations | Full texts |
|-------------------|---|
| General | |
| ACM | Approved Consolidated Methodology |
| AM | Approved Methodology |
| AMS | Approved Methodology for SSC Projects |
| BE | Baseline Emission |
| BM | Build Margin |
| CAR | Corrective Action Request |
| CDM | Clean Development Mechanism |
| CH ₄ | Methane |
| CL | Clarification Request |
| CM | Combined Margin |
| CME | Coordinating/Managing Entity |
| CO ₂ | Carbon di oxide |
| CP | Crediting Period |
| CPA DD | Component Project Activity Design Document |
| DNA | Designated National Authority |
| DR | Desk Review |
| DOE | Designated Operational Entity |
| EB | Executive Board |
| EIA | Environmental Impact Assessment |
| ESPL | Earthood Services Private Limited |
| FAR | Forward Action Request |
| GHG | Green House Gas |
| GSC/GSP | Global Stakeholder Consultation Process |
| GW | Giga Watt |
| GWh | Giga Watt hour |
| IPCC | Intergovernmental Panel on Climate Change |
| KP | Kyoto Protocol |
| Kw | kilo Watt |
| kWh | kilo Watt hour |
| LoA | Letter of Approval/Authorization |
| LSC | Local Stakeholder Consultation Process |
| MoC | Modalities of Communication |
| MoV | Means of Validation |
| MP | Monitoring Plan |
| MW | Mega Watt |
| MWh | Mega Watt hour |
| N ₂ O | Nitrous Oxide |
| OM | Operating Margin |
| PCP | Project Cycle Procedure |
| PDD | Project Design Document |
| PE | Project Emission |
| PLF | Plant Load Factor |
| PoA DD | Programme of Activities Design Document |
| PP | Project Participant |
| PS | Project Standard |
| RFR | Request for Registration |
| Tco _{2e} | Tonnes of Carbon di oxide equivalent |
| TPH | Tonnes Per Hour |
| UNFCCC | United Nations Framework Convention on Climate Change |
| V | Version |
| VVS | Validation and Verification Standard |
| Project Specific | |

| | |
|--------|---|
| ABT | Availability Based Tariff |
| DISCOM | Distribution Company |
| EIL | Enercon (India) Limited |
| EPC | Engineering and Procurement Contractor |
| GOI | Government of India |
| JMR | Joint Meter Reading |
| JVVNL | Jaipur VidyutVitrان Nigam Limited |
| LCS | Local Controller System |
| MGR | Monthly Generation Reports |
| NEWNE | North East West North-East |
| O&M | Operation and Maintenance |
| PPA | Power Purchase Agreement |
| QA/QC | Quality Assurance/Quality Control |
| RERC | Rajasthan Electricity Regulatory Commission |
| RMP | Revision in Monitoring Plan |
| RPTCL | Rajasthan Power Transport Company Limited |
| RRVNL | Rajasthan RajyaVidyutPrasaran Nigam Limited |
| VWIL | Vish Wind Infrastructure LLP |
| WTG | Wind Turbine Generator |
| WWIL | Wind World India Limited |

Appendix 2. Competence of team members and technical reviewers

According to the sectoral scopes / technical area and experiences in the sectoral or national business environment, Applus+ LGAI has composed a project validation team in accordance with the appointment rules in Applus+ LGAI. The composition of assessment team has to be approved by the Applus+ LGAI ensuring that the required skills are covered by the team. The four qualification levels for team members that are assigned by formal appointment rules as below:

- Leader Auditor (LA)
- Auditor (A)
- Auditor in Trainee (A in T)
- Technical Experts (E)

It is required that the sectoral scope / technical area related to the methodology has to be covered by the assessment team.

| Name | Qualification | Coverage of scope | Coverage of technical Area | Financial aspect | Host country Experience | Attendance to the On-Site Assessment |
|---------------------|---------------|-------------------|----------------------------|------------------|-------------------------|--------------------------------------|
| Vivek Kumar Ahirwar | LA/E | Yes (1) | Yes (1.2) | N/A | Yes | Yes |
| Ravi Kant Soni | A in T | Yes (1) | Yes (1.2) | N/A | Yes | Yes |
| - DennyXue | TR | Yes (1) | Yes (1.2) | N/A | N/A | N/A |

The curricula vitae of the DOE's team members are provided below:

Vivek Kumar Ahirwar is a BEE-Certified Energy Auditor by Govt of India with over eight years of relevant experience in energy efficiency, energy audit, thermal and electrical energy generation technology from renewable source and energy conservation in energy intensive industries, designated consumers and commercial buildings, implementation of energy conservation building codes, research, process and green building projects. He is a certified lead auditor for ISO 14001 EMS and 14064. He has experience under various categories of projects stating from renewable to waste to supercritical projects and WCD. He has successfully audited more than 100 GHG (CDM/VCS/GS) projects in different states across the India. He has done Mater in Technology (Energy Management) from a premier institute, School of Energy & Environmental Studies, DAVV, Indore (M.P.), India and Bachelor of Engineering (Mechanical Engineering) from Govt. Engineering college, Rewa, RGPV, India.

Ravi Kant Soni is a certified lead auditor for Lead Auditor ISO 14001:2004&Lead Auditor ISO 14064:2006 GHG Inventory and verification. He has more than 10 years of work experience across Climate Change, Environmental Management & Monitoring, Health & Safety Management, and Statutory Compliance. He was involved in more than 100 CDM validation and verifications activities and Gold Standard, VER projects as a team leader/technical reviewer / validator / verifier covering the sectoral scope 1 technical area 1.2. He has done Mater in Technology (Energy Management) from a premier institute, School of Energy & Environmental Studies, DAVV, Indore (M.P.), India and Bachelor of Engineering (Mechanical Engineering) from M.I.T.S Gwalior Jiwaji University Gwalior, India.

Hanshen (Denny) Xue (Master Degree in Environmental Engineering, Bachelor Degree in Thermal Engineering) is an Auditor appointed by Applus+ LGAI for the GHG project assessment. He is based on Shanghai. He has 1.5 years of work experiences in CDM project development. Before he joined Applus+ LGAI, he has been worked for Shanghai Chuanji Investment and Management which is a CDM consultancy company as a project manager for CDM project development.

Appendix 3. Documents reviewed or referenced

| No. | Author | Title | References to the document | Provider |
|-----|---|--|--|---------------|
| 1. | Basic Documents (Monitoring Report, Project Design Documents, Previous Verification Reports) | | | |
| 1.0 | WWIL | MR , version 01 (Published) | Dated 19/08/2017 | PP |
| 1.1 | WWIL | MR, version 02 | Dated 04/10/2017 | PP |
| 1.2 | WWIL | MR, version 03 (final) | Dated 23/10/2017 | PP |
| 1.3 | WWIL | Registered PDD Version 5.0, | Dated 23/07/2012 | PP |
| 1.4 | DNV | Validation Report of the registered CDM project activity (REPORT NO. 2011-9638 Revision No. 03) | Dated 24/07/2012 | Other: UNFCCC |
| 1.5 | UNFCCC | CDM Project activity view page "Wind Power Project in Tinwari, Rajasthan " https://cdm.unfccc.int/Projects/DB/DNV-CUK1185356859.49/view | - | Other: UNFCCC |
| 1.6 | TUV NORD | Verification report for first monitoring period (01/08/2012-28/02/2013), Report No: 8110005528 – 13/072 | Dated 05/06/2013 | Other: UNFCCC |
| 2. | References and requirements at UNFCCC/IPCC/etc. | | | |
| 2.1 | UNFCCC website | Clean Development Mechanism Validation and Verification Standard for Project Activity (CDM-VVS for PA), version 01.0 as per EB 93, Annex 5 | Dated 03/03/2017 | Other: UNFCCC |
| 2.2 | UNFCCC website | CDM Project Standard for Project Activity (CDM-PS for PA), version 01.0 as per EB 93, Annex 4 | Dated 03/03/2017 | Other: UNFCCC |
| 2.3 | UNFCCC website | Consolidated baseline methodology for grid-connected electricity generation from renewable sources ,ACM0002, version 12.3.0 | - | Other: UNFCCC |
| 2.4 | UNFCCC website | Guidance to Complete "Monitoring Report Form (CDM-MR-FORM), Version 06.0" as accordance with the Attachment "Instructions for filling out the monitoring report form" | Dated 07/06/2017 | Other: UNFCCC |
| 3. | Project implementation information | | | |
| 3.1 | State utility | Commissioning certificate of all 25 WTGs involved in the project activity | Commissioned between 30/09/2011 and 09/11/2011 | PP |
| 3.2 | State utility | Power Purchase Agreement between Jaipur Vidyut Vitran Nigam Limited and Wind World (India) Limited | Dated 09/10/2011 | PP |
| 3.3 | State utility | i. Monthly JMR issued by JVVNL ii. Monthly breakup sheets issued by state utility | For the period 01/03/2013 - 31/07/2017 | PP |
| 3.4 | WWIL | Monthly invoices issued by PP to JVVNL | For the period 01/03/2013 - 31/07/2017 | PP |
| 3.5 | CEA | CEA CO ₂ Baseline Database for the Indian Power Sector | - | Other |

| | | | | |
|-----|--|--|--|------------|
| | | Version 06 | | |
| 3.6 | WWIL | i. Daily Generation Data recorded by the WWIL Personnel at the sub-station. ii. Monthly generation reports issued by O&M contractor (WWIL). | For the period 01/03/2013 - 31/07/2017 | PP |
| 3.7 | Ministry of corporate Affairs, GOI | Name change consent issued by Government of India, | dated 01/01/2013 | PP |
| 4. | ER calculation and cross checking issue | | | |
| 4.1 | WWIL | Emission reduction calculation sheet , Version 02 | - | PP |
| 4.2 | WWIL | Emission reduction calculation sheet, Version 01 | - | PP |
| 5. | Calibration issues | | | |
| 5.1 | State utility | Calibration certificates for the DISCOM substation meters (main meter and check meter) and the meter at WWIL substation. | - | PP |
| 6. | Others | | | |
| 6.1 | LGAJ | Site Visit Attendance Sheet | 25/09/2017 | - |
| 6.2 | LGAJ | Site Visit Photograph | 25/09/2017 | - |
| 6.3 | CEA | Central Electricity Authority (Installation and Operation of Meters) Regulations - Notified on 17/03/2006 No.502/70/CEA/DP&D - AmendmentsNotifiedon26/06/2010No.502/6/2009/DP&D/D-I (http://www.cea.nic.in/reports/regulation/meter_reg.pdf) | 17/03/2006 | Other: CEA |

Appendix 4. Clarification requests, corrective action requests and forward action requests

Table 1. Remaining FAR from validation and/or previous verifications

| | | | | |
|--|-----|--------------------|-----|------------------|
| FAR ID | N/A | Section no. | N/A | Date: N/A |
| Description of FAR | | | | |
| N/A | | | | |
| Project participant response | | | | Date: N/A |
| N/A | | | | |
| Documentation provided by project participant | | | | |
| N/A | | | | |
| DOE assessment | | | | Date: N/A |
| N/A | | | | |

Table 2. CL from this verification

| | | | | |
|---|----|--------------------|-----|-------------------------|
| CL ID | 01 | Section no. | D.2 | Date: 26/09/2017 |
| Description of CL | | | | |
| Title and version of the applied methodology as mentioned at page 1 of the MR is not consistent with project webpage. Source web link provided in the MR for CEA database v.6 is not working. | | | | |
| Project participant response | | | | Date: 04/10/2017 |
| PP has revised MR to maintain the consistency in stating "title & version" of applied methodology with the Project UNFCCC Webpage. https://cdm.unfccc.int/Projects/DB/DNV-CUK1335949463.75/view PP has revised MR to update the link provided in the MR for CEA database v.6 | | | | |
| Documentation provided by project participant | | | | |
| 1. MR Version 2 2. CEA Database ver 6 Source link: http://www.cea.nic.in/reports/others/thermal/tpece/cdm_co2/user_guide_ver6.pdf | | | | |
| DOE assessment | | | | Date: 20/10/2017 |
| Title and version of the applied methodology is corrected at page 1 of the MR, consistent with project webpage. Source web link in the MR for CEA database v.6 is updated, found to be working. CL #1 is closed. | | | | |

Table 3. CAR from this verification

| | | | | |
|---|----|--------------------|-----|-------------------------|
| CAR ID | 01 | Section no. | E.5 | Date: 26/09/2017 |
| Description of CAR | | | | |
| 1. The PP is requested to clarify why the latest version of monitoring report template is not used as available on UNFCCC web site. 2. Section D.2 of MR: It is stated that the parameters $EG_{Export,y}$ and $EG_{Import,y}$ are measured, however as per the description provided in registered PDD for respective parameter, both are calculated using apportioning procedure. Please clarify the inconsistency. | | | | |
| Project participant response | | | | Date: 04/10/2017 |
| 1. PP has revised MR to use the latest version of monitoring report template available on UNFCCC web site. 2. PP has revised MR Section D.2, to state that the parameters $EG_{Export,y}$ & $EG_{Import,y}$ are "Calculated". Thus, maintained the consistency with the description provided in the registered PDD. | | | | |
| Documentation provided by project participant | | | | |
| MR Version 2, dated 04/10/2017 | | | | |
| DOE assessment | | | | Date: 20/10/2017 |

The PP has used latest version of MR template, found to be satisfactory, hence accepted.
 Description of the monitoring parameters $EG_{Export,y}$ and $EG_{Import,y}$ is updated in section D.2 of revised MR, found consistent with registered PDD, hence accepted.
 CAR #1 is closed.

| | | | | |
|--|----|--------------------|-----|-------------------------|
| CAR ID | 02 | Section no. | E.7 | Date: 26/09/2017 |
| Description of CAR | | | | |
| <ol style="list-style-type: none"> 1. There were delay in calibration of meters observed during the current monitoring period, please clarify why the length of delayed period is not reported in the MR and ER sheet. 2. As verified through ER sheet that values of parameter $EG_{JMR, Export}$ and $EG_{JMR, Import}$ were adjusted applying error factor to address delay in calibration. Since both the parameters are comprise data of non-project WTGs, hence please clarify how the approach used to address the delay in calibration is appropriate. | | | | |
| Project participant response | | | | Date: 04/10/2017 |
| <ol style="list-style-type: none"> 1. PP has revised MR & ER Sheet to report the delay in calibration observed during the monitoring period. It is transparently mentioned in the revised MR in section C under "Meter Test Checking Details" & ER Sheet that delay in calibration has been observed in the year 2013 & 2016 for 4 months & 16months respectively. 2. PP has revised ER sheet to apply the maximum permissible error as per guideline VVS (CDM-EB93-A05-STAN) para 369 (a) & APPENDIX – CALIBRATION para 2 Table 1. PP has applied maximum permissible error for all measured values of parameter project WTGs "$EG_{Export,y}$" & "$EG_{Import,y}$" during the period between the scheduled date of calibration and the actual date of calibration conservatively. Please refer worksheet "Apportioning Calculation" within ER Sheet. | | | | |
| Documentation provided by project participant | | | | |
| MR Version 2 ER Version 2 | | | | |
| DOE assessment | | | | Date: 20/10/2017 |
| The PP has reported the delay in calibration in section C of the revised MR appropriately. In the revised ER sheet, error factor is applied to the parameters $EG_{Export,y}$ and $EG_{Import,y}$ to address the delay in calibration identified in the current monitoring period, found satisfactory, hence accepted. CAR #2 is closed. | | | | |

| | | | | |
|---|----|--------------------|-----|-------------------------|
| CAR ID | 03 | Section no. | E.8 | Date: 26/09/2017 |
| Description of CAR | | | | |
| Actual emission reductions claimed for the current monitoring period are lower than the same estimated in the registered PDD for comparable period. Kindly clarify the reason for the same. | | | | |
| Project participant response | | | | Date: 04/10/2017 |
| PP would like to clarify that due to the low wind seasons during the current monitoring period the annual average PLF was lower (i.e. 17.45%) than the expected (19.50%) at the time of registered PDD due to which the actual emission reduction achieved during the current monitoring period is 12.04% lesser than the estimated emission reduction based on the registered PDD for the same period. PP has provided the same explanation in section E.6 of the revised MR and also mentioned the capacity factor, machine availability & grid availability in Appendix 4 of the MR. | | | | |
| Documentation provided by project participant | | | | |
| MR version 2. | | | | |
| DOE assessment | | | | Date: 20/10/2017 |
| Actual emission reductions achieved during the current monitoring period are lower than the same estimated in the registered PDD for comparable period. This is largely due to low PLF achieved during the current monitoring period that is governed by wind availability and out of control of PP. The assessment team has confirmed that the variation in ERs is reasonable, hence accepted. CAR #3 is closed. | | | | |

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|---------------------------|----|--------------------|-----|-------------------------|
| CAR ID | 04 | Section no. | E.7 | Date: 21/11/2017 |
| Description of CAR | | | | |

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|---|-------------------------|
| <ol style="list-style-type: none"> 1. Accuracy class of energy meters mentioned in section C of the MR is inconsistent with registered PDD. 2. Application of error factor and period of delay calibration is not described transparently in section C of the MR. 3. MR section B.1: It is stated that shutdown details of the WTGs is provided under Appendix 5 but no such appendix included in the MR. 4. In line with the approved monitoring plan value of EG_y will be cross checked with the invoices; however the process is not presented in the ER calculation sheet. | |
| Project participant response | Date: 23/11/2017 |
| <ol style="list-style-type: none"> 1. PP has revised MR Section C to maintain the consistency in reporting the "Accuracy class of energy meters i.e. 0.2%" in line with the registered PDD. 2. PP has revised MR Section C to provide the appropriate description for the application of error factor & period of delay calibration more elaborately. 3. PP has revised MR Section B.1 to provide the appropriate reference of Appendix 4 to refer the shutdown details of the WTGs. 4. PP has revised ER excel sheet to present the crosschecking of EG_y value with the invoice in a transparent manner. Please refer | |
| Documentation provided by project participant | |
| MR Version 3 ER Sheet Version 3 | |
| DOE assessment | Date: 24/11/2017 |
| <ol style="list-style-type: none"> 1. Accuracy class of energy meters correctly mentioned in section C of the MR. 2. Application of error factor and period of delay calibration is described transparently in section C of the MR. 3. Appendix 5 included in the MR. 4. Cross checked process is provided in ER sheet. <p>The assessment team has confirmed revision in MR and ER is appropriate, hence accepted. CAR #4 is closed.</p> | |

Table 4. FAR from this verification

| | | | | |
|--|-----|--------------------|-----|------------------|
| FAR ID | N/A | Section No. | N/A | Date: N/A |
| Description of FAR | | | | |
| N/A | | | | |
| Project participant response | | | | Date: N/A |
| N/A | | | | |
| Documentation provided by project participant | | | | |
| N/A | | | | |
| DOE assessment | | | | Date: N/A |
| N/A | | | | |

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Document information

| <i>Version</i> | <i>Date</i> | <i>Description</i> |
|----------------|-----------------|--|
| 02.0 | 31 October 2017 | Revision to align with the requirements of the “CDM validation and verification standard for project activities” (version 01.0). |
| 01.0 | 23 March 2015 | Initial publication. |

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