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Request for Review
"Generation of electricity from 6.25 MW capacity wind mills by Sun-n-Sand Hotels Pvt. Ltd at Soda Mada Rajasthan " (0447)

Dear Sir/Madam,

Please find below the response of the project participant (Sun-n-Sand Hotels Pvt. Ltd.) and the TÜV NORD JI/CDM Certification Program to the request for review for the above mentioned project no. 0447.

If you have any questions do not hesitate to contact us.

Yours sincerely,

TÜV NORD JI/CDM Certification Program

Rainer Winter

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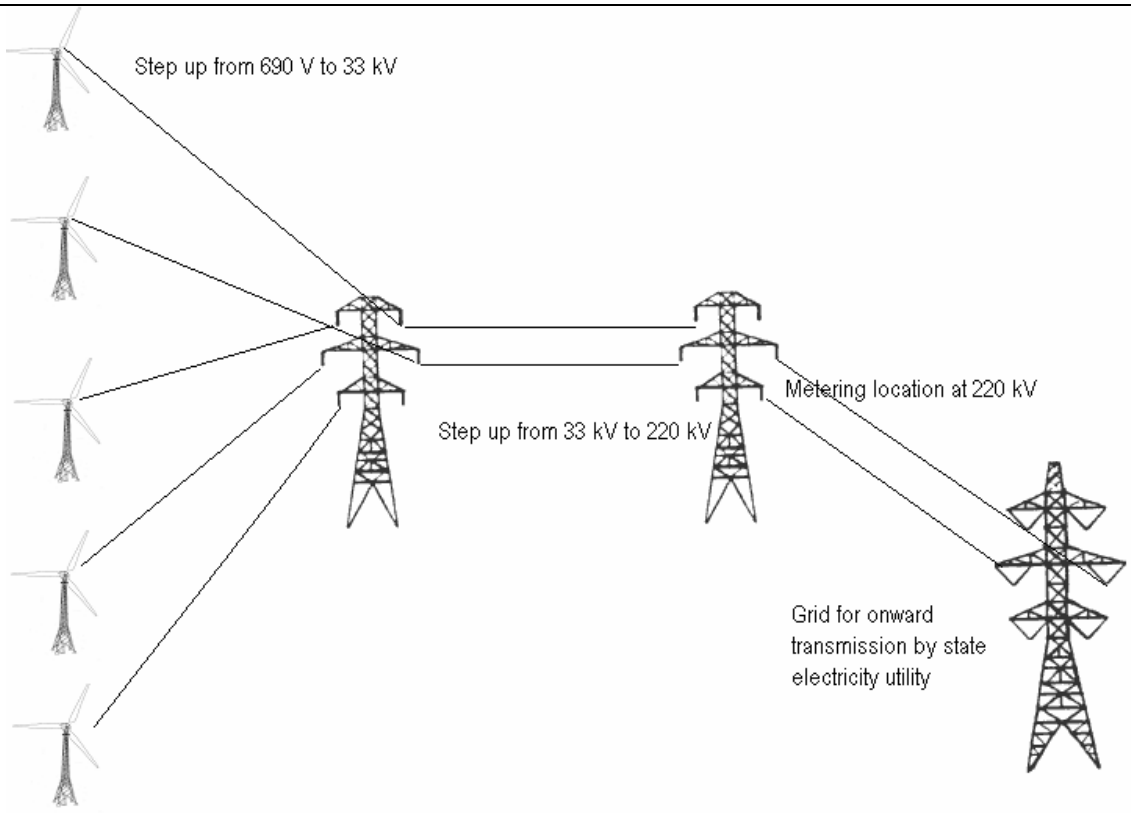
Request for Review	
Issue raised by EB Members / DNA	**EB Member:** The project participant has not conducted the monitoring in accordance with the registered monitoring plan. The monitoring report should contain data on the output of each wind turbine (EGgen) and calculated data on auxiliary consumption and losses. Instead the emission reductions have been calculated using the meter readings from the uploading station. The monitoring report should be revised to be in accordance with the monitoring plan. The monitoring was not conducted in accordance with the registered monitoring plan. The net electricity generation should be calculated as the difference of metered generation at each wind turbine and auxiliary consumption and losses, rather than from the meter readings at the export point. Although the DOE has identified the reporting of electricity generation from the export point as a notational error and accepted the revised monitoring report on the basis of correction of the notations used, it should also address the source of data. Minor issue: QA/QC procedures are not appropriately developed in the PDD and in monitoring report. The PDD states that the development of QA/QC procedures is planed, but nothing is said about when it will be ready.
Response of project participant	**Sun-n-Sand Pvt. Ltd.:** **Preamble:** The electricity generated from 6.25 MW registered CDM project is sold to the state electricity utility (RRVPNL – Rajasthan Rajya Vidyut Prasaran Nigam Limited). The state electricity utility is responsible for metering the generated electricity by following the grid code of the state of Rajasthan (grid code is available at http://www.rajenergy.com/gridcode.htm) by establishing two meters namely main meter of 0.2 accuracy class & check meter of 0.5 accuracy class respectively. In addition to this the project proponent (investor / owner of wind turbines) is also responsible to absorb the losses from the generation point (wind machine) until the grid interconnection point (sub station). These losses include the line losses from point of generation to the point of metering and the transformer losses (two stage step up process from 690 V to 33 kV and from 33kV to 220 kV). Also since the machines come to stand still (halt) during non availability of wind (lean season) and during planned and unplanned maintenance, they will draw current from the grid during initial phase of operation from stand still condition (auxiliary consumption of electricity). Thus the grid code has made provisions for metering system adopted at wind sites to measure both import and export of electricity. This is required to measure the exact amount of electricity produced by a wind machine against which the state electricity utility is liable to make payments to the investor / owner of wind machine. The diagram below further explains the arrangements at site:



Explanation of diagram:

- Generation at machine controller: 3 phase 4 wire 690 volts
- First transformer at individual machine: Step up from 690 V to 33 kV (Step up losses)
- Transmission from machines to grid interconnection point (transmission losses)
- Second transformer before grid interconnection point: Step up from 33 kV to 220 kV (Step up losses)
- Metering location: Metering as per the grid code of Rajasthan by the state electricity utility as per the set of specified main & check meters with calibration as per schedule of the state utility.

Submissions:

- All the machines participating in the candidate CDM project are generating electricity (with a meter installed at individual machine). This calculates the output of each turbine (EGgen).

Further, the data on auxiliary consumption is calculated by taking the difference between the export and import meters. The data on transmission/transformation losses is calculated by taking the difference between the meter reading at the interconnection point and the sum of meter readings of all the wind turbine meters that are connected to the interconnection point to arrive at the transmission/transformation loss for the wind turbines.

	In addition to this we would like to submit the following: - The monitoring report has been revised and prepared in line with the requirements of PDD. The revised report carries calculations clearly indicating the generation of electricity (export), auxiliary consumption of electricity (import), and net export after deducting the imports from exports. - As an example, please find attached one set of documents for the candidate project for the month of March 2004 with following documents: o Joint Mater Reading sheet {measurement of electricity in presence of the representatives of buyer (state electricity utility) and seller (Suzlon representing on behalf of seller)}: This reading dated April 1, 2004 clearly indicates the net electricity generated by project. Refer attachment JMR.jpg o Breakup of generated electricity: Breakup sheet by Suzlon clearly indicating the net electricity export (after deducting imports) confirming value of 2,98,279 kWh during the month of March 2004. Refer attachment Breakup.jpg [This value has been reproduced in the monitoring report on page no. 9] o Invoice to the state electricity utility: The investor / owner of machines has raised invoice to the state electricity utility on date April 6, 2004 for 2,98,279 kWh for INR 9,90,286 @ INR 3.32 /kWh (tariff fixed by state electricity regulatory commission) Refer attachment invoice.jpg o The state electricity utility has made payment of INR 9,90,286 vide cheque dated May 25, 2004. Refer attachment payment.jpg This clearly indicates / confirms the accuracy & conservativeness of the measurements carried out at site. Thus the values used in the monitoring report are correct, conservative and accurate. If members of UNFCCC require, a complete set of the above sheets for every month can be submitted, the same was shown / submitted to the DOE at the time of verification of monitoring report. Kindly refer “Appendix” as presented on pages 9 and 10 of the revised monitoring report. The table presented here has 7 columns. To arrive at the net electricity supplied to RRVPNL, the values for various parameters have been taken as follows: 1. EG_{GEN} : is the gross generation and values are taken from individual meters of wind turbines (reflected in Column 2,Windmill Meter reading in kWh) 2. EG_{loss} is calculated as a combinations of: i. Line losses in between the individual wind turbine meter and the RRVPNL meter (reflected in Column 3, in kWh) ii. Auxiliary consumption values have been taken from joint meters with RRVPNL (actual values, reflected in Column 5, import in kWh) and iii. Transmission & distribution losses: All the transmission & distribution losses until metering of electricity / handing over to state utility have been covered by the project proponent. 3. EG_Y is calculated and presented in Column 6 **Minor issue:** QA/QC procedures are not appropriately developed in the PDD and in monitoring report.

	The PDD states that the development of QA/QC procedures is planned, but nothing is said about when it will be ready. **Submission:** A detailed note on QA/QC procedure currently being followed at Sun-n-Sand wind machines is described below: **QA and QC Procedures at Sand N Sand 6.25 MW wind farm at Soda Mada, Rajasthan** The registered PDD mentions about QA/QC procedure planning for the following three parameters namely, EG_{GEN}; EG_{loss}; and EG_Y. The procedures currently being followed for each of these parameters are as follows: 1. EG_{GEN}: This value is metered at plant through individual wind turbine meters. Sun-n-Sand has signed an 'Operation and Maintenance' contract with the supplier to operate the wind machines. The performance of the machines, safety in operation and scheduled /breakdown maintenances are organized and monitored by the contractor. The wind mill site-in-charge of the contractor reports the power generation and performance of the wind mill daily to the project proponent through their website. A consolidated monthly report is also provided to them. The site in-charge is also responsible for regular calibration of meter as per the manufacturer's requirements. 2. EG_{loss}: This is a combination of auxiliary consumption and line losses. The auxiliary consumption is measured as "import" value in the RRVPNL meters. Based on the clauses of the Power Purchase Agreement (PPA) between RRVPNL and Sun-n-Sand the power supplied to the state grid is strictly measured and monitored. The monthly readings, measuring "export" and "import" values are taken by the representative of the electricity board and communicated to the project proponent. Based on these readings the units are billed. The line losses are calculated based on the difference in "export" value in the RRVPNL meters at the pooling station and the sum of the meter reading(s) from the individual wind machines. 3. EG_Y: Calculated from the above data. These are cross-checked from the credit notes received from RRVPNL. 4. Calibration of meters at grid interconnection point: The testing/ calibration of the meters at the grid interconnection point is done by the state utility in presence of the representative of the O&M contractor. The site management team of the O&M contractor has been advised to keep records of the calibration of meters as per the grid code of Rajasthan. A copy of the latest calibration record is attached with the replies (Refer attachment calibration.jpg). In case if the calibration / meter inspection has not been carried out as per schedule, they have been advised to communicate this to the state electricity utility with information to project proponent. We hope this is in line with the requirements and clarifies all the issues / concerns raised by the members of the issuance team of UNFCCC.

Response of DOE	**TÜV NORD:** 1. As per RfR the data on the output of each wind turbine should be reported. As per monitoring plan EGy is the "Total Electricity Generated". This value (as sum of all installed wind mills) was included in the monitoring report (see page 9). We consider this to be in line with the monitoring plan. 2. As per RfR the monitoring report should contain "calculated data on auxiliary consumption". As per the monitoring plan the "auxiliary consumption is measured in separate meters". The values in the monitoring report are measured values (see page 9 col. 5 "Import"). Thus we consider the monitoring report to be in line with the monitoring plan. 3. As per RfR the monitoring report should contain "calculated data on losses". As per the monitoring plan the "losses are calculated based on the difference in meter reading at the pooling station by RSEB and the sum of the meter reading attached with the individual windmills connected to the pooling station". The values in the monitoring report are exactly calculated according to this stipulation (see page 9 col. 3 "Losses"). Thus we consider the monitoring report to be in line with the monitoring plan. 4. As per RfR "the net electricity generation should be calculated as the difference of metered generation at each wind turbine and auxiliary consumption and losses, rather than from the meter readings at the export point". In case of calculation the losses as stipulated in the monitoring plan the results are equivalent to those presented in the monitoring report. 5. All sources of data were clearly referenced. To summarize as per TÜV NORD view the monitoring of the project activity as presented in the monitoring report is completely in line with the registered monitoring plan. The QA/QC procedures are sufficiently addressed in the above comment of the project participant.