



**Validation Opinion on a Revision in Monitoring Plan**  
**Report number BVC/INDIA/VER 1/318.49/2011, Version 02**

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The validation of revision to the monitoring plan is for the project activity with the following details.

Project reference	UNFCCC Registration Number 1145
Title of the project activity	8.75 MW Bundle Wind Power Project in Maharashtra
Date of registration	29/07/2007
Verification period during which change is requested	29/07/2007 to 31/03/2010
Number of issuances for the project activity before this verification	None

<b>Party</b>	<b>Project participants</b>
India (Host)	M/s Shahi Exports Pvt. Ltd.

Validation team	
Team leader	R S Premkumar
Team member/s	Sapna Pednekar
Internal reviewer	Sanjay Patankar

Period of validation	<del>May 2011</del>
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**Reason for request for revision in monitoring plan**

The request for issuance for the 1<sup>st</sup> monitoring period is from 29/07/2007 to 31/03/2010, subsequent to which the monitoring report was web hosted to the UNFCCC. During the site visit, the verification team observed that the monitoring plan as stated in the registered PDD and the actual monitoring system at the site do not match. Hence, in accordance with Para 201 of VVM, Version 1.2, the verification team concluded that a request for revision to the monitoring plan be made to the UNFCCC.

The project participant accordingly revised the monitoring plan and submitted the same to the DOE for validation before submission to the UNFCCC for approval.

The verification team confirms that the changes made in the revised monitoring plan are intended to provide better transparency and clarity to some of the information and procedures described in the registered PDD and the procedure followed at site, as well as to add some procedures like procedure for apportioning, procedure to deal with data uncertainties etc.



The following are some of the observations made during the site visit viz;

Requirement of the registered monitoring plan	Observed deviation
1. The source of data to be used for the calculation of emission reductions from the project activity was indicated only as 'MSEDCL'	1. The source of the data used to calculate the emission reductions was observed to be 'Credit Report' issued by the MSEDCL
2. Section B.7.2 indicates that there is a main and check meter at the project site and the receiving station.	2. The verification team observed that there is only a main and check meter at the MSEDCL sub-station. There are no meters at the project site.
3. It is stated that the main meter is owned and installed by the MSEDCL and the check meter is owned by the Project Participant.	3. It was observed that both the main and check meters at the MSEDCL sub-station are owned and under the control of the MSEDCL.
4. The CO <sub>2</sub> emission factor is considered as a parameter for ex-post monitoring under Section B.7.1	4. The CO <sub>2</sub> emission factor is considered ex-ante since the validation opinion of the DOE performing the validation of the project activity indicates the same to be ex-ante.

In addition to the above, the following points are also not addressed in the registered monitoring plan:

1. The registered monitoring plan does not describe the metering system at the site transparently. E.g. the measured parameters of gross electricity export and gross electricity import were not included.
2. The detailed procedure of apportioning used by the MSEDCL for deducing the net electricity exported by the individual wind turbines of investors, wherein the project activity and non project activity wind turbines are connected to the same feeder, were not explained transparently.
3. The frequency for accuracy testing of the main and check meter has been included. Also the essential difference between accuracy testing and calibration was not transparently explained.
4. Procedures for crosschecking of the monitored data were not explained
5. Procedure for apportioning, practiced by MSEDCL authorities every month for calculating net electricity generation by each individual WEG supplied to the grid were not transparently explained. Further procedures for data apportioning, in case the dates of the billing cycle do not match with the dates of the verification period, were not explained.
6. Procedure for dealing with data uncertainties in the monitored data in case of meter errors was not explained transparently.

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#### Summary of the proposed revisions to the registered monitoring plan

1. The parameter of Gross Electricity Export (EG<sub>y, export</sub>) and Gross Electricity Import (EG<sub>y, import</sub>) have been included in Section B.7.1.
2. The notation for net electricity exported by the project activity to the grid has been corrected from 'Energy' to 'EG<sub>y</sub>'. Similarly the description of the parameter has been

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changed from 'Gross Electricity Generation' to 'Net electricity exported by the project activity to the grid'.

3. The source of data for  $EG_{y, \text{ export}}$ ,  $EG_{y, \text{ import}}$  and  $EG_y$  has been included as the 'Monthly Credit Report' by MSEDCL (Ref 4)
4. The parameter of  $EG_{\text{controller}}$ , which is monitored through the SCS controller of individual wind turbines, has been included in Section B.7.1. This parameter would be used to arrive at an apportioning ratio in case the dates of the billing cycle do not match with the verification period (Procedure for apportioning).
5. The description of the metering system at the site has been corrected to state that there is only a main and check meter at the MSEDCL sub-station and no meters at the project site.
6. The procedures for monitoring and recording of gross electricity import and gross electricity export and calculating the net electricity exported to the grid by the project activity are included for better transparency in the monitoring plan
7. The entity having the ownership and control on the main and check meter has been corrected to MSEDCL.
8. The billing / payment / cross-checking provisions are now described for better clarity.
9. The procedure for accuracy testing of the main and check meter including the frequency of accuracy testing are included. Further the essential difference between the accuracy testing and calibration of meters are described.

10. Procedure for apportioning the total electricity generated by both, project as well as non-project WEG's, followed by MSEDCL every month, to calculate the net electricity exported by the individual WEG to the grid. is now described. Further procedures for data apportioning, in case the dates of the billing cycle do not match with the dates of the verification period is included to address apportioning of the monitored data.

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11. Procedure to deal with data uncertainties in case of errors identified in the meters during the annual accuracy testing is included.

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a) **Information on how the proposed revision of the monitoring plan ensures that the level of accuracy or completeness in the monitoring and verification process is not reduced as a result of the revisions**

### Completeness

In the opinion of verification team, the completeness of the monitoring and verification process of the project activity is not reduced but effectively improved or become more transparent due to the following inclusions in the revised monitoring plan:

1. The description of the exact name of the data/parameter to be monitored viz; Net Electricity Exported ( $EG_y$ ) by the project activity to the grid' improves the completeness of the monitoring plan.
2. The inclusion of the parameters of Gross Electricity Export ( $EG_{y, \text{ export}}$ ) and Gross Electricity Import ( $EG_{y, \text{ import}}$ ) brings in further transparency in the monitoring system.
3. The description of the source of the data to be used for the above parameters as 'Monthly Credit Report by MSEDCL' (Ref 4) improves clarity on the document to be referred.

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Further the completeness of the monitoring plan is improved by stating clearly that the Gross Electricity Export ( $EG_{y, \text{ export}}$ ) and Gross Electricity Import ( $EG_{y, \text{ import}}$ ) values are measured values whereas the 'Net Electricity Exported by the project activity to the grid ( $EG_y$ )' value is a calculated value. Net Electricity Exported by the project activity to the grid is calculated as, Gross Electricity Export ( $EG_{y, \text{ export}}$ ) minus Gross Electricity Import ( $EG_{y, \text{ import}}$ ).

4. The entity having the ownership and control of the main and check meter has been revised to MSEDCL.

5. There are 2 apportioning approaches described in the revised monitoring plan viz: one is the apportioning approach taken by the Maharashtra State Electricity Distribution Company Limited (MSEDCL) to calculate the share of net electricity supplied to the grid by the individual WEG's and the other is the apportioning approach taken by the Project Participant in cases wherein the dates of the billing cycle do not match with the dates of the verification period.

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- a. The first apportioning approach, as detailed in Section B.7.2 of the RMP, is conducted by the MSEDCL authorities. The monthly joint meter readings (JMR), taken and signed by the representatives of the Project Participant and MSEDCL at the individual feeders in the sub-station contain the total electricity generated by project activity as well as non-project WEG's. This JMR copy is then submitted by the MSEDCL representatives to the Circle office of MSEDCL. As per the PPA signed between the Project Participant and MSEDCL, a common agency needs to be identified to prepare the generation bifurcation statement based on the JMR. In line with the PPA guideline, SISL, acting on behalf of the Project Participant as its representative, prepares and submits a generation bifurcation statement to MSEDCL Circle office. This generation bifurcation statement, based on the JMR readings and the LCS controller readings of the individual WEG's (both project as well as non project WEG's), indicates the net electricity supplied by the individual WEG's that are connected to the same feeder at the sub-station. Thus individual generation bifurcation statements would be prepared for individual WEG's (both, project activity as well as non project) and SISL would be involved in preparation and submission of all the generation bifurcation statements, for the project activity as well as non-project WEG's to MSEDCL. The algorithm used by SISL (Project Participant's representative) provided in the RMP, is approved by MSEDCL. Based on this generation bifurcation statement provided by the Project Participant representative, the MSEDCL authorities at the Circle Office conducts an audit of the JMR and the generation bifurcation statements and only if the values are found to be correct, issues a monthly credit report to the individual investors. The credit report authorized by the MSEDCL indicates the net electricity supplied by the individual WEG's connected to the respective feeder of the sub-station.

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The verification team confirms that the algorithm used by SISL for this apportioning approach is authorized by MSEDCL and MSEDCL further conducts a detailed cross-verification of the data submitted by SISL, based on which the authorized Credit report are released. Hence the verification team does not doubt the reliability of the current monitoring system since all the documents gets audited and authorized by MSEDCL. Further the verification team confirms that the above procedure for apportioning is controlled and conducted under the supervision of MSEDCL and the Project Participant does not have any role in the same. The monitoring of SCS controller readings of the non-project WEG's connected to the same feeder is not

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included in the revised monitoring plan because the verification team, based on its interactions with the Project Participant and SISL representatives, noted that obtaining the SCS controller data of non-project activity WEG's, is not practically possible for the Project Participant due to confidentiality reasons. Only MSEDCL do have an access to this data provided by SISL and uses the same to prepare the credit report for individual WEG's. Further, to improve the reliability of the emission reduction calculations, the validation team confirms that the net electricity export data as indicated in the MSEDCL credit report would be cross-checked with the payment receipts viz; the bank statements.

- b. The second apportioning approach, as detailed in Section B.7.2 of the revised monitoring plan, is conducted by the Project Participant for the purpose of CDM verification, when the dates of the billing cycle do not match with the dates of the verification period. This apportioning procedure utilizes the electricity generation data from the project activity WEG's only, which is monitored from the Wind Turbine generator controller (SCS controller reading) through Daily Generation Reports (Ref 7). Hence in this apportioning approach, the Project Participant only utilizes the SCS controller readings of the WEG's owned by him and under the CDM. The verification team confirms that the SCS controller readings would be used only for deriving the apportioning ratio which would then be applied to the primary monitored data as reflected in the MSEDCL Credit Report, which is duly authorized by the State Electricity Utility viz MSEDCL. The validation team verified the algorithm utilized in the apportioning and confirms that the method of apportioning used by the Project Participant is correct and reliable and would result in conservative estimate of emission reduction calculations.

The first apportioning approach as described above, done by MSEDCL, is only explained in the RMP to provide a transparent illustration of how the MSEDCL personnel conduct the apportioning approach. The verification team confirms that this apportioning process is totally under the control of MSEDCL and Project Participant does not have any role in the same.

6. Procedure for cross checking of the net electricity exported to the grid by the project activity with the invoices raised by the Project Participant on the MSEDCL (Ref 5) and also with entries in the bank statements of the project participant (Ref 6) towards the payment made by State Electricity Utility viz; MSEDCL for sale of net electricity supplied to the grid by the project activity, have been included.
7. The procedure for accuracy testing of the main and check meter and the frequency of accuracy testing has been included. The frequency of accuracy testing has been described as once in a year. Further the situations that would mandate calibration of the meters is included. The verification team confirms that the State Electricity Utility viz; MSEDCL does an accuracy testing of the meters at the site itself and in case an error in either of the main or check meter is found to be beyond the accuracy limit, then the meter with the error would be further sent for calibration in the lab of MSEDCL.
8. The procedure to deal with data uncertainty in case of defects / errors identified in the metering equipments (main and /or check meters) during the routine operation and maintenance and/or during the annual accuracy testing of the meters has been included.

#### Accuracy:

The accuracy of the monitoring and verification process is not reduced rather it is enhanced as a result of the revision to the monitoring plan because of following reasons;

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Deleted: <#>investors. The detailed procedure is explained below viz;¶  
<#>The Joint Meter Reading (JMR) of the energy meter (s) at each of the MSEDCL sub-station (to which the project activity as well as non-project activity Wind turbine is connected) is taken monthly, by the representatives of MSEDCL and the representative of project participant (SISL). ¶  
<#>The JMR readings are forwarded to the Circle office of the MSEDCL, at Dhule. ¶  
<#>The MSEDCL O & M Circle Office at Dhule, based on the JMR, issues a feeder-wise Break up Energy Report of the electricity received at each sub-station to SISL. ¶  
<#>After receipt of the feeder-wise Break up Energy Report, the SISL provide a generation bifurcation of individual Wind turbines of project activity and non project activity connected to the feeder at the substation (based on the electricity generation readings at the individual SCS controller) as per Section 11.05 of the PPA to MSEDCL. ¶  
<#>After receipt of the individual bifurcation of energy generated for each Wind turbines from concerned developer, the net electricity supplied by the individual investor's Wind turbine would be calculated by the MSEDCL, using an apportioning method, based on which the credit report shall be prepared and issued by MSEDCL Circle Office, Dhule for each wind turbine. The credit report contains the net electricity supplied by the individual Wind turbine to the grid. This credit report shall be used for the calculations of emission reductions from the project activity. The formula involves, ¶  
Net Export of WEG at Substation = ¶  
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(Controller generation at individual WEG) x (Total generation at ... [1]

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1. Further detailed explanation on monitoring and recording of the gross electricity export, gross electricity import and the calculation of net electricity exported to the grid by the project activity is included.
2. The parameter of  $EG_{\text{controller}}$  has been included in Section B.7.1, which shall be used only to arrive at an apportioning ratio in case the billing cycle dates do not match with the period dates (Procedure for apportioning). The SCS Controller is the micro processor relay which displays the electricity generated values of the individual WEG and in case of malfunctioning of the SCS controller; the WEG is programmed for automatic shut-down. Hence probability of error in SCS controller's generation data is negligible.
3. The parameter of  $CO_2\text{Emission factor}$  has been deleted from Section B.7.1 since the same parameter is also included in Section B.6.2 of the registered PDD (Ref 2). Further the validation team verified the registered PDD and observed that the Project Participant has not committed to monitor the emission factor ex-post. Further the validation team also verified the registered validation report (Ref 3) and observed that the parameter of emission factor is described to be fixed ex-ante for the entire crediting period (Ref page 11 of 46 of the registered validation report). Based on the above observations, the validation team confirms that the consideration of ex-ante emission factor is appropriate.

Based on the above, the verification team confirms that the metering system is adequately described in the revised monitoring plan.

**b) Information on how the proposed revision of the monitoring plan is in accordance with the approved monitoring methodology applicable to the project activity**

The proposed revision does not alter any of the monitoring parameters that are necessary for the calculation of the CER's. During the validation of the project activity, the DOE had confirmed that the project activity meets the applicability conditions of the baseline and monitoring methodology (AMS I D – Renewable electricity generation for a grid, Version 10, dated 23<sup>rd</sup> December 2006)

The revision to the monitoring plan was proposed since some of the requirements described in the registered monitoring plan were not in compliance with the actual practice at site. Further the revision to the monitoring plan addresses aspects of data uncertainty, cross-checking of the data monitored etc, to bring in more clarity and transparency to the overall monitoring plan, as explained in the above sections.

The registered monitoring plan and hence the proposed revision to it are also consistent with the approved monitoring methodology applicable to the project activity.

**c) Information on how the findings of previous verification reports, for which CERs have been issued, if any, have been taken into account.**

The registered project activity has not completed any verification and issuances. Hence not applicable.

**Conclusion:**

Bureau Veritas Certification has performed a validation of the revised monitoring plan for the CDM project activity "8.75 MW Bundle Wind Power Project in Maharashtra".





The team hereby confirms that the proposed revision of the monitoring plan ensures that the level of accuracy or completeness in the monitoring and verification process is not reduced as a result of the revision.

Bureau Veritas Certification has performed this validation on the basis of the following documents –

- “Procedures for Revising Monitoring Plans in Accordance with Paragraph 57 of the Modalities and Procedures for the CDM” (Version 02 – EB 49 Report – Annex 28)
- “Clarification for Project Participants on When to Request a Revision, Clarification to an Approved Methodology or Deviation” (Version 02 – EB\_31 Report – Annex 12)

The validation consisted of the following three phases –

- i) a desk review of the revised monitoring plan
- ii) follow-up interviews with project stakeholders
- iii) the resolution of issues and the issuance of the final validation report and opinion.

The review of the revised monitoring plan and the subsequent follow-up interviews have provided Bureau Veritas Certification with sufficient evidence to determine the fulfillment of stated criteria. In our opinion, the revised monitoring plan is now consistent with the approved monitoring methodology applied to the registered project activity and ensures that the level of accuracy or completeness in the monitoring and verification process is not reduced as a result of the revision.

Bureau Veritas Certification therefore requests the acceptance, from the Chair of the Methodology Panel, in consultation with the Chair of the Board, of this request for revision in monitoring plan.

## References

1. Revised monitoring plan, in clean and track change mode, which is attached along with this report.
2. Registered PDD, Version 3, dated 07/05/2007
3. Registered Validation Report of M/s SGS with Ref. CDM.Val0982, Version 1.0 dated 14/05/2007
4. Sample copies of ‘Monthly Credit Report’ by MSEDCL.
5. Sample copies of invoices raised by the Project Participant on MSEDCL for billing.
6. Sample copies of the bank statements of the Project Participant – Used for cross-checking purpose.
7. Sample copies of the Daily Generation Report from SCS controller for the project activity WEGs – Used for apportioning in case the dates of the billing cycle do not match with the verification period.

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## Persons interviewed

S No.	Name of the person	Role	Affiliation
1	Mr Sumit Khatri	Senior Executive-Accounts	Shahi Exports Pvt Ltd
2	Mr Pravir Kale	Consultant	Mitcon Consultancy Services

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**List of Abbreviations**

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<u>PDD</u>	<u>Project Design Document</u>
<u>WEG</u>	<u>Wind Energy Generator</u>
<u>MSEDCL</u>	<u>Maharashtra State Electricity Distribution Company Limited</u>
<u>SISL</u>	<u>Suzlon Infrastructure Services Limited</u>
<u>JMR</u>	<u>Joint Meter Reading</u>
<u>SCS</u>	<u>Suzlon Control System</u>
<u>PPA</u>	<u>Power Purchase Agreement</u>
<u>CER</u>	<u>Certified Emission Reduction</u>
<u>RMP</u>	<u>Revised Monitoring Plan</u>

**CVs of the Verification Team****Mr. R S Premkumar****Bureau Veritas Certification, Team Leader, Climate Change Verifier**

Graduate in Environmental Engineering with more than 13 years of Industrial work experience in the field of environmental and occupational safety management systems. He is Lead Auditor in Bureau Veritas Certification for Environment Management System, Quality Management System and Occupational Health and Safety Management System. He is also a Lead Tutor for the CDM Lead Verifier courses and also for the Lead Auditor courses in Quality, Environment and Safety Management Systems. He has undergone intensive training on Clean Development Mechanism. He is involved in the Validation/Verification for more than 35 CDM/VCS/POA projects.

**Ms. Sapna Pednekar****Bureau Veritas Certification, Team Member, Asst. Verifier – Climate Change Services**

Ms Sapna Pednekar is a Post Graduate in Environmental Science from University of Pune, India. She has total Industrial work experience of 5 years in the field of environmental studies of which 2 years experience were in the field of CDM and VCS consulting. She is working in Bureau Veritas Certification (India) Pvt. Ltd. for last 8 months and has undergone training related to Clean Development Mechanism and is currently involved in validation and verification of CDM project activities.

**Mr. Sanjay Patankar****Bureau Veritas Certification, Internal Reviewer**

Educational qualifications: B.E. (Mech.) M.E. (Mech.)

He has over 20 years of experience in engineering manufacturing industry covering various functions like enterprise management, product design, engineering, tool & die design, improvements in the production shop, quality assurance & control and systems planning and implementation, including ISO 9001 based quality management systems. Working for the last 2 years in Bureau Veritas Certification (India) Pvt. Ltd. as Lead Auditor for ISO 9001, 14001 and OHSAS 18001 standards/specifications. Has undergone training related to Clean Development Mechanism and is currently involved in validation and verification of CDM project activities.

**R. S. Premkumar , Team Leader**  
**27/05/2011, Mumbai**

**Sanjay Patankar, Internal Reviewer**  
**28/05/2011, Mumbai**

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