

ESSEL MINING & INDUSTRIES LIMITED

Regd. & Head Office : "INDUSTRY HOUSE" 10 CAMAC STREET, KOLKATA-700 017

Phone : 2282-8339 / 6378 / 6398, Fax : (91-33) 2282 4998

E-mail : hgiho@adityabirla.com / esselmines@adityabirla.com

**The UNFCCC Secretariat
Bonn
Germany**

Dated August 12, 2007

Ref: Submissions by PP in response to "request for review" issued to the project entitled "75MW wind power project in Maharashtra by Essel Mining Industries Limited" UNFCCC Ref No. 1115

Preamble:

The subject candidate CDM project has been essentially conceived to supply the generated electricity to the state utility of Maharashtra in India. The total installed capacity of the project is 75 MW which was implemented in 3 phases starting March 2005 with implementation of 12 machines followed by 24 machines of phase two in September 2005 and 24 machines in phase three with completion of project in February 2006.

Review Comments:

A load factor of 19-20% has been used in the investment analysis based on wind farm performance in April 2005 to May 2006 after the project activity has commenced operation. As the sensitivity analysis shows that a load factor of 25% would make the project feasible, further substantiation of the load factor is required. This substantiation (e.g. wind monitoring stations measurement of the site, wind data certification, reports supplied to the equipment supplier, load factors from other wind farms) should be from before the implementation of the project activity when the investment decision was made and should include measurements made over a longer duration based on official data where possible.

Submissions to the UNFCCC:

Substantiation of the load factor considered in the investment analysis sub-step 2 (b)



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The project activity has started in December 2004 with placing the purchase order for first phase of installations to the EPC contractor M/s Suzlon Energy Limited (Refer Section C.1.1 of validated PDD, page 26).

Since the project was essentially conceived for selling of generated electricity to the state utility, the tariff order dated 24 November 2003 issued by the state electricity regulatory commission (MERC) was used to carry out financial analysis of the project. The tariff order can be downloaded from the following website link (<http://www.mercindia.org.in/ORDERS2003.htm>). The tariff order for all new installations was decided at INR 3.50/kWh with INR 0.15/kWh as annual escalation (Source: Section 1.5.3 of the MERC order referred above). The same tariff order confirmed the capacity utilization factor (CUF or PLF) at 20% (Source: Section 2.2.1B of the MERC order referred above – attached with our reply **Annexure -1**). **The 20% load factor based on MERC order was used as the basis for the investment analysis sub-step 2(b) and not “a load factor of 19-20% has been used in the investment analysis based on wind farm performance in April 2005 to May 2006 after the project activity has commenced operation” as has been indicated in the comments.**

This data can be further substantiated by the estimated generations provided by Ministry of Non-conventional Energy Sources, Government of India wherein it has been confirmed that the possible annual generation in Maharashtra ranges from 1.4 to 1.6 million kWh per annum per MW of installed capacity (<http://www.indianwindpower.com/potential.html>). Thus even after assuming a higher generation of 1.6 million kWh per annum per MW, the PLF of the installation comes out to be: $(1.6 * 10,00,000) / (8760 \text{ hours per year} * 1000 \text{ kW}) = 18.26\%$ which is less than the values assumed in the financial analysis carried out for the project.

There was insufficient data available to carry out a proper sensitivity analysis. In India, the official wind monitoring is carried out by MNES and C-WET (Centre for Wind Energy Technology). **There was no MNES and C-WET wind monitoring station in Dhule and Nandurbar sites where the project is located prior to implementation of project.** C-WET has carried out wind measurements from 1999 – 2001 at 2 locations in Dhule district for preliminary wind potential estimations. The sites have indicated wind annual average wind speed ranging between 5.03 to 6.58 m/s and indicated a wind power density of 324 W/m² (**Reference: Annexure 3**). The power curve of S-70 machine of Suzlon is reproduced below:

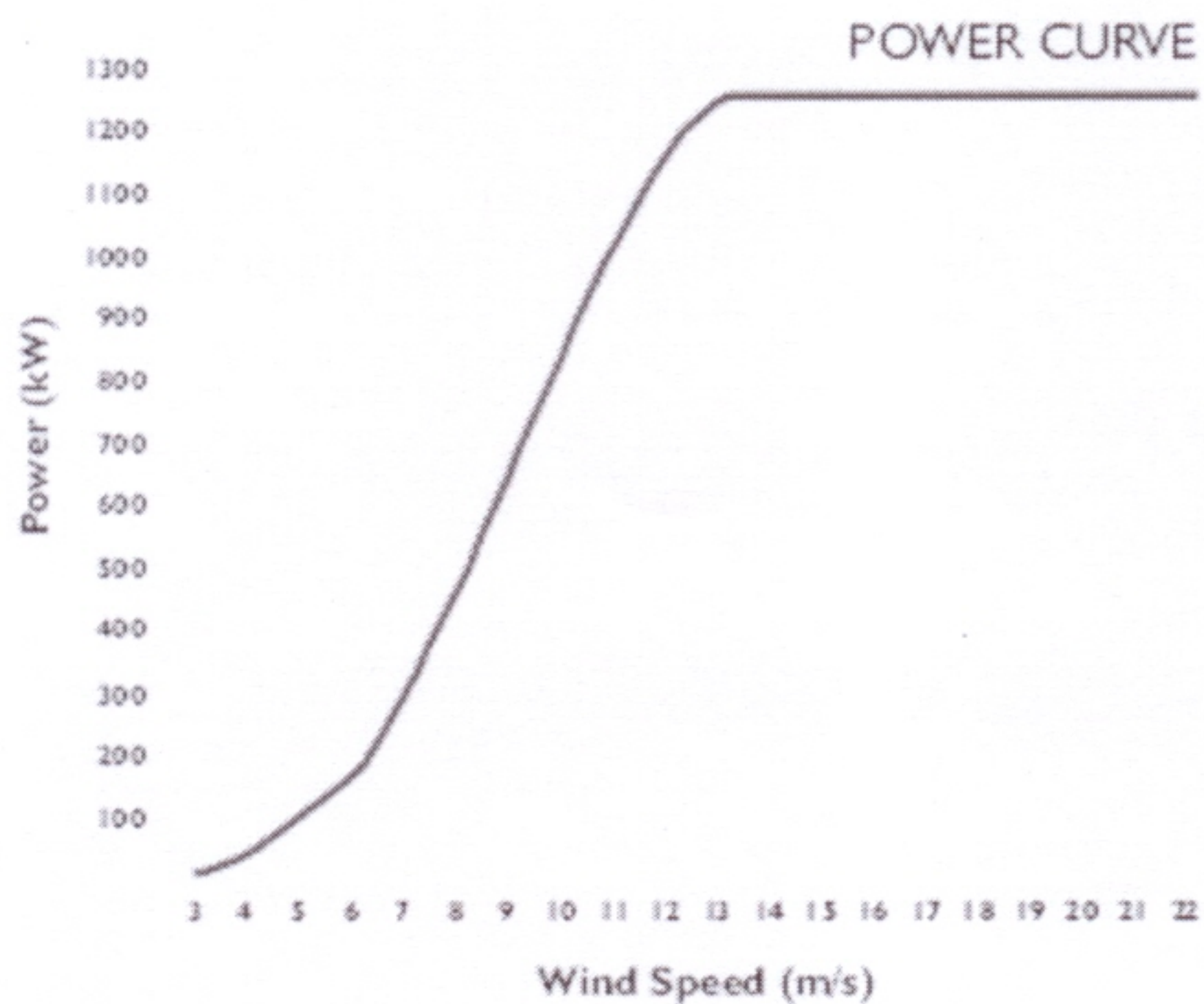


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Thus based on the average annual wind speed (highest of the two values of CWET monitoring stations) corresponds to 240kW; which results in an annual PLF of $(240 / 1250)$ about 19.2%

Further, there was insufficient track record of performance of machines in the region where installations were carried out. The project proponent (M/s Essel Mining Industries Limited - EMIL) was among the first few investors at these sites. A total of 6.25 MW of wind installations of similar technology (1.25 MW) was implemented prior to the start date of December 2004 of EMIL project in Dhule district. The list of 1.25 MW machines installed (by other wind project owners) prior to EMIL phase I installations in March 2004 are K003, K004, K005, K006, K009.

The EPC contractor supplied the data of 4 machines (out of 5) operating in the area while carrying out marketing discussions with EMIL. The data supplied by Suzlon Energy Limited is attached with our reply as **Annexure 2**



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Generation Year 2004 – 05	Arvind Cotsyn	Dhanlaxmi Fabrics	Runwel Industries	Vanaz Engineers
	1.25 MW	1.25 MW	1.25 MW	1.25 MW
Gross Generation (Million kWh)	1841938	2009372	1879655	1669578
Grid availability data as supplied by EPC contractor	82.40%	86.68%	85.38%	84.32%

The actual grid availability for the projects implemented in the region varies widely from month to month, as can be seen from the attached data of the 4 machines. Wind is an infirm source of power and the installations are carried out at remote locations. The state electricity utility always gives priority to the evacuation facilities for firm sources and thus the project will continue to suffer because of low grid availability. This situation is beyond the control of project proponent (EMIL) as well as the EPC contractor (Suzlon Energy Limited) since the Grid is under the control of MSEDCL (Maharashtra State Electricity Distribution Company Limited).

Conclusions:

1. There was no wind monitoring station established at the site by any of the government agencies (MNES / CWET) for measurement of wind potential at the site. The measurements were carried out two nearby locations in the same district, have shown expected PLF of about 19.2% (**Attached Annexure 3**)
2. The wind turbines established at the site are self certified by the EPC contractor (M/s Suzlon Energy Limited)
3. The load factor of other wind farms was not available as this was the newly developed site by the EPC Contractor wherein only 6.25 MW installations have been carried out prior to EMIL project and the previous installations have not completed 1 year of operation. (**Attached Annexure 2**)
4. The only data available is the load factor available in MERC order of November 2003 (**Attached Annexure 1**)



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We (EMIL) have therefore taken a massive risk on making a large scale investment in the newly developed site considering CDM as one of the possible additional revenue streams to mitigate the risks.

We hope our submissions would be helpful in taking the decision for the submitted candidate CDM project.

Thanking you

Yours faithfully

For **Essel Mining Industries Limited**

Ramesh Aggarwal
Jt. Ex. President