ENERCON INDIA

GLC CERTIFIED ISO 9001 Germanischer Lloyd

3rd Verification of UNFCCC Project Reference Number 0276- Project Participant's response to Query from UNFCCC

Query: *It was noted that the electricity generated during the present monitoring period spanning more than two years was 8.55% higher than the estimated in the PDD, and this increase was also noted during the first monitoring period (the project generated 8.4% more electricity) and during the second monitoring period (the project generated 11.77% more electricity than estimated). The PP in the monitoring report explained that this was "due to a higher PLF" and the DOE in the verification report stated that the "average PLF during the monitoring period is about 31.81%". The PP/DOE should further explain if the project was operated as per the PDD given that the sensitivity analysis in the PDD was done considering a variation in the PLF in the range between 26 to 30%.*

Response: The response to the query is provided through the following sub sections:

1. Operation of the project as mentioned in the PDD
2. Estimation of Base PLF and sensitivity range considered in the PDD

1. Operation of the project as mentioned in the PDD

1.1. In total there are 28 WTGs (14 WTGs by CEPCO and 14 WTGs by EWFIL). Each WTG is of Enercon make having capacity of 600 KW each as described in the registered PDD. Therefore total capacity of project activity is 16.8 MW as described in the registered PDD.

1.2. Karnataka Power Transmission Corporation Ltd provides electricity generation statement as "Form-B" for each project that is operating in the state. Form-B indicates the following capacity for the customers included in the project activity:

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Table 1	
Customer	**Capacity [MW]**
M/s. Enercon Wind Farms (India) Ltd.	8.40
M/s. Cepco Industries Ltd.	8.40

It is evident from the above mentioned information that project activity is being operated completely as per the registered PDD, which is also in line with para 5 (a), (b) and (c) of Annex 67, EB 48 guideline. . The only operational parameter relevant to determination of emission reduction of a wind power project as per section 5 (d) of Annex 67, EB 48 is the electricity generation which is directly dependent on the Plant Load Factor (PLF). The PLF is directly proportional to the wind availability, which is seasonal & intermittent in nature and varies based on the vagaries of nature. These parameters are not within the control of the project participant, and hence they don't impact the additionality of the project. However, the assumption of PLF and its sensitivity considered at the time of decision making has been presented in Section 2.

2. PLF and sensitivity range

2.1 Estimation of PLF and sensitivity range considered in PDD

The estimated PLF during decision making was arrived from the wind data compiled by the Wind Resource Department (WRD) of project developer, which was derived from the wind mast installed at the project site. The PLF was determined from the wind mast data available for the period ranging from October 1995 to September 2000, i.e. 5 years data prior to decision making. Wind mast data was compiled and analysed based on internationally established protocols, based on which a PLF estimation report was prepared by the WRD of the project developer. The same has been provided to DOE as reference 1. In addition to the wind mast data, publically available site specific wind data of National Oceanic and Atmospheric Administration (NOAA) was also referred to by the project developer while arriving at the estimated PLF for the project site. The same has been provided to DOE as reference 2. NOAA data indicated similar pattern in the average wind speed for Jogimati site over five years from 1995 till 2000 as that of project developer's wind mast. Hence the PLF of 29.3% was considered as base case PLF. The PLF report of

the project developer also provided the probability of exceedance[1] of PLF at various probability levels i.e P-90, P-75, P-50 P-25 and P-10 levels. In order to capture the complete band of estimated PLF, sensitivity on PLF for the project activity was tested at extreme probability levels i.e. P-10 and P-90 levels, and the corresponding PLF figures at these levels were 30% and 26% respectively. Subsequent to the review query, the actual wind mast data of Jogimati site for the period 1995-2000 has also been analysed by an independent third party. The resultant PLF computed by the third party is in line with the PLF calculated by WRD of the project developer at the time of decision making. Analysis of the third party has been provided to the DOE as reference 3. This further substantiates that consideration of PLF and sensitivity range at the time of decision making was appropriately based on scientifically established, internationally acknowledged protocol and best available site specific information.

2.2 Actual observed PLF

The Table 2 presented below indicates the actual PLF achieved by the project activity during various monitoring periods (as published on UNFCCC website).

Table 2

Monitoring[2]	Period	Net generation (MWh)	Actual PLF
First Monitoring period	03/06/2002 to 30/06/2006	193,694	32.26%
Second Monitoring period	01/07/2006 to 30/06/2007	48,990	33.28%
Third Monitoring period (Current period)	01/07/2007 to 31/12/2009	117,021	31.81%
Fourth Monitoring period (monitoring report webhosted) (15 months)	01/01/2010 to 31/03/2011	44,371	24.12%

As evident from the table, PLF observed for third and fourth monitoring periods (from 01 July 2007 to 31 March 2011) has declined compared to previous monitoring periods. Average PLF for third and fourth monitoring periods (from 01 July 2007 to 31 March 2011) is 27.96%, which is 4.57% lower than PLF estimated in the PDD.

[1] Probability of exceedance is the probability that a certain value is going to be exceeded
[2] Monitoring reports are available (first to fourth) on the UNFCCC website at:
http://cdm.unfccc.int/Projects/DB/DNV-CUK1140782658.34/view

It may also be observed that PLF achieved for the fourth monitoring period is 24.12% which is 17.67% lower than that estimated in the PDD, the reason for which can be attributable to seasonal variation in wind.

3. Conclusion

PLF over the last two monitoring periods is following a clear declining trend, which further reflects the cyclical and seasonal pattern of PLF. It is clear that PLF at the time of decision making was determined based on scientifically established protocol and best available site specific information. The increase or decrease in PLF is due to the seasonal variation in wind pattern, which is beyond the control of the Project Proponent.

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Head - CDM

July 20, 2011