VALIDATION OF "WIND BASED POWER GENERATION BY MYTRAH ENERGY (INDIA) LIMITED (EKIESL-VCS-JANUARY-16-01)"

Document Prepared By

EPIC Sustainability Services Private Limited

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Summary:

EPIC Sustainability Services has been contracted by M/s. **Mytrah Energy (India) Limited,** the project proponent, to carry out the validation of the project - "Wind Based Power Generation by Mytrah Energy (India) Limited (EKIESL-VCS-January-16-01)", with regard to the relevant requirements of VCS programme guidelines and standard (VCS standard version 3.5, VCS Validation and Verification Manual version 3.1 & VCS program guide version 3.5). Relevant requirements of the UNFCCC for CDM project activities, as well as criteria for consistent project operations, monitoring and reporting has been applied for validation.

The baseline and monitoring methodology ACM0002, version 16.0: "**Grid-connected electricity generation from renewable sources**", an approved methodology of UNFCCC CDM program is applied. The proposed project activity involves the installation of Wind turbines in the state of Maharashtra, India. The total installed capacity of the project is 233.10 MW; which involves installation and operation of 156 Wind Turbine Generators (WTGs) located at Andhra Pradesh and Karnataka, and 67 WTGs located at Tamil Nadu, in India. Thus the project activity displaces equivalent amount of electricity that would otherwise be generated in the fossil fuel dominated grid and leads to an estimated annual GHG emission reductions of 479,448 tCO2e and a total of 4,794,480 tCO2e during the crediting period of 10 years.

A risk based approach has been followed to perform this validation. In the course of validation, 09 Corrective Action request (CAR) and 02 Clarification Requests (CLs) were raised and successfully closed. The review of the project design documentation and additional documents related to baseline and monitoring methodology; the subsequent background investigation, follow-up interviews and stakeholders have provided EPIC Sustainability Services with sufficient evidence to validate the fulfilment of the stated criteria.

In detail the conclusions can be summarised as follows:
- The project is in line with all relevant host country criteria (India) and all relevant VCS and UNFCCC requirements for CDM
- The project additionality is sufficiently justified in the PD.
- The monitoring plan is transparent and adequate.
- The calculation of the emission reductions is carried out in a transparent and conservative manner, so that the calculated emission reductions of 4,794,480 tCO2e are most likely to be achieved within the 10 years crediting period.

The conclusions of this report show, that the project, as it was described in the project documentation, is in line with all criteria applicable for the validation. This validation is based on the information made available to EPIC and the engagement conditions are detailed in this report. Hence, EPIC cannot be held liable by any party for decisions made or not made based on this report.

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1 INTRODUCTION

1.1 Objective

EPIC Sustainability Services has been contracted by **Mytrah Energy (India) Limited,** the project proponent (PP), to undertake the validation of the renewable energy project comprising wind technology "**Wind Based Power Generation by Mytrah Energy (India) Limited (EKIESL-VCS-January-16-01)**".

The purpose of this validation is to have an independent third party assessment of whether the project activity conforms to the qualification criteria set out in the VCS Version 3.5 standard to attain real, measurable, additional and permanent emission reductions.

The validation statement/opinion is a written assurance that the project complies with all the applicable VCS requirements and has the ability to generate the emission reductions stated over the project's crediting period.

The validation followed the requirements of the current version of the VCS Standard Version 3.5[/1/] and VCS program guide 3.5[/2/] to ensure the quality and consistency of the validation work and the report.

1.2 Scope and Criteria

The scope of validation was an independent and objective review of the project's VCS PD. In particular, the specific objectives of the validation work involve:

- To verify that the project activity meets the requirements of VCS Standard Version 3.5, VCS Validation and Verification Manual version 3.1 and VCS program guide 3.5 including additionality, proof of title and compliance with local laws
- To assess whether the baseline and monitoring plan are in conformance with the applied methodology from the VCS approved GHG program
- To certify that the information presented are completed, consistent, transparent and free of omission or material error

The information in the PD is reviewed against the criteria of VCS Standard 3.5, the VCS program guide 3.5 and the applied consolidated baseline and monitoring CDM methodology ACM002, version 16.0[/3/]. EPIC has performed validation based on a risk based approach focusing mainly on the significant risks to meet the qualification criteria and the ability to generate Verified Carbon Units (VCUs).

The work carried out by EPIC is free from any conflict of interest.

1.3 Level of Assurance

In line with VCS standard requirements and as per ISO 14064-3:2006 paragraph A.2.3.2, a "reasonable level of assurance" is defined for the validation of the project. This implies that, based on the process and procedures conducted, review of the VCS-PD and supporting evidences made available to the verifier and information collected through performing interviews and during the on-site assessment , EPIC confirms that the information in the Project document.

- is materially correct and is a fair representation of the project information, and
- is prepared in accordance with VCS requirements,
- is prepared based on the approved methodology

The validation work is carried out as per this requirement and details are presented in the Validation statement in section 2 below.

1.4 Summary Description of the Project

The proposed project activity involves the installation of Wind Power Projects. The total installed capacity of the project is 233.10 MW; which involves the new implementation of 112 WTGs of capacity 0.85 MW each and 44 WTGs of capacity 0.85 MW each in the Indian states of Karnataka and Andhra Pradesh respectively by **Mytrah Vayu Krishna Private Limited** and 67 WTGs of capacity 1.5 MW each in the state of Tamil Nadu, India by **Mytrah Vayu (Manjira) Private Limited**. Both Mytrah Vayu Krishna Private Limited and Mytrah Vayu (Manjira) Private Limited are the subsidiary companies of **Mytrah Energy (India) Limited,** the project proponent of the project activity.

The project is a Green field project which results in an estimated annual average GHG emission reduction of 479,448 tonnes of CO2.

2 VALIDATION PROCESS

2.1 Method and Criteria

The verification process consists of the following phases:

i) a document review of the project design documents, monitoring reports and preparation of verification protocol;

ii) on-site visit to the project activity and interviews with project developer and project consultant; and

iii) resolution of outstanding issues and the issuance of final verification report and opinion

In order to ensure transparency, a verification protocol was prepared for the project according to the VVS version 9.0 verification requirements and VCS Standard version 3.5. The verification protocol serves the following purposes:

- it organizes, details and clarifies the requirements that a CDM or VCS project is expected to meet;
- it ensures a transparent validation process where the validator will document how a particular requirement has been validated and the result of the validation.

The completed validation protocol is enclosed in Appendix of this report.
During the verification, non-fulfilment of the verification protocol criteria or identified risks to the fulfilment of project objectives were raised as either CAR or CR. Corrective Action Requests (CAR) were issued, where:

i) mistakes had been made that directly impacted on the project results; or

ii) CDM and VCS requirements had not been met; or

iii) there was a risk that the project would not be accepted as a CDM project or that emission reductions will not be certified.

The Clarification Requests (CR) were issued where additional information was needed to clarify issues, and Forward Action Requests (FAR) for issues relating to project implementation that required review during the first verification of the project activity.

The following team members were involved in identifying the following:

Name	Qualification	Role	Components reviewed
Mr. A. Prabu Das	TA 1.2 – renewables	Lead Auditor	Completeness check, desk review, onsite inspection, Interview with project

			representatives, issuance of findings, report preparation
Dr.R. Madhukar	TA 1.2 – renewables	Team Member	desk review, onsite inspection, Interview with project representatives,
Mr. R. Vijayaraghavan	TA 1.2 - Renewables	Technical Reviewer	Technical review

2.2 Document Review

During the document review, EPIC has applied standard auditing techniques to assess the quality of information provided. On receipt of the project description from the PP, the completeness check of information made available as per VCS Version 3.5 requirements was reviewed. A desk review was further carried out to assess the following:

- The project details as per VCS PD template
- Appropriateness of methodology applied
- Compliance with relevant laws and regulations
- Correctness of application of baseline and monitoring methodology
- Demonstration of additionality
- Monitoring plan
- Stakeholder comments
- Proof of title
-Other external documents like grid emission factor, etc. where applicable.

The VCS PD version 01 dated 29th January 2016 /5/ was initially reviewed and EPIC requested the PP to present the supporting information and documents and such additional information and documents that were also reviewed by EPIC. The documents reviewed by EPIC are listed below. Through the process of the verification, the revised VCS PD and the supporting documents were evaluated to confirm the actions taken by the PP to the CARs and CLs issued by EPIC. EPIC reviewed the final version of the VCS PD version 02 dated 10th Feb 2016 /5/ to confirm that all changes agreed have been incorporated.

Further, prior to the Opening meeting with the PP in the site visit, it was verified by the validation team that the project was listed in the VCS pipeline in line with the requirements.

http://www.vcsprojectdatabase.org/#/pipeline_details/PL1521

The appendix B contains the details of the documentation reviewed during the verification

2.3 Interviews

The details of the on-site assessment conducted by validation team on 03-07th Feb 2016 are as follows:

Name	Organization	Topic
Ms. *Mangaljyoti* *Deputy Manager*	M/s. Mytrah Energy (India) Limited	• Project implementation and management • Site tour • Confirmation of technical specifications of the WTG and Solar panels • Baseline discussion

		• Additionality discussion • Data management and reporting systems • Data verification • QA/QC, management systems, calibration, training • Data archiving • Environmental and social issues •Local stakeholder consultation process and discussion
Ms Rucha Natu, Manager, Operations	M/s EKI Energy Services Limited	• Confirmation of the project activity design • Baseline discussion

2.4 Site Inspections

EPIC has conducted on-site inspection in order to confirm all physical features of the project activity proposed in the VCS PD are in place.

An on-site assessment was conducted on *3rd to 7th Feb 2016* as a part of validation activity which involved:

- Implementation of project activity
- Technical detail of project activity
- Statutory clearances
- Sustainability criteria
- Local stakeholders meeting process
- Baseline determination and additionality
- Monitoring plan.

2.5 Resolution of Findings

Based on the site inspection and review of documents and records including the monitoring plan, issues that need to be further elaborated upon, researched or added in order that the project activity meets the VCS Standard 3.5requirements and can achieve credible emission reductions is identified, discussed and to be resolved by the project proponent.

A Corrective Action Request (CAR) is raised if the VVB identifies a material discrepancy or non-conformance that the project proponent must address.

A Clarification request (CL) is raised if the project reporting lacks transparency and further information is needed to determine if a material discrepancy is present.
On receipt of response and revised PD from the project proponent, the adequacy of compliance with VCS and the methodology requirements is checked. Closure of comments raised occurs only if the response provided and corrections made fully comply with the stated requirements of the VCS Version 3.5 VCS standard and the methodology applied.

During the course of validation, 09 CARs and 02 CLs were raised and closed successfully. The list of CARs/CLs/FARs raised and the response provided, the mean of validation, reasons for their closure and references to correction in the PD are provided in Appendix A of this report.

2.6 Forward Action Requests

A Forward Action Request (FAR) is issued when certain issues related to project implementation should be reviewed during the first verification. This, however, has no impact upon the completion of the current validation activity.

No FAR has been raised during the validation of the project activity.

3 VALIDATION FINDINGS

3.1 Project Details

Project type, technologies and measures implemented, and eligibility of the project:

According to the VCS version 3.5 Guidelines and the list of Sectoral Scopes of the UNFCCC, the project is applicable under the following activity categories:

According to Annex A of the Kyoto Protocol, the project is applicable under the sectoral scope 1 - Energy Industries (renewable/ non-renewable sources).

The proposed project activity involves the installation of Wind Power Projects. The total installed capacity of the project is 233.1 MW; which involves operation of 156 Wind Turbine Generators (WTGs) with capacity of 0.85 MW each located at Karnataka and Andhra Pradesh implemented by **Mytrah Vayu Krishna Private Limited** and 67 Wind Turbine Generator (WTGs) of 1.5 MW capacity implemented by **Mytrah Vayu (Manjira) Private Limited** Tamil Nadu state in India. Both the entities are subsidiary companies of **Mytrah Energy (India) Limited.** The project is promoted by **Mytrah Energy (India) Limited.** The electricity generated by Tamil Nadu WTGs is used for captive consumption. The project is a Green field project which results in an estimated annual average GHG emission reduction of 479,448 tonnes of CO2.

Wind Power Project Technology Details –

The technology employed, converts wind energy to electrical energy. In wind power generation, energy of wind is converted into mechanical energy and subsequently into electrical energy. The technology is an environment friendly technology since there are no GHG emissions associated with the electricity generation.

The project activity comprises a total of 156 WTG's of Gamesa India Limited with Model No. G 58[1] and 67 WTG's of Vensys V87. The project activity WTGs have been commissioned.

The purpose of the project activity is to generate energy electricity by the utilization of wind velocity and selling the generated energy to the respective Grid. The project activity will generate greenhouse gas (GHG) emission reductions by avoiding CO_2e emissions which otherwise would have been generated by the operation of grid connected power plants and by the addition of new sources. Hence the project is anticipated to fulfil VCS conditions.

[1] http://www.wind-power-program.com/Library/Turbine%20leaflets/Gamesa/Gamesa%20G58%20850kw.pdf

Project proponent and other entities involved in the project:

Project proponent for this project activity is M/s. ***Mytrah Energy (India) Limited***

Project start date:

The earliest date of commissioning[/6/] amongst the WTGs is 21-February-2014 and hence this is the start date of the project activity.

Project crediting period:

The crediting period of the project activity is for 10 years and this may be renewed at most twice. The 01st crediting period is from 21/02/2014 to 20/02/2024.

Project scale and estimated GHG emission reductions or removals:

The estimated annual emission reductions for the project activity are 479,448 tCO_2e which is more than 300,000 tCO_2e. Hence the category is applicable under "Large Project".

Project Location:

For Tamil Nadu WTGs

S.No.	Machine ID	HTSC No.	Latitude	Logitude
1	KOO - 518	DRA 001	10.695026 N	77.570779 E
2	KOO - 1359	DRA 003	10.688039 N	77.592838 E
3	APY - 241	DRA 004	10.696430 N	77.655525 E
4	APY - 416	DRA 005	10.693031 N	77.653586 E
5	PAR - 9	DRA 006	10.678811 N	77.553641 E
6	PON - 534	DRA 008	10.676050 N	77.571935 E
7	PON - 1043	DRA 009	10.729955 N	77.576547 E
8	NAL-119	DRA 012	10.652837 N	77.545505 E
9	NAL - 81	DRA 013	10.664993 N	77.528386 E
10	NAL - 57	DRA 015	10.763263 N	77.625708 E
11	MAN - 210	DRA 017	10.727352 N	77.585324 E
12	MAN - 898	DRA 018	10.713748 N	77.629144 E

13	MAN - 802	DRA 021	10.657353 N	77.553426 E
14	KON - 556	DRA 022	10.650216 N	77.649013 E
15	KON - 563	DRA 023	10.699483 N	77.688256 E
16	KON - 590	DRA 024	10.684740 N	77.608212 E
17	KON - 640	DRA 025	10.738135 N	77.688168 E
18	KON - 658	DRA 026	10.670208 N	77.629071 E
19	KON - 621	DRA 027	10.667608 N	77.611546 E
20	KON - 501	DRA 031	10.694380 N	77.634057 E
21	ALA - 1639	DRA 043	10.665640 N	77.659623 E
22	ALA - 1946	DRA 044	10.663297 N	77.566886 E
23	NAL - 434	DRA 049	10.648711 N	77.550586 E
24	KON - 234	DRA 054	10.658922 N	77.561651 E
25	PAR - 50	DRA 007	10.737605 N	77.627596 E
26	MAN - 625	DRA 032	10.662515 N	77.557552 E
27	MAN - 604	DRA 033	10.644345 N	77.515043 E
28	ALA-2301/2304	DRA 046	10.720840 N	77.587169 E
29	ALA - 1569	DRA 047	10.759444 N	77.604996 E
30	ALA-2352	DRA 048	10.763189 N	77.616268 E
31	KOO - 1157	DRA 002	10.669956 N	77.554773 E
32	PON - 1081	DRA 010	10.660363 N	77.617842 E
33	MAN - 940	DRA 019	10.668934 N	77.569253 E
34	PON - 1565	DRA 037	10.673908 N	77.529976 E
35	PON - 1568	DRA 038	10.646536 N	77.555893 E
36	VEL - 1936	DRA 039	10.677837 N	77.535691 E

37	ALA - 1618	DRA 042	10.66492 N	77.547432 E
38	PON - 908	DRA 050	10.718534 N	77.615573 E
39	PON - 1203	DRA 052	10.71890 N	77.581396 E
40	MAN - 963	DRA 055	10.683484 N	77.617876 E
41	PON - 1021	DRA 011	10.773698 N	77.61412 E
42	KUL - 652	DRA 014	10.68742 N	77.616146 E
43	PON - 4	DRA 016	10.692721 N	77.615369 E
44	MAN-828	DRA 020	10.692721 N	77.615369 E
45	KON - 618	DRA 028	10.710023 N	77.646516 E
46	KON-395	DRA 029	10.77361 N	77.639413 E
47	KON-451	DRA 030	10.754682 N	77.62652 E
48	APA-84	DRA 034	10.689743 N	77.610703 E
49	PUN-270	DRA 035	10.66565 N	77.517593 E
50	PUN - 34	DRA 036	10.673745 N	77.54778 E
51	VEL-1702	DRA 040	10.681788 N	77.689854 E
52	KAL-93	DRA 041	10.649539 N	77.51747 E
53	ALA-2290	DRA 045	10.654515 N	77.559157 E
54	PON - 775	DRA 051	10.65057 N	77.580673 E
55	ALA - 2260	DRA 053	10.620784 N	77.564648 E
56	MET 1664	DRA 065	10.630660 N	77.569115 E
57	NAL - 445	DRA 061	10.684400 N	77.563052 E
58	KOO-1036	DRA 056	10.667224 N	77.539641 E
59	VEL-1540	DRA 060	10.683467 N	77.536761 E
60	KOO-1174	DRA 058	10.677765 N	77.616831 E

61	KOO-1000	DRA 057	10.714956 N	77.67510 E
62	PON-1304	DRA 059	10.659904 N	77.651955 E
63	APY-247	DRA 064	10.656300 N	77.62939 E
64	KON-411	DRA 67	10.765864 N	77.633324 E
65	KOO - 581	DRA 062	10.709670 N	77.627337 E
66	VEL - 2119	DRA 063	10.753168 N	77.683129 E
67	ALA 1385	DRA 066	10.762752 N	77.680226 E

For Andhra Pradesh

S. No.	Location No.	Latitude	Longitude
1	508	15.154461 N	77.922135 E
2	510	15.157268 N	77.921522 E
3	511	15.158979 N	77.923322 E
4	513	15.161872 N	77.923761 E
5	514	15.163549 N	77.923292 E
6	515	15.165388 N	77.922815 E
7	516	15.166574 N	77.921892 E
8	517	15.167997 N	77.920787 E
9	518	15.16929 N	77.919977 E
10	519	15.170968 N	77.918066 E
11	520	15.172449 N	77.918783 E
12	528	15.185218 N	77.923655 E
13	529	15.186921 N	77.923976 E
14	530	15.189489 N	77.925118 E

15	531	15.190881 N	77.925026 E
16	532	15.206692 N	77.937622 E
17	533	15.208101 N	77.938972 E
18	534	15.209818 N	77.940958 E
19	535	15.211871 N	77.942781 E
20	536	15.215178 N	77.947515 E
21	537	15.216917 N	77.949166 E
22	538	15.218416 N	77.950564 E
23	539	15.221591 N	77.953603 E
24	540	15.225099 N	77.957372 E
25	541	15.226569 N	77.958248 E
26	542	15.228387 N	77.959399 E
27	543	15.229998 N	77.960501 E
28	545	15.223820 N	77.956471 E
29	546	15.213598 N	77.946804 E
30	547	15.204944 N	77.93730 E
31	551	15.188055 N	77.924987 E
32	509	15.155886 N	77.920862 E
33	512	15.160386 N	77.923416 E
34	521	15.174326 N	77.91959 E
35	522	15.175897 N	77.92030 E
36	523	15.177475 N	77.921177 E
37	524	15.179081 N	77.921943 E
38	525	15.180875 N	77.922916 E

39	526	15.182457 N	77.923515 E
40	527	15.183845 N	77.923022 E
41	544	15.231485 N	77.961368 E
42	548	15.202938 N	77.936743 E
43	549	15.201556 N	77.936035 E
44	550	15.192441 N	77.927995 E

For Karnataka

S.No.	Machine ID	Latitude (N)	Logitude (E)
1	MVKPL_01-03	17° 09' 49.3"	75° 43' 2.6"
2	MVKPL_01-04	17° 09' 37.1"	75° 43' 1.5"
3	MVKPL_01-05	17° 09' 31.4"	75° 43' 1.1"
4	MVKPL_01-06	17° 9' 29.4"	75° 43' 18.8"
5	MVKPL_01-07	17° 9' 24.3"	75° 43' 21.4"
6	MVKPL_01-08	17° 9' 16.6"	75° 43' 26.9"
7	MVKPL_01-09	17° 09' 11.2"	75° 43' 28.3"
8	MVKPL_01-10	17° 9' 3.6"	75° 44' 26.9"
9	MVKPL_01-11	17° 8' 59.1"	75° 44' 31"
10	MVKPL_01-12	17° 8' 51.9"	75° 44' 34.5"
11	MVKPL_01-13	17° 8' 38.9"	75° 44' 20.9"
12	MVKPL_01-14	17° 8' 34.3"	75° 44' 26.1"
13	MVKPL_01-15	17° 8' 26.2"	75° 44' 26.7"

14	MVKPL_02-01	17° 09' 02.4"	75° 42' 49.2"
15	MVKPL_02-02	17° 08' 57.4"	75° 42' 44.3"
16	MVKPL_02-03	17° 08' 51.0"	75° 42' 39.8"
17	MVKPL_02-04	17° 08' 52.5"	75° 42' 31.9"
18	MVKPL_02-05	17° 08' 45.7"	75° 42' 41.7"
19	MVKPL_02-06	17° 08' 36.2"	75° 42' 37.6"
20	MVKPL_02-07	17° 08' 31.4"	75° 42' 31.1"
21	MVKPL_02-08	17° 08' 22.3"	75° 42' 23.2"
22	MVKPL_02-09	17° 08' 20.5"	75° 42' 46.8"
23	MVKPL_02-10	17° 08' 40.9"	75° 42' 53.7"
24	MVKPL_02-11	17° 08' 35.6"	75° 42' 59"
25	MVKPL_02-12	17° 08' 29.4"	75° 42' 59.9"
26	MVKPL_02-13	17° 08' 22.0"	75° 43' 00.1"
27	MVKPL_02-14	17° 08' 12.4"	75° 43' 03.0"
28	MVKPL_02-15	17° 08' 06.8"	75° 43' 04.7"
29	MVKPL_02-16	17° 08' 17.9"	75° 44' 29.8"
30	MVKPL_02-17	17° 07' 59.4"	75° 43' 53.5"
31	MVKPL_02-18	17° 07' 53.6"	75° 43' 50.9"
32	MVKPL_02-19	17° 07' 49.5"	75° 43' 36.0"
33	MVKPL_02-20	17° 07' 24.0"	75° 44' 02.4"
34	MVKPL_03-01	17° 07' 03.4"	75° 41' 51.5"
35	MVKPL_03-02	17° 07' 10.6"	75° 42' 08.1"

36	MVKPL_03-03	17° 07' 52.0"	75° 42' 09.8"
37	MVKPL_03-04	17° 07' 03.2"	75° 42' 21.6"
38	MVKPL_03-05	17° 07' 29.2"	75° 42' 37.1"
39	MVKPL_03-06	17° 07' 44.7"	75° 43' 03.3"
40	MVKPL_03-07	17° 07' 48.5"	75° 42' 58.7"
41	MVKPL_03-08	17° 07' 18.6"	75° 43' 03.0"
42	MVKPL_03-09	17° 07' 11.3"	75° 43' 01.4"
43	MVKPL_03-10	17° 07' 04.4"	75° 42' 57.3"
44	MVKPL_03-11	17° 06' 58.5"	75° 42' 58.1"
45	MVKPL_03-12	17° 07' 34.2"	75° 43' 37.7"
46	MVKPL_03-13	17° 07' 18.1"	75° 43' 24.2"
47	MVKPL_03-14	17° 07' 12.3"	75° 43' 25.2"
48	MVKPL_03-15	17° 07' 06.2"	75° 43' 36.3"
49	MVKPL_03-16	17° 06' 51.9"	75° 42' 0.1"
50	MVKPL_03-17	17° 6' 46.2"	75° 43' 59.9"
51	MVKPL_03-18	17° 06' 37.9"	75° 43' 55.5"
52	MVKPL_03-19	17° 06' 31.1"	75° 43' 49.7"
53	MVKPL_04-01	17° 06' 35.1"	75° 42' 52.8"
54	MVKPL_04-02	17° 06' 01.9"	75° 42' 29.4"
55	MVKPL_04-03	17° 05' 54.7"	75° 42' 21.6"
56	MVKPL_04-04	17° 05' 51.3"	75° 42' 46.6"
57	MVKPL_04-05	17° 05' 46.4"	75° 42' 41.3"

58	MVKPL_04-06	17° 05'39.9"	75° 42' 41.6"
59	MVKPL_04-07	17° 06' 35.9"	75° 43' 23.6"
60	MVKPL_04-08	17° 06' 28.8"	75° 43' 24.4"
61	MVKPL_04-09	17° 06' 23.9"	75° 43' 47.1"
62	MVKPL_04-10	17° 06' 15.6"	75° 43' 39.4"
63	MVKPL_04-11	17° 05' 59.5"	75° 43' 31.8"
64	MVKPL_04-12	17° 05' 27.3"	75° 43' 30.0"
65	MVKPL_04-13	17° 06' 04.5"	75° 43' 55.5"
66	MVKPL_04-14	17° 05' 59.0"	75° 43' 54.1"
67	MVKPL_04-15	17° 05' 51.0"	75° 43' 53.2"
68	MVKPL_04-16	17° 05' 38.9"	75° 43' 45.7"
69	MVKPL_04-17	17°05' 30.6"	75° 43' 49.0"
70	MVKPL_04-18	17° 06' 02.7"	75° 44' 32.2"
71	MVKPL_04-19	17° 05' 53.1"	75° 44' 20.5"
72	MVKPL_04-20	17° 05' 48.0"	75° 44' 11.2"
73	MVKPL_04-21	17° 05' 42.7"	75° 44' 20.2"
74	MVKPL_05-01	17° 05' 54.8"	75° 40' 38.6"E
75	MVKPL_05-02	17° 05' 49.1"	75° 40' 40.6"
76	MVKPL_05-03	17° 05' 43.2"	75° 40' 40"
77	MVKPL_05-04	17° 05' 37.5"	75° 40' 39.2"
78	MVKPL_05-05	17° 05' 31.7"	75° 40' 38.1"
79	MVKPL_05-06	17° 5' 26.1"	75° 40' 34"

80	MVKPL_05-07	17° 05' 20.1"	75° 40' 30.9"
81	MVKPL_05-08	17° 05' 13.9"	75° 40' 32.7"
82	MVKPL_05-09	17° 05' 44.4"	75° 41' 52.6"
83	MVKPL_05-10	17° 05' 29.6"	75° 41' 42.6"
84	MVKPL_05-11	17° 05' 25.2"	75° 41' 26.4"
85	MVKPL_05-12	17° 05' 23.1"	75° 41' 49"
86	MVKPL_05-13	17° 05' 16.5"	75° 41' 48"
87	MVKPL_05-14	17° 05' 12.5"	75° 41' 59.3"
88	MVKPL_05-15	17° 05' 3.4"	75° 41' 57.6"
89	MVKPL_05-16	17° 05' 52.3"	75° 41' 36.9"
90	MVKPL_05-17	17° 05' 45.3"	75° 41' 33"
91	MVKPL_05-18	17° 05' 34.7"	75° 41' 32.7"
92	MVKPL_06-01	17° 04' 51.4"	75° 42' 53.2"
93	MVKPL_06-02	17° 04' 43.4"	75° 42' 58.2"
94	MVKPL_06-03	17° 04' 31.8"	75° 43' 01.3"
95	MVKPL_06-04	17° 04' 25.3"	75° 43' 0.4"
96	MVKPL_06-05	17° 05' 9.3"	75° 43' 42.7"
97	MVKPL_06-06	17° 05' 5.6"	75° 43' 49.8"
98	MVKPL_06-07	17° 04' 53"	75° 43' 54.7"
99	MVKPL_06-08	17° 04' 45.3"	75° 44' 0.8"
100	MVKPL_06-09	17° 04' 28"	75° 44' 9.1"
101	MVKPL_06-10	17° 04' 20.3"	75°44'12.4"

102	MVKPL_06-11	17° 04' 12.7"	75° 44' 13.8"
103	MVKPL_06-12	17° 03' 48.9"	75° 44' 23.9"
104	MVKPL_06-13	17° 03' 55.5"	75° 44' 22.7"
105	MVKPL_06-14	17° 04' 57.8"	75° 42' 49.1"
106	MVKPL_06-15	17° 04' 9.1"	75° 44' 22.6"
107	MVKPL_06-16	17° 04' 5.2"	75° 43' 45.8"
108	MVKPL_06-17	17° 04' 1.3"	75° 45' 0"
109	MVKPL_06-18	17° 03' 41.6"	75° 44' 49.5"
110	MVKPL_06-19	17° 03' 55"	75° 43' 44.1"
111	MVKPL_06-20	17° 03' 44.1"	75° 44' 49"
112	MVKPL_06-21	17° 03' 50.6"	75° 44' 48.9"

Conditions prior to project initiation*:*

The project is a green field project. The same was confirmed during the on-site visits and through review of purchase orders, commissioning certificates and power purchase/Supply agreements.

Project compliance with applicable laws, statutes and other regulatory frameworks:

There is no such compliance requirement with an emission trading program or any binding limits on GHG emissions for the project activity in India (host country) as it is a non annex 1 country. The project is a voluntary initiative by the PP and has not been implemented to meet any local / national laws or regulatory compliances.

The project has obtained valid consents for the installation and operation from the state nodal agencies and is in compliance with local laws and regulations.

Ownership and other programs:

Right of use:

The Project comprises of 156 WTGs of individual capacity 0.85 MW each and 67 WTGs of individual capacity 1.5 MW each implemented by **Mytrah Vayu Krishna Private Limited** and **Mytrah Vayu (Manjira) Private Limited** respectively. Both the entities are the subsidiary companies of **Mytrah Energy (India) Limited** who is the project proponent of the project. The ownership of the project activity and documents showing proof of title and ownership of the emission reductions are as follows:

- Certificate of Incorporation[/10/]

- Purchase order of WTGs[/7/]
- Commissioning certificate of the WTGs[/6/]
- Power Purchase/Supply Agreement with respective State Electricity Board[/9/]

Emissions trading programs and other binding limits:

PP has given a declaration that the net GHG emission reductions generated by the project activity will not be used for compliance with any other emissions trading program or to meet binding limits on GHG emissions.

Participation under other GHG programs:

PP has given a declaration[/12/] that the project activity has not been registered and is not seeking registration under any other GHG emission program to avail carbon benefits during the crediting period of the project activity. Validation team has cross checked the same with CDM pipeline and gold standard project listing and found project is not listed in any of other GHG programs.

Other forms of environmental credit sought or received:

PP has given a declaration[/12/] that the project proponent hereby corroborates that the project activity has not created or sought or received any other form of environmental credit. Further EPIC's validation team has conducted an independent assessment of publically available databases (UNFCCC, GS, and REC) for the crosscheck of the same.

Rejection by other GHG programs:

PP has given a declaration[/12/] that the project proponent hereby corroborates that the project activity has not been rejected by any other GHG program

Eligibility criteria for grouped projects:

The project activity is not a grouped project.

Commercially sensitive information:

PP has stated in the VCS PD section 1.13 that there is no such commercially sensitive information.

Any further information:

The description contained in the VCS PD of the project activity provides the reader with a clear understanding of the precise nature of the project activity and the technical aspects of its implementation. The project description was verified by EPIC by assessment of the PD and the on site visit and review of the supporting documents listed in section Appendix B. As a result, EPIC confirms that the project description of the project contained in the VCS PD to be complete and accurate. The VCS PD complies with the relevant forms and guidance for completing the VCS PD.

3.2 Application of Methodology

3.2.1 Title and Reference

CDM approved methodology has been applied for the project activity.

Title: Grid-connected electricity generation from renewable sources

Type: I – Renewable energy project

Category ACM0002: Grid-connected electricity generation from renewable sources - Version 16.0

Sectoral Scope: 01 Energy industries (renewable / non- renewable sources)

Tools referenced in the applied methodology:

1. Tool for the demonstration and assessment of additionality - Version 07.0.0, EB 70, Annex 8

https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-01-v7.0.0.pdf

2. Tool to calculate the emission factor for an electricity system - Version 04.0, EB 75, Annex 15

https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-07-v4.0.pdf

3.2.2 Applicability

Applicability of the applied methodology ACM002, version 16[2] is discussed below:

Applicability condition	Justification of the project activity	Conclusion
1. This methodology is applicable to grid-connected renewable energy power generation project activities that: a. Install a Greenfield power plant; b. Involve a capacity addition to (an) existing plant(s); c. Involve a retrofit of (an) existing operating plants/units; d. Involve a rehabilitation of (an) existing plant(s)/unit(s);or e. Involve a	The project activity is installation of a new grid connected wind power plant[3] at a site where no renewable power plant was operated prior to the implementation of the project activity (Greenfield plant) and hence this criterion is applicable.	The proposed activity is a, Greenfield project, which involves the installation of a new Grid - connected renewable power generation facility comprising of Wind. From the on-site visit to the project sites and review of the commissioning certificates/06/ and Power Purchase/Supply Agreements/09/, it was confirmed that the project activity is a new wind energy unit supplying electricity to the SOUTHERN grid (greenfield). Therefore, the project activity complies with condition 1 (a).

[2] https://cdm.unfccc.int/methodologies/DB/EY2CL7RTEHRC9V6YQHLAR6MJ6VEU83

[3] The same can be referred to from the commissioning certificates

replacement of (an) existing plant(s)/unit(s).		
2. The methodology is applicable under the following conditions: a. The project activity may include renewable energy power plant/unit of one of the following types: hydro power plant/unit with or without reservoir, wind power plant/unit, geothermal power plant/unit, solar power plant/unit, wave power plant/unit or tidal power plant/unit; b. In the case of capacity additions, retrofits, rehabilitations or replacements (except for wind, solar, wave or tidal power capacity addition projects the existing plant/unit started commercial operation prior to the start of a minimum historical reference period of five years, used for the calculation of baseline emissions and defined in the baseline emission section, and no capacity expansion, retrofit, or rehabilitation of the plant/unit has been	a. The proposed project activity is an installation of a new grid connected wind power plant [4] project. Hence this condition is met. b. The project does not involve any capacity additions, retrofits or replacements and therefore this condition is not applicable[4].	The proposed activity is a, Greenfield project, which involves the installation of a new Grid - connected renewable power generation facility comprising of Wind. From the on-site visit to the project sites and review of the purchase orders/07/, commissioning certificates/06/ and Power Purchase / Supply Agreements/09/, it was confirmed that the project activity is a new wind energy unit supplying electricity to the SOUTHERN grid (greenfield) and does not involve any capacity addition / retrofit / replacement of an existing plant. Therefore, the project activity complies with condition 2 (a).

[4] The same can be referred to from the commissioning certificates

undertaken between the start of this minimum historical reference period and the implementation of the project activity.		
3. In case of hydro power plants, one of the following conditions shall apply: a. The project activity is implemented in existing single or multiple reservoirs, with no change in the volume of any of the reservoirs; or b. The project activity is implemented in existing single or multiple reservoirs, where the volume of the reservoir(s) is increased and the power density calculated using equation (3), is greater than 4 W/m2; or c. The project activity results in new single or multiple reservoirs and the power density, calculated using equation (3), is greater than 4 W/m2; or d. The project activity is an integrated hydro power project involving multiple reservoirs, where the power density for any of the reservoirs, calculated using equation (3),is lower	The project activity is a grid connected wind power project[4] and not a hydro power plant. Therefore, these criteria are not relevant for the project activity.	It was confirmed from the onsite visit and through review of purchase orders[/07/] and commissioning certificates[/06/] that the project activity is a wind power plant and not a hydro power plant. Therefore, this criterion is not relevant to the project activity.

than or equal to 4 W/m2, all of the following conditions shall apply: (i) The power density calculated using the total installed capacity of the integrated project, as per equation (4),is greater than 4 W/m2; (ii) Water flow between reservoirs is not used by any other hydropower unit which is not a part of the project activity; (iii) Installed capacity of the power plant(s) with power density lower than or equal to 4 W/m2 shall be: a. Lower than or equal to 15 MW; and b. Less than 10 per cent of the total installed capacity of integrated hydro power project.		
4. In the case of integrated hydro power projects, project proponent shall: • Demonstrate that water flow from upstream power plants/units spill	The project activity is a grid connected wind power project[4] and not a hydro power plant. Therefore, these criteria are not relevant for the project activity.	It was confirmed from the onsite visit and through review of purchase orders/07/ and commissioning certificates/06/ that the project activity is a wind power plant and not a hydro power plant. Therefore, this criterion is

directly to the downstream reservoir and that collectively constitute to the generation capacity of the integrated hydro power project; or • Provide an analysis of the water balance covering the water fed to power units, with all possible combinations of reservoirs and without the construction of reservoirs. The purpose of water balance is to demonstrate the requirement of specific combination of reservoirs constructed under CDM project activity for the optimization of power output. This demonstration has to be carried out in the specific scenario of water availability in different seasons to optimize the water flow at the inlet of power units. Therefore this water balance will take into account seasonal flows from river, tributaries (if any), and rainfall for minimum five years prior to implementation of CDM project activity.		not relevant to the project activity.

5. The methodology is not applicable to: • Project activities that involve switching from fossil fuels to renewable energy sources at the site of the project activity, since in this case the baseline may be the continued use of fossil fuels at the site; • Biomass fired power plants/units.	• The project activity is installation of a new grid connected wind power project[4] and does not involve switching from fossil fuel to renewable energy and hence this criterion is not relevant to the project activity. • This is a wind/solar power plant[4] and not a biomass fired plant and hence this criterion is not applicable to the project activity.	The proposed project activity is not fuel switch project from fossil fuels to renewable energy sources, biomass fired power plants and the hydro power plant that result in new reservoir. From the on-site visit to the project sites and the commissioning certificates/06/ it was confirmed that the project activity is a new installation of a wind energy project
6. In the case of retrofits, rehabilitations, replacements, or capacity additions, this methodology is only applicable if the most plausible baseline scenario, as a result of the identification of baseline scenario, is "the continuation of the current situation, that is to use the power generation equipment that was already in use prior to the implementation of the project activity and undertaking business as usual maintenance".	The project activity is a new grid connected wind power plant[4] and not a retrofits, replacement or capacity additions and therefore this criterion is not applicable to the project activity.	It is confirmed that the project activity is a Greenfield plant and did not involve any retrofits, replacements or capacity additions, Therefore, this criterion is not applicable to the project activity.

Therefore, all the validation team concludes that all the applicability criteria of the methodology have been fulfilled by the project.

3.2.3 Project Boundary

According to the approved baseline and monitoring methodology "ACM0002", "Grid-connected electricity generation from renewable sources", version 16 the spatial extent of the project boundary includes the project power plant and all power plants connected physically to the electricity system that the CDM project power plant is connected to. The generated electricity will be delivered to the SOUTHERN grid through the connected sub-station. The project activity falls under SOUTHERN grid and the baseline for this project activity is a function of generation mix of the SOUTHERN grid. The selection of SOUTHERN grid as the grid system boundary for the project activity is in line with the methodology.

The project activity is a renewable energy project and hence there are no emissions like CO_2 and CH_4 as such due to the implementation of the project activity (project emissions). The CO_2e emissions from electricity generation in fossil fuel fired power plants installed under SOUTHERN grid that are displaced due to the project activity is considered as baseline emissions. The project boundary was found to be in accordance with the requirements of the applied methodology which was confirmed during the on-site visit.
Thus, the validation team concludes that the PD correctly describes the project boundary, including the physical delineation of the proposed CDM project activity and the information on each GHG source, sink and reservoir thereby complying with VVS requirement.

3.2.4 Baseline Scenario

According to the approved baseline and monitoring methodology "ACM0002", "Grid-connected electricity generation from renewable sources", version 16, the following is the baseline scenario for a new grid-connected renewable power plant/units: "the baseline scenario is electricity delivered to the grid by the project activity would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources, as reflected in the combined margin (CM) calculations described in the "Tool to calculate the emission factor for an electricity system".

Project activity involves generation of electricity using WTGs power plant and selling it to southern grid/supply through southern grid as confirmed through the application for the execution of Power Purchase/Supply Agreements[/09/] between the project owners and the discom. In the absence of this project activity, same amount of electricity would have been generated by the operation of existing/proposed grid connected fossil fuel based power plants. (The pre-project scenario for the captive case was also verified it to be grid connected). The same was cross checked and confirmed by referring the CO_2 Baseline Database for the Indian Power Sector, User Guide (Version 10.0, December 2014) issued by Central Electricity Authority/. The CEA data base used by the PP is accepted by the team as this is the latest version available at the time of submission of PD to DOE as per the "tool to calculate the emission factor for an electricity system" [/15/].

3.2.5 Additionality

According to the approved baseline and monitoring methodology "ACM0002", the additionality of the project has been established applying the tool "Tool for the demonstration and assessment of additionality", version 07. The project proponent has stated the start date of the project activity as 21st Feb 2014 and submitted the commissioning certificate which is checked by the assessment team and found to be in order. The same is in line with VCS guideline and thus accepted by the assessment team.
As per the requirement of VCS the project needs to be intimated to the VCS board before the start of the validation process. The project entitled "Wind Based Power Generation by Mytrah Energy (India) Limited (EKIESL-VCS-January-16-01)" is listed in the link http://www.vcsprojectdatabase.org/#/pipeline_details/PL1521 in VCS Project pipeline.

Identification of Alternatives:

According to the approved baseline methodology ACM0002 "Grid-connected electricity generation from renewable sources", version 16 the baseline scenario is "Electricity delivered to the grid by the project activity would have otherwise been generated by the operation of grid connected power plants and by the addition of new generation sources, as reflected in the combined margin (CM) calculations described in the "Tool to calculate the emission factor for an electricity system" and since it is prescribed in the approved methodology no further analysis is requires as per CDM-VVS. The project proponent has justified the selection of the baseline scenario in line with the applied methodology and the same is deemed reasonable.

Investment analysis

Choice of approach

The PP has chosen to apply investment analysis to demonstrate the additionality of the project activity using the benchmark analysis method. PP has identified post tax equity IRR as the most suitable financial indicator. The project cannot apply simple cost analysis since the project brings revenue from the sale of electricity; also investment comparison analysis cannot be applied as the alternative to the project activity is the electricity generated by new and existing grid connected power plants. Therefore, referring paragraph 19 of the investment analysis guideline /19/ "if the alternative to the project activity is the supply of electricity from grid this is not to be considered an investment and a benchmark approach is considered appropriate". Since the project proponent is demonstrating the financial unattractiveness of the project and the project cost involves both equity and debt, equity IRR is considered appropriate indicator and accepted by the validation team.

Benchmark selection
As per paragraph 12 of the Guidelines on investment analysis, required/expected returns on equity are appropriate benchmarks for an equity IRR.

Following is stated in para 15 of Guidelines on the Assessment of Investment Analysis, version 05, *'If the benchmark is based on parameters that are standard in the market, the cost of equity should be determined either by: (a) selecting the values provided in Appendix A; or by (b) calculating the cost of equity using best financial practices, based on data sources which can be clearly validated by the DOE, while properly justifying all underlying factors. The values in the table in Appendix A may also be used, as a simple default option, if a company internal benchmark is used.'*

In line with above, required/expected return on equity is an appropriate benchmark for equity IRR. Accordingly, project participant considered default values for the expected return on equity of 11.75% as given in para 1 and para 6 of Appendix A of Guidelines on the Assessment of Investment Analysis, version 05, which is expressed in real terms. It was also noted that these default values were available to the PP at the time of this investment decision. The equity IRR calculated is nominal equity IRR as escalation is considered in O&M cost. Accordingly PP converted the default benchmark which is in real terms into nominal terms by using the following equation

Nominal Benchmark = (1+ Benchmark real)*(1+ Inflation rate) -1

The validation team referred the source 'Professional Management Education website /53/, the same equation is mentioned for converting real into nominal values. Hence the validation team considers the above equation as appropriate for converting real benchmark into nominal benchmark based on which the following relation is derived to calculate the benchmark.

Nominal Benchmark estimated = (1+11.75%)*(1 + inflation rate forecast in %)-1

As per the para 7 of Appendix A of Guidelines on the Assessment of Investment Analysis, version 05, states that "the inflation rate shall be obtained from the inflation forecast of the central bank of the host country for the duration of the crediting period. If this information is not available, the target inflation rate of the central bank shall be used. If this information is also not available, then the average forecasted inflation rate for the host country published by the IMF (International Monetary Fund World Economic Outlook) or the World Bank for the next five years after the start of the project activity shall be used." Reserve Bank of India (RBI) is Central Bank of host country (India) and it is India's monetary authority.

The RBI is supervisor of financial system, issuer of currency and manages foreign exchange reserves of the country. Thus the inflation forecast by RBI can be considered as reliable and authentic. The WPI inflation forecasted by RBI for next 10 years is given in below table:-

Phase of project	Investment decision date	Capacity (MW)	WPI-Median Inflation forecast by RBI for 10 Yrs.	Default value for India based on UNFCCC guidelines	Benchmark
Tamil Nadu WTGs	10th Aug 2012	100.5	6.00%[5]	11.75%	**18.46%**
Karnataka and Andhra Pradesh WTGs	25th April 2013	170	6.00%[6]	11.75%	**18.46%**

So PP has used the forecasted inflation rate for 10 years published by the Reserve Bank of India (RBI) for the conservative estimation of the benchmark. Thus the validation team considers that RBI inflation forecast for 10 years as appropriate for the project activity. EPIC verified all the above said documents and confirmed that the benchmark identified to compare the financial attractiveness of the project activity is appropriate.

Choice of financial Indicator

PP has chosen post-tax equity IRR as the financial indicator for proving the additionality. The validation team assessed the timing of availability of the input values such as capacity, number of machines, project cost, O&M cost and its escalation, tariff, Tax Depreciation rate, Book depreciation rate and Income tax rate, and found that the values were readily available to the investors during the investment decision meeting in which the investor took the investment decision. Table below provides the explanation and justification for the applied values for the project activity. Further the worksheets are provided by the PP which reflect the calculations /18/

Parameter	Tamil Nadu WTGs	Karnataka WTGs	Andhra Pradesh WTGs	Validation assessment
Capacity of each WTG	1.5 MW	0.85 MW	0.85 MW	Verified against DPR & Term sheet/04/ and cross verified against the purchase order/07/ placed by the PP to the technology supplier for actual implementation and also the commissioning certificates/06/.
No of	67	118 (112 actual implementatio	44	Verified against DPR &Term sheet /04/ and cross verified against the purchase order/07/ placed by the PP to the technology supplier

[5] https://rbidocs.rbi.org.in/rdocs/Publications/PDFs/01SPF300712F.pdf

[6] https://rbidocs.rbi.org.in/rdocs/Publications/PDFs/01SPFMD250113_F.pdf

WTGs		n)		and also the commissioning certificates[/06/]. The same has been confirmed during onsite visit.
Total capacity	100.5 MW	100.3 MW (95.20 MW actual implementation)	37.4 MW	Verified against DPR & Term sheet [/04/] and cross verified against the purchase order[/07/] placed by the PP to the technology supplier and also the commissioning certificates[/06/]. The same has been confirmed during onsite visit.
Plant Load Factor	26.82%	22.00%	21.00%	The annual PLF applied is considered from the third party assessment certificate[/13/]. The validation team verified the document and found to be in line with the requirements of paragraph 3b of "Guidelines on Reporting and Validation of Plant Load Factors" EB 48 Annex 11.
Period of assessment	20 years	20 year	20 year	The technical life of the WTG is 20 years and this has been confirmed from the project life mentioned in the by the declaration provided by technology supplier. Therefore, financial analysis carried for 20 years is acceptable
Deration (after 10 years)	5.00 %	5.00 %	5.00 %	The validation team has reviewed the TERI report[/11/] and found that the applied rate was found to be correct which is in accordance with paragraph 6 of EB 62 Annex 5. The validation team also assessed the equity IRR with zero deration rates and found that the resultant equity IRR does not cross the benchmark.
Tariff	INR 3.68 (after including electricity tax of 5% on the base tariff applicable for HT – 1 A consumer)	INR 3.70 (PPA tariff 4.70)	INR 4.70	The values used based on the respective state tariff order available at the time of investment decision. The tariff order is the document through which the State Electricity Regulatory Commission determines the tariff rate applicable for wind power projects. The tariff orders /35/ are a publicly available document and available at the time of investment decision. The validation team also crosschecked the tariff with corresponding power purchase agreements (i.e actual tariff and found that the resultant IRR is well within the benchmark). The value used for the financial analysis is acceptable to the validation team. Further, an increase in 10% of the tariff has been covered under sensitivity analysis.

Operation and maintenance	INR 92.76 million (Term sheet)	INR 90.16 million (DPR)	INR 37.82 million	It is verified against the DPR[/04/]. The validation team has cross verified against the operation and maintenance agreement signed between the PP and the service provider[/14/], and found that the value of O&M cost considered for project is appropriate. PP has also subjected the O&M cost to sensitivity; and the validation team observed that even with 10% variation in O & M cost in the sensitivity analysis the equity IRR is below the benchmark. Therefore, the O & M cost as per offer letter is acceptable by the validation team. However, the value is accepted as per Guidance of the 'guidelines on the assessment of investment analysis'.
Escalation in O&M cost /annum	5.0 %	5.0%	5.0%	The evidences such as DPR and term sheet[/04/] have been verified. The validation team has cross verified against the state tariff order[/10/], which recommends a higher escalation of 5.72% in case of Andhra WTGs and found that the value of escalation in O&M cost considered for project is conservative, but for TN and Karnataka, the tariff orders refers to the application of 5%. PP has also subjected the O&M cost to sensitivity; and the validation team observed that even with 10% variation in O & M cost in the sensitivity analysis the equity IRR is below the benchmark. Therefore, the O & M cost as per offer letter[/04/] is acceptable by the validation team.
Project cost	INR 5567.70 million (Term sheet)	5771.40 million (DPR)	INR 2095.00 million (DPR)	The Term sheet and DPR[/04/] available at the time of investment decision were verified. The project cost includes, supply of WTG, erection and commissioning of the WTG, power evacuation and land cost. Further, variability in cost has been covered under sensitivity analysis. Therefore, project cost was found acceptable as per the document a t the time of investment decision. Further independent verification of the actual costs incurred was done by review of the CA certificate / / in which case the project IRR was still below the benchmark.
Insurance cost	INR 8.35 million	INR 8.66 million	INR 3.14 million	During the time of investment decision PP has considered 0.15% of the total project cost as insurance cost. The value was based on General Rules and Regulation of Tariff advisory committee. Further the validation team has ensured that insurance has been calculated as per the TAC order
Residual	INR 556.77	INR 577.14	INR 209.50	PP has calculated book depreciation based

Book depreciation	million	million	million	on the residual value of machinery as 10% and calculating it by Straight Line Method (SLM) as per state tariff order[/10/]. The validation team has cross checked the same and found to be correct and hence accepted.
Salvage value	10%	10%	10%	PP has sourced the value as mentioned in the state tariff order. As per the tariff order the depreciation is allowed up to a maximum of 90% of the capital cost; and hence, salvage value considered (10%) at the time of investment decision is appropriate. The validation team has cross checked the same and found to be correct and hence accepted.
Debt: Equity	70:30	70:30	70:30	The validation team has reviewed the state tariff orders[/10/] and found that the applied rate was found to be correct which is in accordance with paragraph 6 of EB 62 Annex 5. However, a sensitivity analysis has been performed covering the mentioned value. Hence, the debt equity ratio considered in the investment analysis is acceptable to the validation
Interest rate	12.00%	12.50%	12.50%	The interest rates have been considered for the investment analysis base on the state tariff order[/10/] available at the investment decision. The validation team has cross verified the same with the loan sanction letter and found the value appropriate
Corporate tax rate	30%	30%	30%	The tax rate is sourced from Income Tax Act and it is cross checked and found to be correct which was applicable at the time of investment decision
MAT	18.50%	18.50%	18.50%	The tax rate is sourced from Income Tax Act and it is cross checked and found to be correct which was applicable at the time of investment decision
Service tax	12.00%	12.00%	12.00%	The tax rate is sourced from Income Tax Act and it is cross checked and found to be correct which was applicable at the time of investment decision
GBI	NA	0.50 INR / kWh	0.50 INR / kWh	GBI benefits (as per MNRE scheme) are considered for Karnataka and Andhra Pradesh. However for TN, it is not considered as the PP is not availing the benefits, undertaking letter to this effect is obtained ad verified. The impact on additionality by considering the GBI benefits was verified and found that the resulting IRR is well within the benchmark.

Based on the information verified, the validation team was able to confirm that the input parameters used in the investment analysis are reasonable and adequately represent the economic situation of the project activity at the time of the investment decision.

Wind Project Investor	Investment decision date	Capacity (MW)	Equity IRR without CDM	Default Value Benchmark
Mytrah Vayu Krishna Private Limited (Karnataka)	25th April 2013	112 X 0.85	7.66%	18.46%
Mytrah Vayu Krishna Private Limited (Andhra Pradesh)	25th April 2013	44 X 0.85	14.07%	18.46%
Mytrah Vayu (Manjira) Private Limited (Taminadu)	10th August 2012	67 X 1.5 MW	10.66%	18.46%

Sensitivity analysis

To substantiate the robustness of the results obtained above, the sensitivity analysis has been conducted. In accordance with para 20 of the investment guidance in EB 62, Annex 5, the PP has conducted a sensitivity analysis on the financials by varying the parameters which have a bearing of 20% or more on either the project costs or the project revenues and has tabulated the results. The scenarios considered for the purpose of sensitivity analysis are +10% increase and -10% decrease in annual generation, project cost, tariff and O & M cost.

The results of sensitivity analysis clearly demonstrate that in all probable scenarios, the project activity is lower than the benchmark. (i.e. the project is unable to acquire returns equal to that of benchmark). These results of sensitivity analysis were evaluated and were found to be correct; they indicate robustness of the parameters used for the investment analysis. The revenues of project activity would be insufficient to justify the required investment and it is observed that with the benefits of VCS the project is favorable option to invest.

The results of sensitivity analysis are as follows:

For Karnataka state (Mytrah Vayu Krishna Private Limited)

Variation %	-10%	Normal	10%	Breaching Value
PLF	5.23%	7.66%	10.03%	43.20%
O&M Cost	7.98%	7.66%	7.33%	-470.00%
Project Cost	10.15%	7.66%	5.72%	-30.90%

Tariff Rate	5.40%	7.66%	9.95%	45.83%

For Andhra Pradesh (Mytrah Vayu Krishna Private Limited)

Variation %	-10%	Normal	10%	Breaching Value
PLF	10.10%	14.07%	18.25%	15.50%
	14.46%	14.07%	13.66%	-170.00%
Project Cost	18.46%	14.07%	10.82%	-14.00%
Tariff Rate	10.38%	14.07%	18.01%	16.50%

For Tamil Nadu Mytrah Vayu (Manjira) Private Limited

Variation %	-10%	Normal	10%	Breaching Value
PLF	7.46%	10.66%	13.83%	22.27%
O&M	11.04%	10.66%	10.26%	-206.81%
Project Cost	13.77%	10.66%	8.14%	-19.84%
Tariff Rate	7.46%	10.66%	13.83%	22.27%

All the input parameters applied in the IRR calculations were found to be suitable and accurate; these were crosschecked with the supporting documents and publically available sources. Thus the financial returns of the proposed VCS project activity would be insufficient to justify the required investment and it is observed that only with the benefits of VCS the project is a favourable option. Hence, the project is concluded to be strongly additional and VCS revenue is considered imperative to bridge the gap between the equity IRR and the benchmark. Based on the evaluation it was evidenced that the returns from the project without the revenue from VCS are less than the benchmark. Hence, it is confirmed that revenue from VCS was considered essential for the project activity. In this context, the project activity is considered additional and all the requirements of VVS[/1/] is satisfied.

Common practice analysis

The PP has conducted the common practice analysis as per the requirements of “Tool for the demonstration and assessment of additionality Version 07 and the latest “Guidelines on Common Practice, Version 02.0” has been followed for the project activity. In line with the guidance, the PP has selected the India (host country) as the default applicable geographical area for the assessment of common practice. Further, the PP has selected the step-wise approach given in the Guidelines on Common Practice, Version 02.0; to carry out the common practice analysis.

As per the Step 1 of the guidelines, the applicable output range as ± 50% of the design output range (199.70 MW) is 99.85 MW to 299.55 MW.

In the step 2, PP has identified the plants that deliver the output in the range of 99.85 MW to 299.55 MW in the host country India. The geographical scope has been identified as host country India. This is the default option which is in accordance with paragraph 1 of the Guidelines on Common Practice, Version 02.0. In accordance with the guidelines, the wind power plants that have started commercial operation before the start date, which is 21/02/2014, were identified. A. The similar power projects were identified from the CDM pipeline and submitted as separate worksheet[/17/]. The PP has correctly excluded the power plants that are registered or are under validation. Validation team confirms from its host country expertise that the comprehensive list of all power plants used for Nall is correct and valid. The PP has not considered other type of power plants that are different from wind power plants owing to its different energy/fuel source. Not considering other power plants results in conservative F factor due to lower denominator (Nall) and does not impact Nall – Ndiff, as the all the projects considered except wind power plants, are considered as plants with different technologies and included under Ndiff.

In step 3, the PP has identify those that are neither registered CDM project activities, project activities submitted for registration, nor project activities undergoing validation and diffentiated with the total projects identified in the above step 2. That is the identified number for N_{all} = 0. In step 4, the PP has identified those that apply technologies that are different to the technology applied in the proposed project activity. The different projects were identified as 0. The PP has followed paragraph 4 (d) of the "Guidelines on common practice", version 02. The paragraph 4 states that "Different technologies are technologies that deliver the same output and differ by at least one of the following (as appropriate in the context of the measure applied in the proposed VCS project activity and applicable geographical area):
(d) Investment climate on the date of the investment decision, inter alia:
(i) Access to technology;
(ii) Subsidies or other financial flows;
(iii) Promotional policies;
(iv) Legal regulations;"

The policies/tariff for each state is regulated by the State Electricity Regulatory Commission of the respective states. The project activity is located in the states of Tamilnadu, Karnataka nad Andhra Pradesh. Therefore, it can be assumed that the policies and tariff are different in different states and hence projects installed in other states have been considered in Ndiff. The identified projects in Nall (step 3) located in states other those mentioned above states and are regulated by the respective State Electricity Regulatory Commissions (SERCs). Therefore, these projects come under different investment climate and have been considered under N_{diff}.

In step 5, the PP has calculated F factor as less than 0.2 and Nall – Ndiff = 0. The project is not a common practice in India as F factor is less than 0.2. Thus, in view of the guidance given in the Tool for the demonstration and assessment of additionality Version 07, the validation team confirms that the analysis has been performed as per the step 4 of the "Tool for the demonstration and assessment of additionality" Version 7 and in line with the "Guidelines on Common Practice, Version 02.0".

The team based on the assessment has been able to confirm that the project activity can be regarded as not a common practice in the host country India.

Conclusion

EPIC can confirm that all data, rationales, assumptions, justifications and documentation provided by the project participants to support demonstration of additionality are credible and reliable.

By assessing the evidences presented and cross-checking the information contained in, the validation team considers the reasonings for the proposed project additionality demonstration is credible and

reasonable i.e. the proposed project has the ability to reduce anthropogenic emissions of greenhouse gases by sources below those that would have occurred in the absence of the registered CDM project activity.

3.2.6 Quantification of GHG Emission Reductions and Removals

Baseline emissions (BEy):
As per ACM0002 Version 16, equation 7, baseline emissions include only CO_2 emissions from electricity generation in fossil fuel fired power plants that are displaced due to the project activity and are calculated as follows:

$$BE = EG \cdot EF_{grid,CM,y}$$

Where:
BE_y = Baseline emissions in year *y* (tCO_2)
$EG_{PJ,y}$ = 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)
$EF_{grid,CM,y}$ = Combined margin CO_2 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" (tCO_2/MWh)

Calculation of $EG_{PJ,y}$

The project activity being the Greenfield plant, the calculation of $EG_{PJ,y}$ is carried out using the approach (a) as mentioned in ACM0002 Version 16, equation 8 as below:

$$EG_{PJ,y} = EG_{facility,y}$$

Where:
$EG_{PJ,y}$ = 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)
$EG_{facility,y}$ = Quantity of net electricity generation supplied by the project plant/unit to the grid in year *y* (MWh)

Determination of $EG_{PJ,y}$:The amount of electricity supplied by project to grid is estimated to be *488,388.4 MWh/ year* . This value is calculated based on the estimated PLF for the individual sub-projects. For expost, the value shall be monitored in calibrated energy meter and as recorded in monthly generation report issued by state utility/service provider. The same can be cross checked from the invoice copy raised to DISCOM.

Determination of $EF_{grid,CM,y}$: CM (combined margin) emission factor for SOUTHERN grid of India has been calculated on the basis of sum of 75% of OM (operating margin) and 25% of BM (build margin).
$EF_{grid,CM,y} = 0.75 * EF_{grid,OM,y} + 0.25* EF_{grid,BM,y}$

The CM emission factor is calculated as 0.9817 tCO_2e/MWh for southern grid as per the "Tool to calculate the emission factor for an electricity system", Version 4 and has been sourced from the Calculated from CEA database, Version 10, December 2014[/20/].

Calculation of EF_{OM}: The simple OM emission factor have been calculated using the Simple OM method as the low-cost/must run resources constitute less than 50% (for year 2011-2012, 2012-2013 & 2013-2014)/10/. The ex-ante vintage data has been used for the OM calculation of the project. The latest available data vintage at the time of PD submission to DoE is taken for the EF calculations. EF_{OM} for the most recent three years (2011-2012, 2012-2013 & 2013-2014) and the weighted average is calculated to be 0.9887 tCO_2e/MWh. The calculated EF_{OM} is fixed ex-ante and will not be reviewed in the crediting period of the project activity.

Calculation of EF_{BM}: BM is calculated ex-ante based on the average emission intensity of 20% most recent capacity additions in the grid based on the net generation for the year 2013-2014 Consequently, the Build Margin emission factor is calculated to be 0.9609 /MWh. This is as per the "Tool to calculate the emission factor for an electricity system", Version 4 and has been sourced from the Calculated from CEA database, Version 10, December 2014. The validation team accepted the same as this follows the latest version of the database available to the project participant at the time of submission of PD for validation. So, the validation team is of the opinion that all the assumptions and data used by the PP discussed in the PD are appropriate and conservative and same has been cross checked with the references and the sources provided by the PP in the PD. The baseline emission estimated is 479,448 tCO_2/yr.

Project emissions

As per ACM0002, for most renewable power generation project activities, $PE_y = 0$. However, some project activities may involve project emissions that can be significant. These emissions shall be accounted for, by using the following equation:

$$PE_y = PE_{FF,y} + PE_{GP,y} + PE_{HP,y}$$

Where,

PE_y = Project emissions in year *y* (tCO_2e)
$PE_{FF,y}$ = Project emissions from fossil fuel consumption in year *y* (tCO_2)
$PE_{GP,y}$ = Project emissions from the operation of geothermal power plants due to the release of non-condensable gases in year *y* (tCO_2e)
$PE_{HP,y}$ = Project emissions from reservoirs of hydro power plants in year *y* (tCO_2e)
As the project activity is a wind energy and solar based power generation, the project emissions are not applicable to the project activity. Hence, $PE_y = 0$

Leakage
As per ACM0002, no leakage emissions are considered. The main emissions potentially giving rise to leakage in the context of electric sector projects are emissions arising due to activities such as power plant construction and upstream emissions from fossil fuel use (e.g. extraction, processing, transport). These emissions sources are neglected. Therefore, $LE_y = 0$.

Emission Reductions
As per equation 13 of ACM0002 Version 16, the emission reductions are calculated as follows:

$$ER_y = BE_y - PE_y$$

ER_y = 479,448- 0 = **479,448 tCO_2e**

PP has calculated the emission reductions using the above equation and is estimated to be 47,055 tCO_2e per annum. The calculation of the emission reductions has been ensured by the validation team based on the latest CER calculation sheet[/19/]

The validation team did not find any additional uncertainty associated with the calculation of emission reductions other than those inherent with the applied methodology and default emission factors used.
Validation team confirms that:
- All relevant assumptions and data are listed in the project description, including their references and sources.
- All data and parameter values used in the project description are considered reasonable in the context of the project.

- All estimates of the baseline emissions can be replicated using the data and parameter values provided in the project description.

Validation team is able to confirm that the methodology and relevant tools have been applied correctly to calculate baseline emissions, project emissions, leakage and net GHG emission reductions and removals.

3.2.7 Methodology Deviations

The project does not seek any methodology deviations.

3.2.8 Monitoring Plan

The approved baseline and monitoring methodology "ACM0002" has been applied. The monitoring plan is in accordance with the monitoring methodology; the monitoring plan will give opportunity for real measurement of achieved emission reductions. The monitoring plan provides detailed information related to the collection and archiving of all relevant data needed to:

- Estimate or measure emissions occurring from GHG sources, sinks and reservoirs
- Determine the baseline emissions
- Determine the project emissions

The monitoring plan as per ACM002, version 16 has been clearly described in section 4 of the VCS PD.
EPIC confirms that the monitoring arrangements described in the monitoring plan are feasible within the project design, and the means of implementation of the monitoring plan are sufficient to ensure the emission reductions achieved by/resulting from the proposed CDM project activity can be reported ex post and verified.

Parameters Determined at validation (Ex-ante)

The following parameters are determined ex-ante and mentioned in section 4.1 of the PD:

Data / Parameter	Unit	Value	Assessment
EF_y (Combined Margin of the SOUTHERN Grid)	tCO_2/MWh	0.9817	Project participant has used the official published data on operating and build margin emission factors. The version of the data used is as it is the latest version available on Dec 2014 the date of submitting the PD to DoE (viz start of validation). This data is published by Central Electricity Authority, CEA (version 10) who is the sole authority for the publication of such data in India. CEA has published a database of carbon dioxide emission factors for the power sector in India based on detailed authenticated information obtained from CEA on all operating power stations in the country. Project participant has applied weightage factors for the OM and BM [75% & 25% respectively] as specified in the tool to arrive at the emission factor for the combined margin. Validation team has checked the emission factor calculations from CEA database version 10 and the value of EF_y, is found to be correct. The validation

			team agrees to this emission factor since it is based on the official background data published by CEA. EPIC confirms that the database is an official publication of Ministry of Power, Government of India. The calculation and assumptions were verified by the validation team and found to be correct and appropriate.
$EF_{grid,BM,y}$ (Build Margin of the SOUTHERN Grid)	tCO_2/MWh	0.9609	Project participant has used the official published data on operating and build margin emission factors. The version of the data used is as it is the latest version available on Dec 2014 the date of submission of the PD to DoE (viz start of validation). This data is published by Central Electricity Authority, CEA (version 10) who is the sole authority for the publication of such data in India. CEA has published a database of carbon dioxide emission factors for the power sector in India based on detailed authenticated information obtained from CEA on all operating power stations in the country. Validation team has checked the emission factor calculations from CEA database version 10 and the value of EF_{BM} is found to be correct. The validation team agrees to this emission factor since it is based on the official background data published by CEA. EPIC confirms that the database is an official publication of Ministry of Power, Government of India. The calculation and assumptions were verified by the validation team and found to be correct and appropriate.
$EF_{grid,OM,y}$ (Generation Weighted Operational Margin of the SOUTHERN Grid)	tCO_2/MWh	0.9862	

Parameters to be monitored (ex-post)

Monitoring of the project activity involves all the parameters necessary for calculation of GHG emission reduction by the proposed project activity. These parameters are mentioned in section 4.2 of the PD. The parameters, which are to be monitored include:

Parameter	**Assessment**
Quantity of net electricity generation supplied by the project plant/unit to the grid in year *y* **$EG_{facility,y}$** (MWh/year)	The electricity generated will be evacuated to SOUTHERN grid at substation / project site and it will be measured by a main energy meter and check meter which are installed at the grid interconnection point. The main meter readings will be the basis for the estimation of emission reduction calculations and; the check meter readings will be used for cross checking. Monthly (JMR) readings are taken jointly by the representative of State Electricity Supply Company Limited and site in charge of O&M contractor or representative of PP and a statement is

	prepared and signed by the representatives of both the parties for total electricity exported to grid, total electricity imported from the grid and the net electricity supplied. The meters installed are capable of measuring export and import. The net electricity exported will be calculated as difference of export and import meter reading. **For WTGs** Based on the JMR reading and LCS data of individual WTGs, a credit statement/share certificate is prepared which forms the basis for net electricity supplied to the grid. The same has been cross checked with the monitoring plan provided in final PD and interview with PP/O&M service provider during the site visit. The net electricity exported to the SOUTHERN grid will the basis of emission reduction calculations. This reading can be cross verified with the actual invoices presented to State Utility. Project participant has chosen renewal crediting period of 10 years. Continuous monitoring will be carried out by energy meters. Continuous measurements and monthly recording will be carried out.

Electricity meter of accuracy class not inferior to 0.2s shall be used. Main electricity meters at sub-station will be calibrated as per the norms of the state utility; and the calibration will be incompliance with the national standards/regulation. The accuracy class of the energy meter is as per the CEA notification and hence complies with the International Standards. Calibration records shall be maintained by state utility/01/, which is in compliance with clause 14 (3) of the national regulations. The O & M of the project activity will be done by the technology supplier who has dedicated trained personnel to carry out the day to day operation and maintenance of the project activity so as to monitor the quantity of electricity supplied to the grid.

The operational and management structure implemented together by PP and the technology supplier is summarized below:

- The O & M team under the shift in-charge monitors continuous electricity generation from individual WTGs / Solar power plant and compile so as to calculate the monthly electricity generation.
- The Plant-in-Charge maintains the data records received from shift in-charge and forward to the head of the PP.
- Final data management and invoicing against net electricity generation will be done by the individual sub-projects
- The data will be archived for 2 years after the end of the crediting period by the PP

EPIC confirms that the monitoring plan mentioned in the PD is in accordance with the requirements mentioned in the monitoring methodology and the local regulatory requirements of the state utility, as well the monitoring arrangements described in the monitoring plan are feasible within the project design. EPIC is of the opinion that the monitoring plan will give opportunity for real measurement of achieved emissions reductions for 2 years after the crediting period.

The validation team based on local and sectoral expertise deemed acceptable the relevant monitoring equipment along with their accuracy class and calibration frequency. Detailed responsibilities and authorities for project management, monitoring procedures, calibration procedures and QA/QC procedures have been presented and were verified during follow up interviews. The detailed

monitoring practice is considered appropriate and the implementation of these will enable subsequent verification of the project's emission reductions.

3.3 Non-Permanence Risk Analysis

The Project is not an AFOLU (Agriculture, Forestry and Other Land Use) project and therefore no surveys are required. Hence this is not applicable.

3.4 Environmental Impact

No significant adverse environmental impact is expected due to project activity, since the project is a renewable energy (wind energy and solar) project with no project emissions. Further, as per the Schedule 1 of the EIA notification dated 1/12/2009[7]and latest notification dated 24/12/2013[8], given by the Ministry of Environment and Forests under the Environment (Protection) Act 1986, the proposed Project activity does not fall under the list of activities requiring EIA as the environmental impacts for such project are not considered as significant by the host Party. The validation has verified all the statutory clearances and commissioning certificates/06/. The validation team concludes that all the clearances obtained are in accordance with the procedures required by the host party and no significant environmental impacts are expected from the project activity.

3.5 Comments by Stakeholders

The project proponent organized the local stakeholder consultation to get their comments / feedbacks and suggestions of the project activity. Details of Stakeholders' consultation meeting/08/ and invitation by the individual sub-projects are detailed below :-

Project Promoters' Name	Invitation Date	Meeting Date	Location of the LSM
Mytrah Vayu (Manjira) Private Limited	10-October- 2012	23-October-2012 24-October-2012 25-October-2012	Tamil Nadu
Mytrah Vayu Krishna Private Limited	12-April-2013	22-April-2013	Andhra Pradesh
Mytrah Vayu Krishna Private Limited	11-April-2013	21-April-2013	Karnataka

[7] http://moef.nic.in/downloads/rules-and-regulations/3067.pdf

[8] http://envfor.nic.in/sites/default/files/ia-24122013.pdf

Local community, local village administration, local vendors, representatives of the technology supplier, representatives of project participant, and representatives of individual sub-projects were present at the meeting. The validation team has cross checked the attendance list of stakeholders and also interviewed some of the local stakeholders during site visit to confirm the consistency of the information provided in the PD.

A summary of comments has been provided by PP and it is found that no adverse comment was received for the project activity. This has also been verified by the validation team during site visit at the WTGs and Solar site. Further, the interviews confirmed that there was no adverse comment about the project and this project will lead to employment generation and better environmental conditions. EPIC considers the local stakeholder consultation carried out adequately and can confirm that the process is credible.

4 VALIDATION CONCLUSION

M/s. **Mytrah Energy (India) Limited** has contracted EPIC Sustainability Services Private Limited (EPIC) to validate the project: *"Wind Based Power Generation by Mytrah Energy (India) Limited (EKIESL-VCS-January-16-01)*" with regard to VCS Standard 3.5 requirements and the information provided by the project proponent related to the project design, operation, monitoring and reporting.

EPIC has reviewed the project description documents and subsequently carried out site visit interviews to confirm the fulfilment of stated criteria. The project intends to reduce GHG emissions by displacing fossil fuels (for the heat generated to meet captive requirements). A risk based approach has been followed to perform this validation. In the course of the draft validation 09 CARs (Corrective Action Requests) and 02 Clarification Request (CLs) were raised and successfully closed.

The project activity has applied the baseline and monitoring methodology, **ACM0002: Grid-connected electricity generation from renewable sources --- Version 16.0**, which is an approved methodology under the CDM programme and is acceptable under VCS Version 3. The baseline has been determined in accordance with the stated approved baseline methodology.

Analysis of the proposed project activity reveals that the emission reductions resulting from the project activity are real, measurable and give long term benefits and are additional to what would have occurred in the absence of the project activity. The total emission reductions from the project activity are estimated to be 4,794,480 tCO2e over the 10 years crediting period. The emission reductions forecast has been checked and is deemed likely that the stated amount is achieved given that the underlying assumptions do not change.

The monitoring plan makes sufficient provision for monitoring relevant project and baseline emission indicators. Responsibilities and authorities for project management, monitoring and reporting and QA/QC procedures have also been addressed. Based on the information provided by the project developer, it is EPIC's opinion that the "*Wind Based Power Generation by Mytrah Energy (India) Limited (EKIESL-VCS-January-16-01)*" in India as described in the VCS PD, Version 02 dated 10/02/2016, meets all relevant VCS Standard ver 3.5 requirement and correctly applied CDM simplified baseline and monitoring methodology ACM002, version 16.0.

Epic Sustainability Service's validation opinion is purely based on the information made available to us by the project proponent during the course of validation and hence cannot guarantee the accuracy or correctness of the information. Keeping this in mind, no party can hold EPIC liable for any decisions made or not made in this report.

Prepared by	Approved by :
Mr. A. Prabu Das	Mr. K. Sudheendra
(Lead Auditor)	(Head Operations)

APPENDIX A: RESOLUTION OF FINDINGS

Correction Action Request (CAR) or Clarification Request (CR) or Forward Action Request (FAR)	Reference to Table 1 & 2	Response from project participant	Validation team conclusion
CAR.1 PD does not specifically describe the pre-project scenario of the captive scenario in T.N state. Further, the details of the entity to which the electricity is wheeled is not identified.		Description as provided in the section 1.1 of the VCS PD is revised, to clarify the pre project scenario for the captive projects.	The facility (in case of TN) to which the electricity is wheeled was sourcing electricity from grid in the pre-project scenario. This has been verified from the electricity bills, and the information is updated in the revised PD. *Conclusion: Resolved*
CAR.2 Considering that the project activities is commissioned and in operation, indicate the precise Latitude and longitude details of the WEGs in the standard format in the PD. Support the location information along with the documentary evidence.		Geo-coordinate of the WEGs is mentioned in the Latitude and longitude details is been mentioned in the revised version of PD. The same is been provided with appropriate documentary evidence.	Lat-long is updated in the VCS PD and the supporting evidence is verified to be meeting the requirement. *Conclusion: Resolved*
CAR.3		Supporting documents/links for all the input values considered in the investment	Supporting links submitted have been reviewed and their applicability to the project as on

Correction Action Request (CAR) or Clarification Request (CR) or Forward Action Request (FAR)	Reference to Table 1 & 2	Response from project participant	Validation team conclusion
Supporting documents/links for all the input values considered in the investment analysis is not submitted.		analysis is now submitted along with this submission.	date of investment decision is verified. Further the validation team has also cross verified the input values with other public sources available and also by applying the actual values applicable to the project activity. *Conclusion: Resolved*
CAR.4 Common practice analysis carried out is not correct; refer the latest version of the guidance document.		Common practice analysis carried out now refer latest version, "*Methodological Tool on Common Practice, version 03.1 9 EB84, Annex 7*". DOE is requested to refer revised set of documents submitted along with this submission.	Common practice analysis presented in the revised PD, supported by means of excel sheet, is verified to be as per the validation requirement. *Conclusion: Resolved*
CAR.5 PLF of the project activity is not demonstrated as per *EB 48 Annex 11* in the PDD.		PLF report of the proposed project activity is been provided along with this submission for the respective states.	The annual PLF applied is considered from the third party assessment certificate. The validation team verified the document and found to be in line with the requirements of paragraph 3b of "Guidelines on

[9] https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-24-v1.pdf

Correction Action Request (CAR) or Clarification Request (CR) or Forward Action Request (FAR)	Reference to Table 1 & 2	Response from project participant	Validation team conclusion
			Reporting and Validation of Plant Load Factors" EB 48 Annex 11. *Conclusion: Resolved*
CAR.6 PD indicates the operational lifetime of the project activity as 25 years – evidence to support this claim is not submitted.		Operational life time of the document is been submitted along with this submission.	WTG suppliers conformation regarding life time is verified, the validation team has also verified the DPR, PPA signed, respective state tariff order for conformation. *Conclusion: Resolved*
CAR.7 Information provided in section 6 of the PD, relating to stake holder consultation is inadequate, (date/mode of invite, date of LSH, venue and information on list of attendees not presented), to verify and confirm the stakeholder consultation process carried out for the project activity. Further, the supporting documents as referred in Section 6 for the LSH process are not submitted for assessment.		Documents relating to the stakeholders feedback round is been submitted, DOE is requested to refer the same.	Stakeholder information presented in the revised PD is detail enough to verify the conduct of the LSH process for the project activity. Supporting documents submitted conform the same. *Conclusion: Resolved*

Correction Action Request (CAR) or Clarification Request (CR) or Forward Action Request (FAR)	Reference to Table 1 & 2	Response from project participant	Validation team conclusion
CAR.8 Document to support the investment/management decision for the implementation of the project activity is not submitted for assessment		Board resolution to support the investment/management decision for the implementation of the project activity is submitted for assessment is been	Extract of the board resolution copy is provided in support of the investment decision taken for the project activity. Capacity, location, technology and carbon revenue consideration has been confirmed from the review of the document submitted. *Conclusion: Resolved*

Correction Action Request (CAR) or Clarification Request (CR) or Forward Action Request (FAR)	Reference to Table 1 & 2	Response from project participant	Validation team conclusion
CAR.9 Procedures to adjust the emission reductions for the scenario where the monitoring period and the electricity billing cycle are not in agreement is not detailed in the PD. .		Procedures to adjust the mismatch between the billing date & start date of monitoring period is been provided in relevant sections of the VCS PD.	Procedures detailed in the revised PD is accepted by the validation team as it enabled to determine conservative estimate of ER during the period where MR dates mismatch with the billing cycle.
CL 1. Derating factor for PLF is applied in the financial analysis, whereas the same is not considered in the ER estimation, clarify.		As per the TERI report page 19, one time deration factor of 5% after 10 years is applicable and thus it does not applies to the current ER estimations.	The emission reductions are calculated for first 10 years from the date of commissioning of the earliest WTG in the project activity. Non-consideration of deration in emission reductions calculation for the first 10 years is in line with the TERI report, hence accepted by the validation team.
CL 2. Clarify the following:- • Whether the GBI is applicable for the WTGs in TN • Tariff considered in the financial analysis of Andhra WEGs is not as per the source document referred. • Final PPA dated 12/02/04 for Andhra WEGs is not submitted		• GBI is not applicable to the WTGs installed in TN. • Tariff considered for financial analysis is as per the source document. • Final PPA dated 12/02/04 for Andhra Pradesh WEGs is now submitted	• GBI benefit is not availed by the WTGs in the TN state, the undertaking letter has been provided in support of the claim. This confirmation is provided for the entire lifetime of the project activity. • Tariff considered in the

Correction Action Request (CAR) or Clarification Request (CR) or Forward Action Request (FAR)	Reference to Table 1 & 2	Response from project participant	Validation team conclusion
			revised PD and the financial excel submitted is as per the source referred, further the value is applicable at the time of investment decision. • Final PPA applicable to the WTGs in Andhra Pradesh state is submitted and the tariff implications to the project activity is verified.

APPENDIX B: The following table outlines the documentation reviewed during the verification:

Reference	Details of supporting documents
1	VCS Standard Version 3.5
2	VCS program guide 3.5
3	CDM methodology ACM002, version 16.0
4	DPR and Term sheet
5	VCS PD version 01 dated 29th January 2016 VCS PD version 02 dated 10th Feb 2016
6	Certificate of commissioning of the WTGs
7	Purchase order of WTGs
8	Stakeholder consultation meeting documents
9	Power Purchase/Supply Agreement with respective State Electricity Board/9/
10	State Regulatory tariff orders (Karnataka, Andhra Pradesh and Tamil Nadu)
11	TERI report
12	Declaration by PP for meeting VCS validation requirements
13	PLF assessment certification from third party
14	Operation and maintenance agreement signed between the PP and the service provider
15	Tool to calculate the emission factor for an electricity system Version 04.0, EB 75, Annex 15

16	Certificate from Chartered Accountant for Actual project cost incurred
17	Worksheet for common practice
18	IRR financial calculation sheets – (for 3 subprojects)
19	CER calculation sheet
20	CEA Database version 10