



Verified Carbon Standard

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



Project title	Wind Based Power Generation by Mytrah Energy (India) Limited (EKIESL-VCS-January-16-01)
Project ID	1521 ¹
Crediting period	21-February-2024 to 20-February-2034 (inclusive both of dates)
Original date of issue	16-December-2025(Inclusive of both the dates)
Most recent date of issue	25-March-2026
Version	05
VCS Standard Version	4.7 ²
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¹ <https://registry.verra.org/app/projectDetail/VCS/1521>

² <https://verra.org/wp-content/uploads/2024/04/VCS-Standard-v4.7-FINAL-4.15.24.pdf>

CONTENTS

1	PROJECT DETAILS.....	4
1.1	Summary Description of the Project	4
1.2	Audit History.....	5
1.3	Sectoral Scope and Project Type	6
1.4	Project Eligibility	6
1.5	Project Design	7
1.6	Project Proponent	7
1.7	Other Entities Involved in the Project	7
1.8	Ownership.....	8
1.9	Project Start Date	8
1.10	Project Crediting Period	8
1.11	Project Scale and Estimated GHG Emission Reductions or Removals	9
1.12	Description of the Project Activity	10
1.13	Project Location	12
1.14	Conditions Prior to Project Initiation	21
1.15	Compliance with Laws, Statutes and Other Regulatory Frameworks	21
1.16	Double Counting and Participation under Other GHG Programs	22
1.17	Double Claiming, Other Forms of Credit, and Scope 3 Emissions.....	22
1.18	Sustainable Development Contributions	23
1.19	Additional Information Relevant to the Project	24
2	SAFEGUARDS AND STAKEHOLDER ENGAGEMENT	25
2.1	Stakeholder Engagement and Consultation.....	25
2.2	Risks to Stakeholders and the Environment.....	29
2.3	Respect for Human Rights and Equity	31
2.4	Ecosystem Health	35
3	APPLICATION OF METHODOLOGY.....	37
3.1	Title and Reference of Methodology	37
3.2	Applicability of Methodology	37
3.3	Project Boundary	45

3.4	Baseline Scenario	46
3.5	Additionality	55
3.6	Methodology Deviations	66
4	QUANTIFICATION OF ESTIMATED GHG EMISSION REDUCTIONS AND REMOVALS.....	66
4.1	Baseline Emissions	66
4.2	Project Emission.....	71
4.3	Leakage Emission	72
4.4	Estimated GHG Emission Reductions and Carbon Dioxide Removals	72
5	MONITORING	74
5.1	Data and Parameters Available at Validation	74
5.2	Data and Parameters Monitored.....	75
5.3	Monitoring Plan.....	77
	APPENDIX 1: COMMERCIALY SENSITIVE INFORMATION.....	82
	APPENDIX II: METER DETAILS.....	83

1 PROJECT DETAILS

1.1 Summary Description of the Project

The purpose of the project activity is to generate electrical energy using renewable energy source (wind) for the purpose of captive utility. The project activity generates electricity using wind potential and converts it into kinetic energy using Wind turbines, which drives the alternators to generate energy. The generated electricity is exported to the regional grid system which is under the purview of the Indian grid of India.

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 implemented by Mytrah Vayu (Manjira) Private Limited Tamil Nadu state in India. These are the subsidiary companies of Mytrah Energy (India) Limited. However, the project is promoted by JSW Neo Energy Limited, which is also the project proponent in the project activity.

The power produced displaces an equivalent amount of power from the grid, which is fed mainly by fossil fuel fired power plants. Hence, it results in reduction of GHG emissions. GHG emission reductions from the project activity will be 369,594 tonnes of CO₂ and total GHG emission reductions for the chosen 10-year crediting period will be 3,695,943 tonnes of CO₂.

The Project activity is a new facility (Greenfield) and the purpose of the project activity is to generate electricity by the utilization of wind velocity, and selling the generated electrical energy from 132.6 MW project implemented by Mytrah Vayu Krishna Private Limited to respective state utilities under the Indian Grid. Further energy generation from 100.5 MW wind mill project implemented by Mytrah Vayu (Manjira) Private Limited will be for captive utilization, under Tamil Nadu state. In this process there is no consumption of any fossil fuel and hence the project does not lead to any greenhouse gas emissions. Thus, electricity would be generated through sustainable means without causing any negative impact on the environment.

Climera Carbon Private Limited is the sole project entity as a consultant and responsible for the design, implementation, and monitoring of this project. Climera is not representing, affiliated with, or acting on behalf of any other entity for the purposes of this project.

In the Pre- project scenario, the equivalent amount of electricity delivered to the grid by the project activity, would have otherwise been generated by the operation of grid-connected fossil fuel-based power plants and by the addition of new generation sources. The Pre- project scenario for the facility where the electricity is wheeled (in case of TN WEGs), the electricity was sourced from Indian grid.

The decision to implement the project activity is therefore voluntary and driven by investment considerations. The project activity goes beyond existing regulatory requirements and contributes to greenhouse gas emission reductions on a voluntary basis.

1.2 Audit History

Audit type	Period	Program	Validation/verification body name	Number of years
Validation	21-February-2014-20-February-2024	VCS	EPIC Sustainability Services Private Limited	Ten years
Verification	21-February-2014 – 01-April-2016	VCS	EPIC Sustainability Services Private Limited	Two years one month twelve days
Verification	02-April-2016 – 01-May-2018	VCS	LGAI Technological Center S.A. (Applus+ Certification)	Two years one month
Verification	02-May-2018 – 01-August-2019	VCS	LGAI Technological Center S.A. (Applus+ Certification)	One year three months
Verification	02-August-2019 – 31-March-2020	VCS	LGAI Technological Center S.A. (Applus+ Certification)	Seven months thirty days
Verification	01-April-2020 – 31-May-2021	VCS	KBS Certification Services Pvt. Ltd.	One year two months
Verification	01-June-2021 – 28-February-2022	VCS	LGAI Technological Center S.A. (Applus+ Certification)	Nine months
Verification	01-March-2022 – 31-March- 2022	VCS	LGAI Technological Center S.A. (Applus+ Certification)	One month
Verification	01-April-2022 – 30-June-2023	VCS	VKU Certification Pvt. Ltd.	One year three months
Verification	01-July-2023– 20-February-2024	VCS	LGAI Technological Center S.A. (Applus+ Certification)	Seven months twenty days
Renewal Crediting Period	21-February-2024-20-February- 2034	VCS	LGAI Technological Center S.A. (Applus+ Certification)	Ten years

1.3 Sectoral Scope and Project Type

Sectoral scope ³	01 - Energy industries (renewable / non renewable sources)
Project activity type	I - Renewable Energy Projects

1.4 Project Eligibility

1.4.1 General eligibility

The project activity applies the large-scale CDM approved methodology ACM0002: Grid-connected electricity generation from renewable sources, Version 22.0 which is eligible under VCS GHG program. Further, this project is not a fragmented part of a larger project or activity that would otherwise exceed such limits. Thus, the proposed project is eligible under the scope of the VCS program.

This project activity is a grid-connected renewable energy power generation project that displaces electricity that would otherwise have been generated by fossil fuel-based power plants connected to the regional grid. The project results in measurable, real, and verifiable greenhouse gas (GHG) emission reductions through the supply of clean electricity to the grid.

The project activity falls within the scope of the VCS Program as defined in the VCS Standard. The project does not fall under any of the project categories that are excluded under **Table 2.1 of the VCS Standard**. In particular:

- The project is not a nuclear power project.
- The project does not involve large-scale hydro power exceeding the thresholds defined by the VCS Standard.
- The project does not involve fossil fuel-based power generation, fossil fuel efficiency improvement, or fossil fuel extraction or processing activities.
- The project does not involve any other activity type that is listed as excluded under Table 2.1 of the VCS Standard.

Accordingly, the project activity is eligible for inclusion under the VCS Program and is not excluded under any provision of the VCS Standard.

The project activity has complied with all applicable procedural and timeline requirements of the VCS Program with respect to pipeline listing, engagement of the Validation and Verification Body (VVB), and submission for validation.

The project was listed in the Verra in accordance with the VCS Program requirements and within the applicable pipeline listing deadline. The project was subsequently submitted for validation which is within the validation deadline specified by the VCS Standard.

³ Projects, activities, or methodologies may be developed under any of the 16 VCS sectoral scopes: <https://verra.org/programs/verified-carbon-standard/vcs-program-details/#sectoral-scopes>

The project applies the approved VCS methodology ACM0002 version 22.0, which is an eligible methodology under the VCS Program and is applicable to grid-connected renewable electricity generation projects such as the proposed project activity.

1.4.2 AFOLU project eligibility

Not Applicable, as this project activity is non AFOLU project

1.4.3 Transfer project eligibility

Not applicable as this project activity is a new standalone project activity that has been developed and submitted directly under the VCS Program. The project is not a transferred project from any other GHG program (such as CDM, Gold Standard, or any other crediting mechanism), and therefore does not seek eligibility under the VCS rules for transferred projects.

1.5 Project Design

- ☐ Single location or installation
- ☒ Multiple locations or project activity instances (but not a grouped project)
- ☐ Grouped project

1.5.1 Grouped project design

Not Applicable, as this project activity is not grouped project

1.6 Project Proponent

Organization name	JSW NEO ENERGY LIMITED
Contact person	Ms. Shashank Sahu
Title	Assistant Manager
Address	Tower 1, 9th Floor C Wing, Seawoods Nexus Mall Sector 40, Navi Mumbai-400706.
Telephone	M No. +91 94250 94750 Tel. 022 6352 4690
Email	shashank.sahu@jsw.in

1.7 Other Entities Involved in the Project

Organization name	Climera Carbon Private Limited
Role in the project	Project Consultant

Contact person	R.K. Nimonkar
Title	Deputy General Manager
Address	Corp. Office - Awfis, 2nd Floor, Winway World Offices, Plot No. B-7, Scheme No. PU-4 Commercial, Vijay Nagar, Indore, M.P. - 452010, India
Telephone	91-8878666063
Email	rk.nimonkar@climera.co

1.8 Ownership

The Project is owned by JSW Neo Energy Limited , hence it possesses right of use of ER credits. JSW Neo Energy Limited⁴, a wholly owned subsidiary of JSW Energy, acquired Mytrah Energy (India) Limited's renewable portfolio of 1.75 GW capacity in 2022-2023.

The Ownership is demonstrated through the following documents.

1. Commissioning certificates for WTGs in the name of Mytrah Vayu Krishna Private Limited and Mytrah Vayu (Manjira) Private Limited issued by respective state nodal agencies/authorities of the Tamil Nadu, Karnataka & Andhra Pradesh States of India. These two companies are the subsidiary of the Mytrah Energy (India) Limited.
2. Power Purchase Agreement with respective State Electricity Board for sale of electricity by the Mytrah Vayu Krishna Private Limited and Wheeling Agreement is signed for the captive usage.

1.9 Project Start Date

Project start date	21-February-2014
Justification	The project start date is the date on which first WTG was commissioned under the Project activity.

1.10 Project Crediting Period

Crediting period	☐ Seven years, twice renewable ☐ Ten years, fixed
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⁴ https://www.jswenenergy.in/energy/jsw-energy-completes-acquisition-re-portfolio-mytrah-energy?utm_source=chatgpt.com

	☒ Other (As per the registered PDD and project webpage ⁵ , The project activity adopts renewable crediting period of 10 years period which can be renewed for maximum 2 times)
Start and end date of first or fixed crediting period	21-February -2024 to 20-February-2034 The project activity adopts renewable crediting period of 10 years period which can be renewed for maximum 2 times.

1.11 Project Scale and Estimated GHG Emission Reductions or Removals

☐ < 300,000 tCO₂e/year (project)

☒ ≥ 300,000 tCO₂e/year (large project)

Calendar year of crediting period	Estimated GHG emission reductions or removals (tCO ₂ e)
21-February-2024 to 31-December-2024	318,703
01-January-2025 to 31-December-2025	369,291
01-January-2026 to 31-December-2026	369,291
01-January-2027 to 31-December-2027	369,291
01-January-2028 to 31-December-2028	370,302
01-January-2029 to 31-December-2029	369,291
01-January-2030 to 31-December-2031	369,291
01-January-2031 to 31-December-2031	369,291
01-January-2032 to 31-December-2032	370,302
01-January-2033 to 31-December-2033	369,291
01-January-2034 to 20-February-2034	51,599

⁵ <https://registry.terra.org/app/projectDetail/VCS/1521>

Total estimated ERRs during the Second or fixed crediting period	3,695,943
Total number of years	10
Average annual ERRs	369,594

1.12 Description of the Project Activity

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 223 Wind Turbine Generators (WTGs) with capacity of 1.5 MW & 0.85 MW at Andhra Pradesh, Karnataka, and Tamil Nadu state in India. The project is promoted by JSW Neo Energy Limited . Details of the installation of project in respective state is as follows:-

Serial No.	Investor	State	Capacity in MW
1.	Mytrah Vayu Krishna Private Limited	Karnataka	(0.85*112)
		Andhra Pradesh	(0.85*44)
2.	Mytrah Vayu (Majira) Private Limited	Tamil Nadu	(1.5*67)
Total			233.1

The project activity involves the installation and operation of a grid-connected renewable energy power generation facility with an installed capacity of 233.1 MW, located in India. The project supplies clean electricity to the regional grid, thereby displacing electricity that would otherwise be generated by fossil fuel – based power plants. The technical lifetime of the main generating equipment (e.g., WTGs) is approximately 20–25 years,

- The average lifetime of electrical and auxiliary equipment (inverters, transformers, switchgear) is approximately 15–20 years.

The project activity provides the service of generation and supply of electricity to the regional grid. The electricity generated by the project is exported to the grid through the existing transmission infrastructure.

The principal energy flow of the project activity is:

- Input: Renewable energy resource (e.g., wind / solar radiation),
- Output: Electrical energy delivered to the grid, measured by revenue-grade energy meters.

The project systems operate independently but are electrically interconnected with the regional grid. The project does not require any fuel input and does not rely on any manufacturing or production systems outside the project boundary, except for the grid infrastructure used for electricity evacuation. The equipment is new and unused at the time of installation. Based on manufacturer specifications and prevailing industry standards:

The project does not modify or rely on any existing power generation equipment outside the project boundary. It operates as an independent power producer injecting electricity into the grid.

Deviations approved during previous verifications of this project activity.

Deviation 1

This project Tamil Nadu site WTGs are under group captive since commissioning. To meet group captive consumers annual energy requirement, banking is done during high wind season ((i.e., from June to October) and then those units will get utilize in low wind season (i.e. from Nov to Mar). Due to this process electricity in invoice is different than JMR and cannot be consistent and not appropriate to compare or to take lower values as conservative approach. Also Tamil Nadu Generation and Distribution Corporation deducts Transmission & Distribution loss in generating end while doing the energy allocation. This T&D loss will vary based on consumer drawal voltage (3.06%, 4.24%. Due to above reason, the comparison of JMR and invoices value for Tamil Nadu Site (Vagarai) is not appropriate as there is adjustment of electricity due to banking as explained above. Thus, PP is considering the JMR value for net electricity supplied to grid and for emission reduction calculations. There is no cross check possible due to difference in JMR and invoice values due to banking for Tamil Nadu site, hence only JMR value is considered for ER calculations. State electricity board is doing adjustment in invoice based on JMR value. Hence month wise JMR and invoice is not matching. Since JMRs are issued by state electricity board and authentic, JMR values are considered for ER calculations. There is no material impact on ER calculations as primary source of data are correctly applied for ER calculations.

This was approved in verification for monitoring period of 01-June-2021 to 28-February- 2022(including both the dates).

Deviation 2

For Burgula site of Andhra Pradesh, there is no individual meter which shows the generation from this site. The combined generation is shown in meter located at 132/33 KV, Racharla and JMR issued for 39.7 MW. This was approved during monitoring period of 01-June-2021 to 28-February- 2022. Further section 4.2 and 4.3 can be referred for calculation.

Deviation 3

For Burgula site of Andhra Pradesh, export value for 37.4 MW is given and can be used for calculation but the import values need to be apportioned to obtain import for 37.4 MW. This was approved during monitoring period of 01-June-2021 to 28-February-2022. Further section 4.2 and 4.3 can be referred for calculation.

Deviation 4

The invoices for Burgula site are generated on export value. The total generation cannot be cross checked with invoice. Hence, as conservative approach the minimum of JMR and Invoice is considered for emission reduction. This was approved during 01-June-2021 to 28-February- 2022.

Deviation 5

The geo-coordinates were mentioned incorrect due to typo-error for Vagrai and Savalsung site which are corrected and requested as deviation in previous verification. Same details is provided in appendix 6. The above change does not have any impact on emission reductions, applicability of the methodology, additionality or the appropriateness of baseline scenario. And, therefore deviation is sought for the same from the registered PD. This deviation is a permanent.

Deviation 6

The machine IDs for the WTGs at the Savalsung site was previously mentioned incorrectly. During the previous verification, a deviation was requested and approved to rectify the machine IDs. The corrected information has now been included in Appendix-3. The above change does not have any impact on emission reductions, applicability of the methodology, additionality or the appropriateness of baseline scenario. And, therefore deviation is sought for the same from the registered PD. This deviation is a permanent.

Deviation number 05 and Deviation number 06 is requested and approved during previous verification (Monitoring period: 01-April-2022 to 30-June-2023 (Inclusive of both days)).

The project description deviation doesn't impact the applicability of the methodology, additionality and baseline scenario, emission reduction calculation of project.

1.13 Project Location

The location of the project activity is as such –

S No.	Project site	Address
1.	Vagrai	Manakadavu, Ponnivadi, Nallampalayam, Kongoor, Alampalayam, Vellaviputhur, Paruthiyur, Koothampoondi, Pungamuthur, Appiyampatti Taluka: - Dharapuram, Ottanchatiram, Dharapuram District: - Tirupur and Dindigul, Tamil Nadu India
2.	Burgula	Village Burgula, District: - Kurnool, Andhra Pradesh, India
3.	Savalsung	Village: Savalsang, Kannuru, Kolurgi, Domnal, Inchageri, Mahaveeranagar, Jigagivani, Hadalasang. District: Bijapur, Karnataka, India

The geo-coordinates of each WTG are as such –

For Tamil Nadu

S No.	Machin ID	Feeder Nos.	Latitude (N)	Longitude (E)
1	KOO-518	Feeder 9	10.69948341	77.6882558
2	KOO-1359		10.66563968	77.65962324
3	APY-241	Feeder 5	10.65021639	77.64901256
4	APY-416		10.67020783	77.62907088
5	PAR-09		10.66760795	77.6115463
6	PON-534		10.68803933	77.59283778
7	PON-1043		10.68473981	77.60821209
8	NAL-119	Feeder 2	10.7208402	77.58716885
9	NAL-81	Feeder 5	10.72735208	77.58532376
10	NAL-57		10.72995488	77.57654703
11	MAN-210	Feeder 9	10.69502488	77.57087056
12	MAN-898		10.67605028	77.57193498
13	MAN802		10.67881165	77.55364153
14	KON-556	Feeder 4	10.6625153	77.55755231
15	KON-563		10.65892169	77.56165127
16	KON-590		10.65451458	77.55915715
17	KON-640		10.65735343	77.55342588
18	KON-658		10.65283678	77.54550489
19	KON-621		10.64871125	77.55058605
20	KON-501	Feeder 3	10.66499329	77.52838599
21	ALA-1639	Feeder 8	10.76318948	77.61626788
22	ALA-1946		10.76326328	77.62570771
23	NAL-434	Feeder 6	10.73760525	77.62759636
24	KON-234		10.64497336	77.52904287
25	PAR-50	Feeder 5	10.67281499	77.60039121
26	MAN-625	Feeder 3	10.67788177	77.53579195
27	MAN-604	Feeder 2	10.68348459	77.53683425
28	ALA-2301	Feeder 8	10.75886068	77.63132567

29	ALA-1569		10.75463624	77.6265833
30	ALA-2352		10.74110802	77.63007535
31	KOO-1157	Feeder 2	10.68178844	77.68985383
32	PON-1081		10.68348435	77.61787566
33	MAN-940	Feeder 9	10.66893415	77.56925334
34	PON-1565		10.69642995	77.65552456
35	PON-1568	Feeder 6	10.69303118	77.6535857
36	VEL-1936	Feeder 8	10.73813524	77.68816772
37	ALA-1618	Feeder 9	10.75944434	77.6049963
38	PON-908	Feeder 8	10.71374814	77.62914446
39	PON-1203	Feeder 6	10.69438029	77.63405677
40	MAN-963	Feeder 7	10.66329726	77.56688572
41	PON-1021	Feeder 6	10.68974267	77.61070314
42	KOL-652	Feeder 5	10.7374949	77.57384237
43	PON-4		10.71893637	77.58140577
44	MAN-828	Feeder 9	10.67012558	77.55507631
45	KON-618	Feeder 3	10.6446245	77.54867946
46	KON-395		10.64247133	77.52219864
47	KON-451	Feeder 2	10.65236689	77.52989861
48	APA-84	Feeder 3	10.64182591	77.56167279
49	PUN-270		10.60746419	77.54929363
50	PUN-34		10.63256556	77.56924986
51	VEL-1702	Feeder 9	10.75513671	77.69153445
52	KAL-093	Feeder 8	10.76334694	77.69804901
53	ALA-2290		10.76527764	77.63428714
54	PON-775	Feeder 6	10.71842551	77.61554436
55	ALA-2260		10.75628612	77.6376538
56	MET-164	Feeder 7	10.61592339	77.56684556
57	NAL-445		10.73391078	77.63495601
58	KOO-1036	Feeder 6	10.68513012	77.6699966
59	VEL-1540		10.75739179	77.66053403

60	KOO-1174	Feeder 7	10.67220444	77.68962334
61	KOO-1000		10.67217045	77.67146366
62	PON-1304		10.70991951	77.63314951
63	APY-247		10.65429232	77.65102078
64	KON-411		10.64434508	77.51504326
65	KOO-581		10.69196175	77.68144785
66	VEL-2119		10.72574112	77.64794111
67	ALA-1385		10.71111522	77.64877317

For Andhra Pradesh

S No.	Location No.	Feeder Nos.	Latitude (N)	Longitude (e)
1	508	Feeder 1	15.154461	77.922135
2	510		15.157268	77.921522
3	511		15.158979	77.923322
4	513		15.161872	77.923761
5	514		15.163549	77.923292
6	515		15.165388	77.922815
7	516		15.166574	77.921892
8	517		15.167997	77.920787
9	518		15.16929	77.919977
10	519		15.170968	77.918066
11	520		15.172449	77.918783
12	528	Feeder 2	15.185218	77.923655
13	529		15.186921	77.923976
14	530		15.189489	77.925118
15	531		15.190881	77.925026
16	532	Feeder 3	15.206692	77.937622
17	533		15.208101	77.938972
18	534		15.209818	77.940958
19	535		15.211871	77.942781
20	536		15.215178	77.947515

21	537		15.216917	77.949166
22	538		15.218416	77.950564
23	539		15.221591	77.953603
24	540		15.225099	77.957372
25	541		15.226569	77.958248
26	542		15.228387	77.959399
27	543		15.229998	77.960501
28	545		15.223820	77.956471
29	546	Feeder 3	15.213598	77.946804

30	547		15.204944	77.93730
31	551	Feeder 2	15.188055	77.924987
32	509	Feeder 1	15.155886	77.920862
33	512		15.160386	77.923416
34	521	Feeder 2	15.174326	77.91959
35	522		15.175897	77.92030
36	523		15.177475	77.921177
37	524		15.179081	77.921943
38	525		15.180875	77.922916
39	526		15.182457	77.923515
40	527		15.183845	77.923022
41	544	Feeder 3	15.231485	77.961368
42	548		15.202938	77.936743
43	549		15.201556	77.936035
44	550	Feeder 2	15.192441	77.927995

For Karnataka

S No.	Machine ID	Feeder Nos.	Latitude (N)	Longitude (E)
1	SVG15	Feeder 01	17.1604	75.717
2	SVG16		17.1588	75.7173
3	SVG17		17.1582	75.7219
4	SVG18		17.1568	75.7226
5	SVG19		17.1546	75.7241
6	SVG20		17.1531	75.7245
7	SVG22		17.151	75.7408
8	SVG23		17.1477	75.7429
9	SVG25		17.1441	75.7392
10	SVG26		17.1429	75.7406
11	SVG27		17.1406	75.7408
12	SVG28		17.1332	75.7316
13	SVG29		17.1316	75.7308

14	SVG30	Feeder 02	17.1507	75.7137
15	SVG31		17.1493	75.7122
16	SVG32		17.1475	75.7111
17	SVG33		17.146	75.7116
18	SVG34		17.1434	75.7105
19	SVG35		17.1421	75.7089
20	SVG37		17.139	75.713
21	SVG39		17.1448	75.715
22	SVG40		17.1432	75.7164
23	SVG41		17.1415	75.7166
24	SVG42		17.1395	75.7167
25	SVG43		17.1368	75.7175
26	SVG47		17.1304	75.7266
27	SVG48		17.1497	75.742
28	SVG49		17.1479	75.7089
29	SVG50		17.1233	75.734
30	SVG51		17.1217	75.7234
31	SVG52		17.12	75.7237
32	SVG53		17.1184	75.7267
33	SVG54		17.1395	75.7064
34	SVG57		17.1086	75.7305
35	SVG58		17.1066	75.7298
36	SVG60		17.1007	75.7422
37	SVG62		17.0982	75.7389
38	SVG63		17.0949	75.7388
39	SVG64		17.0968	75.7364
40	SVG65		17.1013	75.7321
41	SVG66		17.0997	75.7317
42	SVG68	Feeder 03	17.1176	75.6977
43	SVG74		17.1105	75.7321
44	SVG75		17.1099	75.7232
45	SVG76		17.108	75.7233

46	SVG83		17.1248	75.7104
47	SVG84		17.1231	75.7170
48	SVG85		17.1179	75.7158
49	SVG88		17.0999	75.7254
50	SVG90		17.1005	75.7082
51	SVG91		17.0986	75.7059
52	SVG94		17.0945	75.7117
53	SVG96	Feeder 04	17.0976	75.7314
54	SVG97		17.0918	75.7302
55	SVG101		17.1176	75.706
56	SVG103		17.0897	75.697
57	SVG105		17.1145	75.7027
58	SVG106		17.0986	75.6774
59	SVG107		17.097	75.678
60	SVG108		17.0953	75.6778
61	SVG109		17.0937	75.6776
62	SVG110		17.0921	75.6772
63	SVG111		17.0906	75.6761
64	SVG112		17.089	75.6753
65	SVG118		17.0872	75.6758
66	SVG119		17.0814	75.6768
67	SVG120		17.0798	75.678
68	SVG122		17.0903	75.6907
69	SVG123		17.0879	75.6967
70	SVG125		17.1163	75.7161
71	SVG126		17.0909	75.7251
72	SVG128		17.0795	75.6956
73	SVG129		17.0766	75.6981
74	SVG131	Feeder 05	17.0736	75.7047
75	SVG132		17.0716	75.7049
76	SVG134		17.081	75.7148
77	SVG135		17.0787	75.7162

78	SVG136		17.0755	75.717
79	SVG137		17.0737	75.7168
80	SVG138		17.0859	75.7285
81	SVG139		17.085	75.7305
82	SVG140		17.0814	75.7319
83	SVG141		17.0793	75.7336
84	SVG143		17.0744	75.7359
85	SVG144		17.0722	75.7368
86	SVG145		17.0701	75.7373
87	SVG147		17.0636	75.74
88	SVG148		17.0654	75.7397
89	SVG150		17.0827	75.7137
90	SVG153		17.0691	75.7396
91	SVG154		17.1383	75.7416
92	SVG155	Feeder 06	17.1144	75.7334
93	SVG156		17.1128	75.7333
94	SVG157		17.1044	75.7275
95	SVG165		17.0963	75.7114
96	SVG166		17.094	75.7293
97	SVG168		17.0753	75.692
98	SVG170		17.1415	75.7129
99	SVG172		17.0956	75.7194
100	SVG173		17.0681	75.7294
101	SVG174		17.0792	75.7598
102	SVG175		17.0763	75.76
103	SVG176		17.0777	75.7537
104	SVG177		17.0747	75.7526
105	SVG178		17.0669	75.7516
106	SVG179		17.0635	75.7549
107	SVG180		17.0616	75.7544
108	SVG193		17.0623	75.7469
109	SVG194		17.064	75.7469

110	SVG195		17.0707	75.762
111	SVG196		17.0725	75.7623
112	SVG197		17.1227	75.7171

1.14 Conditions Prior to Project Initiation

The project is a Greenfield wind power project and does not involve generation of GHG emissions for the purpose of their subsequent reduction, removal or destruction. Prior to the initiation of the this project activity, the equivalent amount of electricity would have been drawn from grid connected or new power plants, in Indian Grid. The grid is predominantly coal based and therefore is a major source of carbon dioxide emissions in India. The main emission in the pre project scenario is the power plants connected to the Indian Grid, and main GHG involved is CO₂.

The Pre- project scenario for the facility where the electricity is wheeled (in case of TN WEGs), the electricity was sourced from Indian grid.

1.15 Compliance with Laws, Statutes and Other Regulatory Frameworks

The Project has received necessary approvals for development and commissioning for each WTG from the state Nodal agencies and is in compliance to the local laws and regulations.

The relevant national laws and regulations pertaining to generation of energy in India are:

- Electricity Act 2003⁶
- National Electricity Policy 2005⁷
- Tariff Policy 2006⁸

The Project activity conforms to all the applicable laws and regulations in India:

- Power generation using wind energy is not a legal requirement or a mandatory option.
- There are state and sectoral policies, framed primarily to encourage wind power projects. These policies have also been drafted realizing the extent of risks involved in the projects and to attract private investments.
- The Indian Electricity Act, 2003 (May 2007 Amendment)⁹ does not influence the choice of fuel used for power generation.
- There is no legal requirement on the choice of a particular technology for power generation.

⁶ https://www.indiacode.nic.in/bitstream/123456789/12827/1/the_electricity_act_no._39_of_2003_date_02.06.2003.pdf

⁷ https://cea.nic.in/wp-content/uploads/legal_affairs/2020/09/National%20Electricity%20Policy%20%281%29.pdf

⁸ https://www.orierc.org/CuteSoft_Client/writereaddata/upload/National%20Electricity%20Tariff%20Policy.pdf

⁹ https://www.iitr.ac.in/wfw/web_ua_water_for_welfare/power/Electricity_Act_2007.pdf

1.16 Double Counting and Participation under Other GHG Programs

1.16.1 No Double Issuance

Is the project receiving or seeking credit for reductions and removals from a project activity under another GHG program?

☐ Yes ☐ No

1.16.2 Registration in Other GHG Programs

Has the project registered under any other GHG programs?

☐ Yes ☒ No

Is the project active under the other program?

☐ Yes ☒ No

1.16.3 Projects Rejected by Other GHG Programs

Has the project been rejected by any other GHG programs?

☐ Yes ☒ No

1.17 Double Claiming, Other Forms of Credit, and Scope 3 Emissions

1.17.1 No Double Claiming with Emissions Trading Programs or Binding Emission Limits

Are project reductions and removals or project activities also included in an emissions trading program or binding emission limit? See the *VCS Program Definitions* for definitions of emissions trading program and binding emission limit.

☐ Yes ☒ No

1.17.2 No Double Claiming with Other Forms of Environmental Credit

Has the project activity sought, received, or is planning to receive credit from another GHG-related environmental credit system? See the *VCS Program Definitions* for definition of GHG-related environmental credit system.

☐ Yes ☒ No

1.17.3 Supply Chain (Scope 3) Emissions

Do the project activities specified in Section 1.12 affect the emissions footprint of any product(s) (goods or services) that are part of a supply chain?

☐ Yes

☒ No

Is the project proponent(s) or authorized representative a buyer or seller of the product(s) (goods or services) that are part of a supply chain?

☐ Yes

☒ No

Has the project proponent(s) or authorized representative posted a public statement on their website saying, "Carbon credits may be issued through Verified Carbon Standard project [project ID] for the greenhouse gas emission reductions or removals associated with [project proponent or authorized representative organization name(s)] [name of product(s) whose emissions footprint is changed by the project activities]."

☐ Yes

☒ No

1.18 Sustainable Development Contributions

Contribution to sustainable development:

Ministry of Environment and Forests, has stipulated economic, social, environment and technological well-being as the four indicators of sustainable development. The project contributes to sustainable development using the following ways.

Social well-being: The project would help in generating employment opportunities during the construction and operation phases. The project activity will lead to development in infrastructure in the region like development of roads and also may promote business with improved power generation.

Economic well-being: The project is a clean technology investment in the region, which would not have been taken place in the absence of the VCS benefits the project activity will also help to reduce the demand supply gap in the state.

The project activity will generate power using zero emissions wind based power generation which helps to reduce GHG emissions and specific pollutants like SO_x, NO_x, and SPM associated with the conventional thermal power generation facilities.

Technological well-being: The successful operation of project activity would lead to promotion of wind based power generation and would encourage other entrepreneurs to participate in similar projects.

Environmental well-being: Wind being a renewable source of energy, it reduces the dependence on fossil fuels and conserves natural resources which are on the verge of depletion. Due to its zero emission the Project activity also helps in avoiding significant amount of GHG emissions.

Alignment with UN Sustainable Development Goals (SDGs)

- SDG 7: Affordable and Clean Energy – by generating renewable electricity.
- SDG 8: Decent Work and Economic Growth – through job creation and skill development.
- SDG 13: Climate Action – by reducing greenhouse gas emissions.

	By generating an estimated average annual output of 429,162.45 MWh/year of renewable energy, the project significantly contributes to the realization of SDG 7, which strives to ensure access to affordable, reliable, sustainable, and modern energy for all. This contribution aligns with the overarching goal of fostering a greener and more sustainable future.
	Throughout the construction and operational phases, the project has actively created numerous direct and indirect employment opportunities, predominantly benefitting the local population in the region. This proactive approach contributes to the fulfilment of SDG 8.5.1 10 employment opportunities created along with 12 Trainings provided in year, which seeks to promote sustained, inclusive, and sustainable economic growth, along with full and productive employment and decent work for all.
	Through its efforts in emission reductions, the project aligns with the objectives of SDG 13, which calls for urgent action to combat climate change and its adverse impacts. By taking substantial measures to decrease greenhouse gas emissions, the project actively contributes to the global initiative of safeguarding the planet for the well-being of future generations.

1.19 Additional Information Relevant to the Project

1.19.1 Leakage Management

Not As per the section 5.6 para 71 of applied methodology, No other leakage emissions are considered. The emissions potentially arising due to activities such as power plant construction and upstream emissions from fossil fuel use (e.g., extraction, processing, transport etc.) are neglected. Since this renewable energy generation project hence not applicable.

1.19.2 Commercially Sensitive Information

Not Applicable as All information provided in this Project Description for Project activity is non-confidential and does not contain any commercially sensitive, proprietary, or trade secret information. The project activity is a standard grid-connected renewable energy project and does not involve any unique industrial processes, confidential technologies, or business-sensitive operational data that would require protection from public disclosure.

1.19.3 Further Information

Not Applicable as The project activity does not involve any special circumstances, exceptional project features, or program-specific conditions that would require the provision of additional information beyond what has already been presented in this document.

2 SAFEGUARDS AND STAKEHOLDER ENGAGEMENT

2.1 Stakeholder Engagement and Consultation

2.1.1 Stakeholder Identification

Stakeholder Identification	The stakeholders of the project activity were invited to attend the stakeholder meeting. Personal invitations were also sent to the prominent members (villagers, local community people) of the regions in the vicinity. The stakeholders were explained about the project activity and the various benefits arising out of the project activity. A discussion was held in which the views of the local stakeholders were addressed. <table border="1"> <tr> <td colspan="2">Tamil Nadu</td></tr> <tr> <td>Date of invitation</td><td>Meeting date</td></tr> <tr> <td rowspan="3">10-October- 2012</td><td>23-October-2012</td></tr> <tr> <td>24-October-2012</td></tr> <tr> <td>25-October-2012</td></tr> <tr> <td colspan="2">Andhra Pradesh</td></tr> <tr> <td>12-April-2013</td><td>22-April-2013</td></tr> <tr> <td colspan="2">Karnataka</td></tr> <tr> <td>11-April-2013</td><td>21-April-2013</td></tr> </table>	Tamil Nadu		Date of invitation	Meeting date	10-October- 2012	23-October-2012	24-October-2012	25-October-2012	Andhra Pradesh		12-April-2013	22-April-2013	Karnataka		11-April-2013	21-April-2013
Tamil Nadu																	
Date of invitation	Meeting date																
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	25-October-2012																
Andhra Pradesh																	
12-April-2013	22-April-2013																
Karnataka																	
11-April-2013	21-April-2013																
Legal or customary tenure/access rights	Not Applicable There are no legal or customary tenure/access rights to territories and resources, including collective and conflicting rights held by stakeholders, indigenous people (Ips), Local communities (LCs), and customary rights holders with regards to the project. The project is wind energy generation and it is established on the project proponent's land.																

Stakeholder diversity and changes over time	Stakeholders identified for this project activity are diverse in nature – in terms of socio-economic status, age and gender wise and the diversity is unlikely to change over time.
Expected changes in well-being	Expected changes 1. Economic wellbeing – the project activity is likely to provide employments to the locality thus economic well beings are expected 2. Environmental wellbeing – as this project activity reduces the dependence on fossil fuels and conserves natural resources which are on the verge of depletion. Due to its zero emission the Project activity also helps in avoiding significant amount of GHG emissions and specific pollutants like SO_x, NO_x, and SPM associated with the conventional thermal power generation facilities.
Location of stakeholders	Tamil Nadu, Andhra Pradesh , Karnataka
Location of resources	Not Applicable There are no territories or resources in the project area that are owned by stakeholders or to which they have customary access.

2.1.2 Stakeholder Consultation and Ongoing Communication

Date of stakeholder consultation	Initial LSC conducted at the time of registration) For Tamil nadu 23-October-2012 24-October-2012 25-October-2012 For Andhra Pradesh 22-April-2013 For Karnataka 21-April-2013
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Stakeholder engagement process	the meeting was outlined towards making aware local stakeholders including local community, local administration representatives, NGOs working for environmental cause etc., about the project activity that involves electricity generation using wind produced by wind plant with the primary objective of reducing emissions of GHGs in compared to pre-project or baseline scenario
Consultation outcome	During the consultation, the project activity, its objectives, expected environmental and social impacts, and its contribution to clean energy generation were presented to the stakeholders. Stakeholders were given the opportunity to raise questions, provide comments, and express any concerns regarding the project. Overall, the project was well received by the stakeholders. No significant negative comments or objections were raised against the implementation of the project activity.
Ongoing communication	The communication has been recorded by stakeholder on register placed at security office of project site.
Stakeholder input	The feedbacks/comments received from stakeholders were quite positive and no negative comments were received. The questions asked by stakeholders were only on process and these are explained by PP representatives

2.1.3 Free Prior and Informed Consent

Obtaining consent	There are no ongoing or unresolved conflicts related to the project, as a comprehensive stakeholders meeting was conducted before the initiation of project activities. All relevant stakeholders were invited to participate through formal invitations and were
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	encouraged to raise any concerns or questions. The project proponent addressed all queries during the meeting, ensuring that any potential issues were resolved before the project began. As a result, the project does not exacerbate or influence the outcomes of any unresolved conflicts, as it was designed with transparency and neutrality, ensuring all stakeholders' concerns were adequately addressed and mitigated in advance.
Outcome of FPIC	The project has not encroached on land, relocated people, or caused any physical or economic displacement. All necessary assessments and consultations were conducted to ensure compliance with legal requirements, and no individuals or communities have been displaced by the project.

2.1.4 Grievance Redress Procedure

Development process	Feedback register is kept at project site office where any stakeholder can come and register his/her feedback
Grievance redress procedure	The project proponent has operating complaint procedure. The PP has kept the register on plant site office for logging the ongoing communication or any grievance from the stakeholder which is easily accessible to the all stakeholders. This procedure of ongoing communication log & addressal is used for the project. Stakeholders' feedback is monitored daily and any grievance if found, resolved immediately.

2.1.5 Public Comments

Comments received	Actions taken
No comments received	No action required as no comments were received.

2.2 Risks to Stakeholders and the Environment

2.2.1 Management Experience

The management team of the project proponent has significant expertise and experience in implementing similar project activities, including community engagement. There has been no change in the project proponent, implementing entities, or key contractors, and that the institutional and managerial arrangements of the project remain unchanged since project inception. The team has a proven track record of managing construction, operations, and community engagement, with a particular focus on environmental and social aspects. This includes overseeing registration, monitoring, measurement, reporting, and review processes.

The project team operates within an organizational structure approved by the board members and consists of professionals with diverse expertise in environmental management, data handling, and project management. This combined experience ensures the effective implementation and monitoring of the project, fully compliant with Verra requirements.

In case there are any areas where additional experience is needed, the project proponent has the necessary internal and external resources to address these gaps and ensure successful project delivery.

2.2.2 Risk Assessment

Risks identified		Mitigation or preventative measure(s) taken
Natural and human-induced risks to stakeholders' wellbeing	No risk identified	The project does not pose any risks to stakeholder wellbeing. The PP is ensuring open and transparent dialogue with the stakeholders.
Risks to stakeholder participation	No risk identified	Stakeholder participation in wind projects poses minimal risk due to the clean nature of wind energy production, which does not emit pollutants. This fosters positive community relationships and reduces potential health and environmental concerns, ensuring smoother project implementation and garnering support from the community.
Working conditions	No risk identified	Stakeholder participation in wind projects poses negligible risks when the systems are operational.

		Wind technology typically operates reliably with minimal maintenance requirements, ensuring consistent energy generation and stakeholder satisfaction.
Safety of women and girls	No risk identified	Ensuring the safety of women and girls in the project involves comprehensive risk assessment and mitigation strategies. Measures such as well-lit areas, security patrols, gender-sensitive policies, and training on harassment prevention help mitigate risks, fostering a safe environment for all stakeholders and workers.
Safety of minority and marginalized groups, including children	No risk identified	While wind projects generally entail minimal or no risks to minority and marginalized groups, comprehensive safety measures have been implemented. This includes ensuring safe access to project sites, implementing child protection policies, and addressing any potential social or economic impacts on marginalized communities, thereby safeguarding their well-being throughout project development and operation.
Pollutants (air, noise, discharges to water, generation of waste, and release of hazardous materials and chemical pesticides and fertilizers)	No risk identified	As it is a wind power project, hence no risk identified. Noise Pollution: There is some noise generated by the wind turbine, but it remains within the permissible limits of environmental law, indicating that the impact is controlled and compliant with regulations. Air Pollution: There is no risk of air pollutants being emitted from the wind turbine.

		Discharges to Water: No discharges to water bodies are anticipated, which suggests minimal to no risk of water pollution. Generation of Waste: The turbine operation does not generate significant waste. Hazardous Materials: No hazardous materials or chemicals, such as pesticides or fertilizers, are released as part of the wind turbine's operation. The projects' lack of pollutants substantially reduces risks to stakeholders, including potential health hazards or environmental contamination. This inherent cleanliness fosters a safer environment for communities, minimizing concerns related to air and water quality, noise pollution, waste generation, and exposure to hazardous materials, ensuring overall safety and well-being.
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2.3 Respect for Human Rights and Equity

2.3.1 Labor and Work

	Risks identified ¹⁰	Mitigation or preventative measure(s) taken
Discrimination	No risk identified	No risk identified. Equal opportunity practices are actively implemented across the project. Discrimination based on personal, social, or demographic factors is explicitly prohibited. The project's internal policies foster diversity, promote inclusive conduct, and

¹⁰ The identified risks and commensurate mitigation or preventative measure(s) for forced labor, child labor, and human trafficking, must be inclusive of staff and contracted workers employed by third parties.

		prohibit all forms of harassment. A confidential grievance mechanism is established to promptly address any reported concerns. No instances of discrimination have been observed or reported during the current monitoring period. Preventative systems are in place to ensure ongoing compliance and early resolution of potential issues.
Sexual harassment	No risk identified	PP has provided declaration that no sexual harassment has occurred or will occur. No risk identified. The project enforces a zero-tolerance policy towards any form of harassment. Internal mechanisms are established to confidentially manage complaints. Regular training and awareness programs are conducted to uphold a respectful workplace culture.
Equal pay for equal work	No risk identified	PP provides equal opportunities in the context of gender equity and pay for labor and work. No risk identified. Equal participation and pay practices are followed irrespective of gender. Recruitment, compensation, and advancement are based on merit. Monitoring systems help ensure continued fairness and non-discrimination. Ongoing training programs also foster gender inclusivity and address unconscious biases in the workforce. The Project Proponent ensures equal wage pay to its employees keeping them in line with the minimum wage criteria as per state labor laws.

Gender equity in labor and work	No risk identified	The project has implemented stringent ethical policies in line with national labor act 1986. Regular audits and inspections are carried out to verify that the project's supply chain and workforce are free from forced labor. The company policy restricts hiring of any such employee involved in such practices. The project remains under strict surveillance of the project proponent & the state DISCOM, any malpractice at the project implemented site will be immediately reported and strict actions will be taken. Since the date of project start date, PP has not encountered any such activity at the project site.
Forced labor	No risk identified	No risk identified. Systems are in place to verify worker age during hiring. There is no force labor, which is as per labor act 1986. Labor policies prohibit the engagement of underage workers, and routine checks are conducted to ensure adherence to these policies across all project activities.
Child labor	No risk identified	No risk identified. Employment and subcontracting practices are structured to prevent coercion or exploitation. All hiring is based on free and informed consent. Screening procedures for labor providers help ensure ethical sourcing and fair treatment
Human trafficking	No risk identified	No risk identified. Equal opportunity practices are actively implemented across the project. Discrimination based on personal,

		social, or demographic factors is explicitly prohibited. The project's internal policies foster diversity, promote inclusive conduct, and prohibit all forms of harassment. A confidential grievance mechanism is established to promptly address any reported concerns. No instances of discrimination have been observed or reported during the current monitoring period. Preventative systems are in place to ensure ongoing compliance and early resolution of potential issues.
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2.3.2 Human Rights

Risks identified	Mitigation or preventative measure(s) taken
No risk identified	PP has provided declaration that there will be no human rights violation of any kind to any of the stakeholders during construction and operation of the project activity.

2.3.3 Indigenous Peoples and Cultural Heritage

Risks identified	Mitigation(s) or preventative measure taken
No risk identified	The project is implemented entirely within the boundaries of privately owned land. No physical or cultural heritage sites of Indigenous Peoples have been identified within or near the project area. Regular site assessments and stakeholder consultations confirm that there has been no adverse impact on tangible or intangible cultural heritage. Measures are in place to ensure continued protection of local and national heritage assets throughout the project's lifecycle.

2.3.4 Property Rights

Risks identified	Mitigation or preventative measure(s) taken
No risk identified	The project activity is implemented on Project owners land and PP is committed to protecting and preserving the property rights of IPs, LCs, and customary rights holders, and to protecting legal or customary tenure/access rights to territories, property, and resources.

2.3.5 Benefit Sharing

Process used to design the benefit sharing plan	As stated in Section 2.3.4, the project does not impact on property rights as the land is privately owned and has been secured via a agreement; therefore, there is no Benefit Sharing Agreement.
Summary of the benefit sharing plan	Not Applicable as no benefit sharing for this project activity
Approval and dissemination of benefit sharing plan	Not Applicable as no benefit sharing for this project activity

2.4 Ecosystem Health

	Risks identified	Mitigation or preventative measure(s) taken
Impacts on biodiversity and ecosystems	No risk identified	The project activity has not resulted in any adverse impact on biodiversity or ecosystems. On the contrary, it contributes positively by reducing air pollution and mitigating climate change. During the monitoring period, no negative interactions with local flora or fauna were observed. Wind energy projects are typically considered environmentally benign, with limited disruption to surrounding ecosystems.
Soil degradation and soil erosion	No risk identified	No soil erosion and degradation are likely to be caused. This project is a wind power project

		and does not result adverse effects on Soil degradation and soil erosion.
Water consumption and stress	No risk identified	No risk identified. Water usage associated with the project remains minimal and within sustainable limits. No signs of water stress or resource depletion were observed during the monitoring period. Wind turbine operations typically require very low volumes of water, helping to preserve local water resources and minimize ecological pressure.

2.4.1 Rare, Threatened, and Endangered Species

☐ Yes ☒ No

Species and habitat	No impact as the project is wind power
Areas needed for habitat connectivity	Not Applicable

	Risks identified	Mitigation or preventative measure(s) taken
Habitats for rare, threatened, and endangered species	Not Applicable	Not Applicable
Areas for habitat connectivity	Not Applicable	Not Applicable

2.4.2 Introduction of Species

Species introduced	Classification	Justification for use	Adverse effects and mitigation
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Existing invasive species	Mitigation measures to prevent the spread or continued existence of invasive species
Not Applicable	Not Applicable

	Risks identified	Mitigation or preventative measure(s) taken
Invasive species	No risk identified	No impact on Ecosystem is likely to be caused

2.4.3 Ecosystem Conversion

	Risks identified	Mitigation or preventative measure(s) taken
Ecosystem conversion	No risk identified	No impact on Ecosystem is likely to be caused

3 APPLICATION OF METHODOLOGY

3.1 Title and Reference of Methodology

Type (methodology, tool or module).	Reference ID, if applicable	Title	Version
Methodology	ACM0002	ACM0002: Grid-connected electricity generation from renewable source	22.0
Tool	Tool 1	Tool for the demonstration and assessment of additionality	7.0.0
Tool	Tool 7	Tool to calculate the emission factor for an electricity system	7.0
Tool	Tool 24	Common practice	3.1
Tool	Tool 27	Investment Analysis	14
Tool	Tool 11	Assessment of the validity of the original/current baseline and update of the baseline at the renewal of the crediting period	03.0.1

3.2 Applicability of Methodology

The project activity is grid-connected Wind power projects. Version 22.0 of ACM0002 methodology is applicable to grid-connected renewable 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 replacement of (an) existing plant(s)/unit(s).

The project activity is wind power based renewable energy source, zero emission power project connected to the different state grids, which forms part of the Indian electricity grid. The project activity will displace fossil fuel-based electricity generation that would have otherwise been provided by the operation and expansion of the fossil fuel-based power plants in Indian grid. The approved consolidated baseline and monitoring methodology ACM0002 Version 22.0 is the choice of the baseline and monitoring methodology and it is applicable because:

Comparison of project activity characteristics and eligibility criteria of version 22.0 of ACM0002.

Methodology ID	Applicability condition	Justification of compliance
ACM0002	This methodology is applicable to grid-connected renewable power generation project activities that: • Install a Greenfield power plant; • Involve a capacity addition to (an) existing plant(s); • Involve a retrofit of (an) existing operating plants/units; • Involve a rehabilitation of (an) existing plant(s)/unit(s) or • Involve a replacement of (an) existing plant(s)/unit(s).	The project activity is a Renewable Energy Project i.e. Wind Power Project which falls under applicability criteria option 1 (a) i.e., “Install a Greenfield power plant”. Hence the project activity meets the given applicability criterion.
	In case the project activity involves the integration of a BESS, the methodology is applicable to grid-connected renewable energy power generation project activities that: a) Integrate BESS with a Greenfield power plant; b) Integrate a BESS together with implementing a capacity addition to (an) existing wind photovoltaic or wind power plant(s)/unit(s); c) Integrate a BESS to (an) existing wind photovoltaic or wind power plant(s)/unit(s)	This criterion is not applicable for this project activity as it does not use battery Energy Storage System.

	without implementing any other changes to the existing plant(s); d) Integrate a BESS together with implementing a retrofit of (an) existing wind photovoltaic or wind power plant(s)/unit(s).	
	The methodology is applicable under the following a) Hydro power plant/unit with or without reservoir, wind power plant/unit, geothermal power plant/unit, wind 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, wind, wave or tidal power capacity addition projects) the existing plant/unit must have started commercial operation prior to the start of a minimum historical reference period of five years. The reference period is used for the calculation of baseline emissions and defined in the baseline emission section. Furthermore, no capacity expansion, retrofit, or rehabilitation of the plant/unit has been undertaken between the start of this minimum historical reference period and the implementation of the project activity; c) In case of Greenfield project activities applicable under paragraph Error! Reference source not found., the project participants shall demonstrate that the BESS was an integral part of the design of the renewable energy project activity (e.g., by referring to feasibility	The project activity is an installation of a new grid connected renewable energy wind power project. Hence condition (a) is met. The conditions (b) to (e) are not applicable for this project activity.

	studies or investment decision documents); d) The BESS should be charged with electricity generated from the associated renewable energy power plant(s). Only during exigencies¹¹ may the BESS be charged with electricity from the grid or a fossil fuel electricity generator. In such cases, the corresponding GHG emissions shall be accounted for as project emissions following the requirements under section. The charging using the grid or using fossil fuel electricity generator should not amount to more than 2 per cent of the electricity generated by the project renewable energy plant during a monitoring period. During the time periods (e.g., week(s), months(s)) when the BESS consumes more than 2 per cent of the electricity for charging, the project participant shall not be entitled to issuance of the certified emission reductions for the concerned periods of the monitoring period. e) In case the project activity involves PSP, the PSP shall utilize the electricity generated from the renewable energy power plant(s) that is operating in coordination with the PSP during pumping mode.	
	In case of hydro power plants, one of the following conditions shall apply:¹² (a) The project activity is implemented in existing	This condition is not relevant, as the project activity is not the installation of a hydro power plant.

¹¹For example, upon deep discharge of the batteries.

¹² ¹² Project participants wishing to undertake a hydroelectric project activity that results in a new reservoir or an increase in the volume of an existing reservoir, in particular where reservoirs have no significant vegetative biomass in the catchments area, may request a revision to the approved consolidated methodology.

	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 of the project activity, as per definitions given in the Project Emissions section, is greater than 4 W/m² ; or (c) The project activity results in new single or multiple reservoirs and the power density of the project activity, as per definitions given in the Project Emissions section, 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, as per definitions given in the Project Emissions section, is lower than or equal to 4 W/m², all of the following conditions shall apply. 1) (i) The power density calculated using the total installed capacity of the integrated project, as per definitions given in the Project Emissions section, 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 - Lower than or equal to 15MW; and - Less than 10 per cent of the total installed capacity of integrated hydro power project	
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	In the case of integrated hydro power projects, project proponent shall: (a) Demonstrate that water flow from upstream power plants/units spill directly to the downstream reservoir and that collectively constitute to the generation capacity of the integrated hydro power project; or (b) 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 of five years prior to the implementation of the CDM project activity.	This condition is not relevant, as the project activity is not the installation of a hydro power plant.
	In the case of PSP, the project participants shall demonstrate in the PDD that the project is not using water which would have been used to generate electricity in the baseline.	The project activity does not involve any PSP, Hence it is not applicable.
	The methodology is not applicable to the following: - 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;	The project activity does not involve any of the given criteria hence methodology is applicable for the project activity.

	In the case of retrofits, 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, i.e. 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 wind power plants. Also, no replacement, modification and retrofit measures are implemented here. Hence, this criterion is also not relevant to the project activity.
Tool 1	The use of the “Tool for the demonstration and assessment of additionality” is not mandatory for project participants when proposing new methodologies. Project participants may propose alternative methods to demonstrate additionality for consideration by the Executive Board. They may also submit revisions to approved methodologies using the additionality tool.	The project is not proposing any new methodologies, hence the use of the “Tool for the demonstration and assessment of additionality” is mandatory. Refer to section B.5 of PDD for details where additionality of the project activity is demonstrated using TOOL1.
	Once the additionality tool is included in an approved methodology, its application by project participants using this methodology is mandatory.	Project participant is not proposing new methodologies.
Tool 7	This tool may be applied to estimate the OM, BM and/or CM when calculating baseline emissions for a project activity that substitutes grid electricity that is where a project activity supplies electricity to a grid or a project activity that results in savings of electricity that would have been provided by the grid (e.g., demand-side energy efficiency projects).	This condition is applicable. OM, BM, and CM are estimated using the tool under section B.6.1 for calculating baseline emissions. Only grid connected plants have been considered for the calculation of OM and BM calculations. “CEA CO2 database, published by CEA, version 20 ¹³ ” outlines Operating, Build and Combined Margin Emission Factors for National Grid was used for the calculations. In reference of link provided, it can be seen that EF calculation is based on grid connected plants only.
	Under this tool, the emission factor for the project electricity system can be calculated either for grid power plants only or, as an option, can include off-grid power plants. In the latter case, the conditions specified in “Appendix	Since the project activity is grid connected, this condition is applicable, and the emission factor has been calculated accordingly. The emission factor for the project electricity system is

¹³ https://cea.nic.in/wp-content/uploads/baseline/2020/07/user_guide_ver3.pdf

	2: Procedures related to off-grid power generation” should be met. Namely, the total capacity of off-grid power plants (in MW) should be at least 10 per cent of the total capacity of grid power plants in the electricity system; or the total electricity generation by off-grid power plants (in MWh) should be at least 10 per cent of the total electricity generation by grid power plants in the electricity system; and that factors which negatively affect the reliability and stability of the grid are primarily due to constraints in generation and not to other aspects such as transmission capacity.	calculated for grid power plants only.
	In case of CDM projects the tool is not applicable if the project electricity system is located partially or totally in an Annex I country.	The project is located in India which is a non-Annex-1 country. Hence, this tool is applicable.
	Under this tool, the value applied to the CO2 emission factor of biofuels is zero.	The project activity is a grid connected wind power project. Therefore, this criterion is not applicable for the project activity.
Tool 24	This methodological tool is applicable to project activities that apply the methodological tool “Tool for the demonstration and assessment of additionality”, the methodological tool “Combined tool to identify the baseline scenario and demonstrate additionality”, or baseline and monitoring methodologies that use the common practice test for the demonstration of additionality.	As “Tool for the demonstration and assessment of additionality” is applied, therefore, Tool 24 is applied and complied with for investment analysis for the demonstration of additionality. Please refer to section B.5 of PDD for details.
	In case the applied approved baseline and monitoring methodology defines approaches for the conduction of the common practice test that are different from those described in this methodological tool, the requirements contained in the methodology shall prevail.	Not Applicable. The applied approved baseline and monitoring methodology does not define any different approaches for the conduction of the common practice test from those described in this methodological tool.
Tool 27	This methodological tool is applicable to CDM project activities and programmes of activities (PoAs) that conduct an investment analysis for the demonstration of additionality and/or the identification of the baseline scenario.	As “Tool for the demonstration and assessment of additionality” is applied, TOOL27 is also applicable and complied with for investment analysis for the demonstration of additionality. Please refer to section B.5 of PDD for details.

	In case the applied approved baseline and monitoring methodology contains requirements for the investment analysis that are different from those described in this methodological tool, the requirements contained in the methodology shall prevail.	The applied approved baseline and monitoring methodology does not contain requirements for the investment analysis that are different from those described in this methodological tool. Hence, Not Applicable.
Tool 11	This tool provides a stepwise procedure to assess the continued validity of the baseline and to update the baseline at the renewal of a crediting period, as required by paragraph 49 (a) of the modalities and procedures of the clean development mechanism.	This tool provides a stepwise procedure to assess the continued validity of the baseline and to update the baseline at the renewal of a crediting period, as required by paragraph 49 (a) of the modalities and procedures of the clean development mechanism. Step wise procedure for assessment of validity of the baseline and baseline update has been described in section B.4 of the project design document.
	The tool consists of two steps. The first step provides an approach to evaluate whether the current baseline is still valid for the next crediting period. The second step provides an approach to update the baseline in case that the current baseline is not valid anymore for the next crediting period.	“Assessment of the validity of the original/current baseline and update of the baseline at the renewal of the crediting period” (TOOL 11) is mandated for such updates. Therefore, accordingly the TOOL 11 is applied to update the ex-ante determined parameters during renewal of crediting period of the project appropriately.

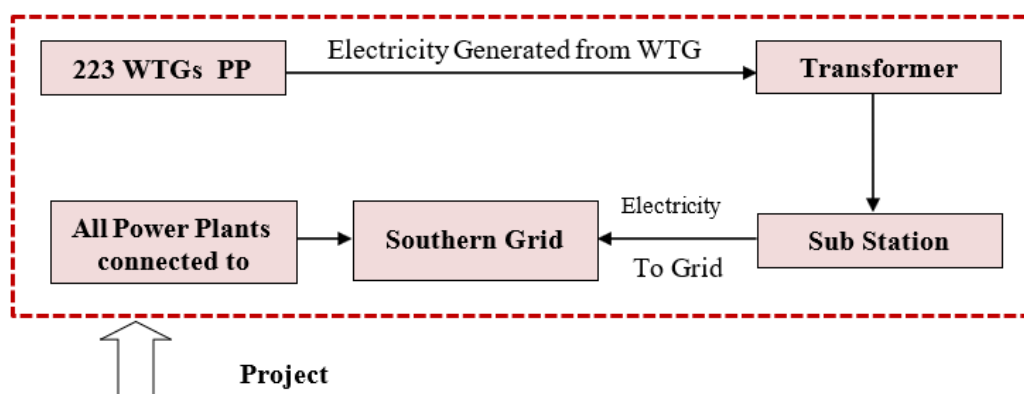
3.3 Project Boundary

As per ACM0002 version 22 “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”.

Therefore, the project boundary includes all the 223 numbers of WTGs along with the WTGs of the other project proponents connected to the sub-station, which is further connected to the network of the Indian grid, i.e. the project boundary also includes the Indian grid. Thus, the project boundary further includes all the power plants physically connected to the Indian grid.

Source		Gas	Included?	Justification/Explanation
Baseline	Grid-connected electricity generation	CO ₂	Yes	Major emission sources.
		CH ₄	No	Excluded for simplification. This is conservative
		N ₂ O	No	Excluded for simplification. This is conservative
Project	Greenfield Wind energy conversion system	CO ₂	No	The project activity does not emit any emissions.
		CH ₄	No	No methane generation is expected to be emitted.
		N ₂ O	No	No nitrous oxide generation is expected to be emitted.

Project Boundary Diagram:



3.4 Baseline Scenario

As per the approved consolidated Methodology ACM0002 (Version 22.0,) para 27 “If the project activity is the installation of a Greenfield power plant with or without a BESS as described under paragraph 5(a) or paragraph 7(a) or paragraph 7(e) above, the baseline scenario is electricity delivered to the grid by the project activity that 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 TOOL07”.

The project activity involves setting up of wind projects to harness the power of sun to produce electricity and supply to the grid. In the absence of the project activity, the equivalent amount of power would have been supplied by the Indian grid, which is fed mainly by fossil fuel fired plants.

In the absence of the project activity, the equivalent amount of power would have been drawn from the Indian grid. Hence, the baseline for the project activity is the equivalent amount of power from the Indian grid.

The combined margin ($EF_{grid,CM,y}$) is the result of a weighted average of two emission factor pertaining to the electricity system: the operating margin (OM) and build margin (BM). Calculations for this combined margin must be based on data from an official source (where available) and made publicly available. The

CEA database version 20 date December 2024¹⁴ is the latest available data at the time of PDD submission to VVB for validation, hence same is considered for emission factor calculations.

TOOL 11: Methodological tool: Assessment of the validity of the original/current baseline and update of the baseline at the renewal of the crediting period, Version 03.0.1 (Eb 66, Annex 47)

As per the section 3.9 of the project standard, version 4.7¹⁵,

If data and parameters used for determining the original baseline, that were determined ex ante and not monitored during the crediting period, are no longer valid, the project Developer shall update such data and parameters in accordance with the “Methodological tool: Assessment of the validity of the original/current baseline and update of the baseline at the renewal of the crediting period”.

This tool provides a stepwise procedure to assess the continued validity of the baseline and to update the baseline at the renewal of a crediting period, as required by paragraph 49 (a) of the modalities and procedures of the clean development mechanism. Step wise procedure for assessment of validity of the baseline and baseline update has been described in section 4.1 of this report.

The Methodological Tool “Assessment of the validity of the original / current baseline and update of the baseline at the renewal of the crediting period”, Version 03.0.1 has been utilized for assessing the continued validity of the baseline and to update the baseline at the renewal of the crediting period. The steps followed are as described in the Methodological Tool consists of two steps. The first step provides an approach to evaluate whether the current baseline is still valid for the next crediting period. The second step provides an approach to update the baseline in case the current baseline is not valid anymore for the next crediting period. Accordingly, the following step-wise approach was utilized:

Step 1: Assess the validity of the current baseline for the next crediting period

In accordance with the VCS requirements for renewal of the crediting period, the baseline scenario for Project activity has been reassessed in below steps of this report to confirm its continued validity for the proposed next crediting period.

Step 1.1: Assess compliance of the current baseline with relevant mandatory national and/or sectoral policies

The baseline scenario remains unchanged and is in compliance with all the relevant mandatory national and/or sectoral policies for this project activity.

Step 1.2: Assess the impact of circumstances

The baseline scenario identified at the validation of the project activity was the 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 into the grid. Thus this project activity was a voluntary investment which intends to replace equivalent amount of electricity at grid from renewable source. PP was not bound to incur this investment; hence absence of project activity (i.e. the investment) does not lead to any continued baseline practice for PP within their scope whereas the continued operation of the project activity would continue to replace equivalent amount of electricity at grid. Hence, the same baseline as identified in the previous crediting period is still valid for the project. Therefore, the assessment of the changes in market characteristics is not required for the renewal of the project's crediting period under VCS

¹⁴ <https://img.saurenergy.com/2025/01/cea-report.pdf>

¹⁵ <https://verra.org/wp-content/uploads/2024/04/VCS-Standard-v4.7-FINAL-4.15.24.pdf>

Furthermore, project participant has considered the latest available CO2 Baseline Database (CEA database, version 20¹⁶) at the time of requesting renewal of the crediting period for establishing the baseline emission factor, which itself considered all the new circumstances. Hence, the new circumstances do not have an impact on the baseline emission.

As a result of the impressive growth attained by the Indian Power Sector, the installed capacity has grown from mere 1,713 MW in 1950 to 441969.60 MW as on 31.03.2024. Sector-wise details of installed capacity are shown in [Table 1](#).

Table1 : Sector- wise installed capacity (MW) as on 31.03.2024 (CEA Database version 20)

Sector	Thermal					Nuclear	Hydro	RES	Total
	Coal	Lignite	Gas	Diesel	Total				
State	69437.50	1150.00	7012.05	280.31	77879.86	0.00	27254.45	2535.11	107669.43
Central	68019.96	3640.00	7237.91	0.00	78897.91	8180.00	15742.72	1632.30	104452.93
Private	73512.00	1830.00	10788.24	308.89	86439.15	0.00	3931.00	139477.09	229847.24
All India	210969.46	6620.00	25038.21	589.20	243216.87	8180.00	46928.17	143644.51	441969.55

Thus, current baseline remain same and there is no impact if circumstances, existing at the time of requesting renewal of crediting period.

Step 1.3: Assess whether the continuation of use of current baseline equipment(s) or an investment is the most likely scenario for the crediting period for which renewal is requested.

As explained in step 1.2, the baseline scenario was the electricity import/generation from the power plants connected to the electricity grid. Therefore this condition is not applicable to the project activity.

Step 1.4: Assessment of the validity of the data and parameters

This step stipulates that “Where emission factors, values or emission benchmarks are used and determined only once for the crediting period, they should be updated, except if the emission factors, values or emission benchmarks are based on the historical situation at the site of the project activity prior to the implementation of the project and cannot be updated because the historical situation does not exist anymore as a result of the CDM project activity.”

In the context of the present project activity the emission factor has been updated along with the approach used to calculate the emission factor.

Step 2: Update the current baseline and the data and parameters

This step is only applicable if any of the Steps 1.1, 1.2, 1.3 and/or 1.4 showed that the current baseline needs to be updated.

¹⁶ https://static-cdn.publive.online/saur-energy/media/pdf_files/2025/01user_guide_version_20.0.pdf

Step 2.1: Update the current baseline

As evident from the explanation provided above the baseline scenario remains unchanged. Only the approach used to calculate the baseline emission factor is updated as per the latest version available at the time of PDD submission for renewal.

In line with the paragraph 4 ,section 3.2.6 of the project standard version 4.7, the impact of new relevant national and/or sectoral policies and circumstances on the baseline taking into account relevant EB guidance with regard to renewal of the crediting period at the time of requesting renewal of crediting period; and the correctness of the application of an approved baseline methodology for the determination of the continued validity of the baseline or its update, and the estimation of emission reductions for the applicable crediting period .

Impact of the national and/or sectoral policies and circumstances upon the baseline scenario of the project activity

The Government of India enacted the Electricity Act in the year 2003 to harmonize and rationalize the provisions in the then existing laws. The Act consolidated the laws relating to generation, transmission, distribution, trading and use of electricity. With the Enactment of the act, the then existing laws viz, The Indian Electricity Act 1910, The Electricity Supply Act, 1948 and The Electricity Regulatory Commissions Act, 1998 were repealed. The Electricity Act 2003 was in force at the time of the completion of the baseline study for the registered PDD.

Section 3 of the said act required the Central Government to prepare the national electricity policy and tariff policy, in consultation with the State Governments and the Authority for development of the power system based on optimal utilization of resources such as coal, natural gas, nuclear substances or materials, hydro and renewable sources of energy. In accordance with the section 3 of the Electricity Act 2003, the Central Government notified the National Electricity Policy¹⁷ on 12th February 2005 which was in force at the time of completion of the baseline study as stated in the registered PDD of the project activity. This policy has not been revised since then and is currently in force as well.

In addition to the above policies, State Electricity Regulatory Commissions (SERCs) have announced preferential tariffs and Indian Renewable Energy Development Agency (IREDA) provides term loan assistance towards establishing biomass power projects. All these fiscal and financial incentives were in force at the time of completion of the baseline study for the registered PDD of the project activity and still continue to exist.

The state electricity regulatory commission issues tariff order in respect of procurement of power generated from renewables and there is no mandatory national and/or sectoral policies have come into effect that would affect the compliance of the current baseline. Hence, it can be concluded the current baseline complies with all relevant mandatory national and/or sectoral policies that have come into effect after the submission of the project activity for validation and are applicable at the time of requesting renewal of the crediting period.

However, in spite of the financial incentives given by the government to renewable power projects in India the generation from the low cost must run resources connected to the Indian Grid has not increased to such an extent that this would lead to more than 50% contribution from the low cost must run resources towards the total generation from the Indian Grid.

¹⁷ <https://www.cercind.gov.in/Act-with-amendment.pdf>

The approved methodology ACM0002 (Version 22), has been used to determine the baseline and the estimation of emission reductions for the applicable crediting period. As referred in the methodology, para 27 “If the project activity is the installation of a Greenfield power plant, 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”.

The approved methodology ACM0002 (Version 22), has been used to determine the baseline and the estimation of emission reductions for the applicable crediting period. As referred in the methodology “Tool to calculate the emission factor for an electricity system” (version 07.0) has been used to determine continued validity of the baseline based on combined margin (CM) calculations.

As per CEA database version 20, the fossil fuel dominated electricity is more than renewable sector and is continuing with same pattern. In light of the above discussion it is to be concluded that in accordance with relevant guidelines stipulated in the Project Standard version 4.7, national and/or sectoral policies and circumstances had been considered towards formulating the OM & BM baseline scenario. Hence the baseline scenario as applied for the present project activity remains justified.

As per the approved methodology ACM0002 (Version 22): “If the project activity is the installation of a Greenfield power plant, the baseline scenario is that the 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”.

The project activity involves setting up of hydro project to produce electricity and supply to the grid. In the absence of the project activity, the equivalent amount of power would have been supplied by the Indian grid, which is fed mainly by fossil fuel fired plants.

In the absence of the project activity, the equivalent amount of power would have been drawn from the Indian grid. Hence, the baseline for the project activity is the equivalent amount of power from the Indian grid.

The combined margin ($EF_{grid,CM,y}$) is the result of a weighted average of two emission factor pertaining to the electricity system: the operating margin (OM) and build margin (BM). Calculations for this combined margin must be based on data from an official source (where available) and made publicly available. The CEA database version 16 is the latest available data at the time of PD submission to DOE for validation, hence same is considered for emission factor calculations.

The combined margin of the Indian grid used for the project activity is as follows:

As the project activity is the installation of a new grid-connected wind power plant/unit, according to ACM0002 Version 22, the baseline scenario is the following.

Step 2.2: Update the data and parameters

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”

The step-wise procedure given in the tool have been applied for determination of the emission factor as detailed below:

As per methodology, combined grid emission factor as per the “Tool to calculate the emission factor for an electricity system” version 07 is calculated as below.

CO2 Baseline Database for the Indian Power Sector, Version 20, December 2024 published by Central Electricity Authority (CEA), Government of India has been used for the calculation of emission reduction.

As per Methodological tool: Tool to calculate the emission factor for an electricity system (Version 07.0, EB 100, Annex 4), following six steps have been followed:

- (a) Step 1: Identify the relevant electricity systems;
- (b) Step 2: Choose whether to include off-grid power plants in the project electricity system (optional);
- (c) Step 3: Select a method to determine the operating margin (OM);
- (d) Step 4: Calculate the operating margin emission factor according to the selected method;
- (e) Step 5: Calculate the build margin (BM) emission factor;
- (f) Step 6: Calculate the combined margin (CM) emission factor.

Step 1: Identify the relevant electricity systems

As described in tool “For determining the electricity emission factors, identify the relevant project electricity system. Similarly, identify any connected electricity systems”. It also states that “If the DNA of the host country has published a delineation of the project electricity system and connected electricity systems, these delineations should be used”. Keeping this into consideration, the Central Electricity Authority (CEA), Government of India has divided the Indian Power Sector into five regional grids viz. Northern, Eastern, Western, North-eastern and Southern.

However since August 2006, however, all regional grids except the Southern Grid had been integrated and were operating in synchronous mode, i.e. at same frequency. Consequently, the Northern, Eastern, Western and North-Eastern grids were treated as a single grid named as NEWNE grid from FY 2007-08 onwards for the purpose of this CO2 Baseline Database. As of 31 December 2013, the Southern grid has also been

synchronised with the NEWNE grid, hence forming one unified Indian Grid. Since the project supplies electricity to the Indian grid, emissions generated due to the electricity generated by the Indian grid as per CM calculations will serve as the baseline for this project.

Table: Geographical Scope of Indian Electricity Grid

INDIAN GRID				
Northern	Eastern	Western	North-Eastern	Southern
Chandigarh Delhi Haryana	Bihar Jharkh and	Chhattisgarh Gujarat	Arunachal Pradesh Assam	Andhra Pradesh Karnataka
Himachal Pradesh Jammu & Kashmir Ladakh Punjab	Orissa West Bengal	Dadar & Nagar Haveli and Daman & Diu Madhya	Manipur Meghalaya Mizoram	Kerala Tamil Nadu

Rajasthan	Sikkim	Pradesh	Nagaland	Puduch
	Andaman-Nicobar*	Maharashtra	Tripura	erry
		Goa		Lakshadweep*
Uttar Pradesh				Telangana
Uttarakhand				

Step2: Choose whether to include off-grid power plants in the project electricity system (optional)

Project participants may choose between the following two options to calculate the operating margin and build margin emission factor:

Option I: Only grid power plants are included in the calculation.

Option II: Both grid power plants and off-grid power plants are included in the calculation. The Project Participant has chosen only grid power plants in the calculation.

Step 3: Select a method to determine the operating margin (OM)

The calculation of the operating margin emission factor ($EF_{grid,OM,y}$) is based on one of the following methods, which are described under Step4:

(a) Simple OM; or

(b) Simple adjusted OM; or(c) Dispatch data analysis OM; or

(d) Average OM.

The data required to calculate Simple adjusted OM and Dispatch data analysis OM is not possible due to lack of availability of data to project developers. The choice of other two options for calculating operating margin emission factor depends on generation of electricity from low-cost/ must-run sources. In the context of the methodology low cost/must run resources typically include hydro, geothermal, wind, low cost biomass, nuclear and solar generation. Share of Must-Run (Hydro/Nuclear) (% of Net Generation)

2019-20	2020-21	2021-22	2022-23	2023-24	
17.0%	16.5%	15.8%	15.33%	12.52%	India

Data Source: Central Electricity Authority (CEA) database Version 20, December'2024¹⁸

The above data clearly shows that the percentage of total grid generation by lowcost/ must-run plants (on the basis of average of five most recent years) for the Indian grid is less than 50 % of the total generation. Thus the Average OM method cannot be applied, as low cost/must run resources constitute less than 50% of total grid generation.

The simple OM emission factor is calculated as the generation-weighted average CO2 emissions per unit net electricity generation (tCO2/MWh) of all generating power plants serving the system, not including low-cost/must-run power plants/units.

For the simple OM, the simple adjusted OM and the average OM, the emissions factor can be calculated using either of the two following data vintages:

Ex-ante option: if the ex-ante option is chosen, the emission factor is determined once at the validation stage, thus no monitoring and recalculation of the emissions factor during the crediting period is required.

¹⁸ https://static-cdn.publive.online/saur-energy/media/pdf_files/2025/01user_guide_version_20.0.pdf

OR

Ex-post option: if the ex-post option is chosen, the emission factor is determined for the year in which the project activity displaces grid electricity, requiring the emissions factor to be updated annually during monitoring.

PP has chosen ex-ante option for calculation of Simple OM emission factor using a 3-year generation-weighted average, based on the most recent data available at the time of submission of the PDD for validation.

OM determined at validation stage will be the same throughout the crediting period. There will be no requirement to monitor & recalculate the emission factor during the crediting period.

Step 4: Calculate the operating margin emission factor ($EF_{grid,OMSimple,y}$) according to the selected method
The operating margin emission factor has been calculated using a 3 year data vintage:

Net Generation in Operating Margin (GWH) (incl. Imports)			
	2021-22	2022-23	2023-24
Indian Grid	10,35,672	11,17,846	12,48,868

Simple Operating Margin (tCO ₂ /MWh) (incl. Imports) (1) (2)			
	2021-22	2022-23	2023-24
Indian Grid	0.9605	0.9710	0.9615

Build Margin (tCO ₂ /MWh) (not adjusted for imports)	
	2023-24
Indian Grid	0.5522

Weighted Generation Operating Margin	
Indian Grid	0.9643

Combined Margin Emission Factor for Wind/Solar Projects	
Indian Grid	0.8612

Step 5: Calculate the build margin (BM) emission factor ($EF_{grid,BM,y}$)

As per Methodological tool: "Tool to calculate the emission factor for an electricity system" (Version 07.0, EB 100, Annex 4) para 70:

In terms of vintage of data, project participants can choose between one of the following two options:

(a) Option 1 - for the first crediting period, calculate the build margin emission factor

ex ante based on the most recent information available on units already built for sample

group m at the time of PDD submission for validation. For the second crediting period, the build margin emission factor should be updated based on the most recent information available on units already built at the time of submission of the request for renewal of the crediting period. For the third crediting period, the build margin emission factor calculated for the second crediting period should be used. This option does not require monitoring the emission factor during the crediting period.

(b) Option 2 - For the first crediting period, the build margin emission factor shall be updated annually, ex post, including those units built up to the year of registration of the project activity or, if information up to the year of registration is not yet available, including those units built up to the latest year for which information is available. For the second crediting period, the build margin emissions factor shall be calculated ex ante, as described in Option 1 above. For the third crediting period, the build margin emission factor calculated for the second crediting period should be used.

Option 1 as described above is chosen by PP to calculate the build margin emission factor for the project activity. BM is calculated ex-ante based on the most recent information available at the time of submission of PDD and is fixed for the entire crediting period.

Build Margin (tCO₂/MWh) (not adjusted for imports)

2023-24

INDIAN Grid

0.8682

Step 6: Calculate the combined margin (CM) emission factor ($EF_{grid,CM,y}$)

As per Methodological tool: "Tool to calculate the emission factor for an electricity system" (Version 07.0, EB 100, Annex 4) para 79:

The calculation of the combined margin (CM) emission factor ($EF_{grid,CM,y}$) is based on one of the following methods:

- (a) Weighted average CM; or
- (b) Simplified CM.

PP has chosen option (a) i.e weighted average CM to calculate the combined margin emission factor for the project activity.

The combined margin emissions factor is calculated as follows: $EF_{grid,CM,y} = EF_{grid,OM,y} * W_{OM} + EF_{grid,BM,y} * W_{BM}$

Where:

$EF_{grid,BM,y}$ = Build margin CO₂ emission factor in year y (tCO₂ / MWh) $EF_{grid,OM,y}$ = Operating margin CO₂ emission factor in year y (tCO₂ / MWh) W_{OM} = Weighting of operating margin emissions factor (per cent)

W_{BM} = Weighting of build margin emissions factor (per cent)

The following default values should be used for W_{OM} and W_{BM} :

Wind and solar power generation project activities: W_{OM} = 0.75 and W_{BM} = 0.25 (owing to their intermittent and non-dispatchable nature) for the first crediting period and for subsequent crediting periods. Since project activity is of wind power generation, the above weightage has been considered for OM and BM.

Therefore, $EF_{grid,CM,y} = 0.9643 * 0.75 + 0.5542 * 0.25$
 $= 0.8612 \text{ tCO}_2/\text{MWh}$

Project Emissions: For most renewable power generation projects activities $PE_y = 0$. As per applied methodology only emission associated with the fossil fuel combustion, emission from operation of geo-

thermal power plants due to release of no condensable gases, emission from water reservoir of Hydro should be accounted for the project emission. Since the project activity is a wind power project.

Hence $PE_y = 0$

Leakage Emissions: No Leakage emissions are considered. The main emission potentially giving rise to leakage in the context of electrical sector projects is emission arising due to activities arising such as power plant construction and upstream emission from fossil fuel use (e.g. extraction, processing, and transport). These emission sources are neglected.

Hence, $LE_y = 0$

Emission reduction (ER_y): The project activity mainly reduces carbon dioxide through substitution of grid electricity generation with fossil fuel fired power plant by renewable electricity. The emission reduction ER_y by the project activity during a given year y is the difference between Baseline emission and Project emission & Leakage emission.

$$ER_y = BE_y - PE_y$$

Where,

ER_y = emission reduction in tCO₂ /year

BE_y = baseline emission in tCO₂ /year

PE_y = Project emission in tCO₂ /year

The combined margin of the Indian grid used for the project activity is as follows:

Parameter	Value	Nomenclature	Source
$EF_{grid,CM,y}$	0.8612 tCO ₂ /MWh	Combined margin CO ₂ emission factor for the project electricity system in year y .	Calculated as the weighted average of the operating margin (0.75) & build margin (0.25) values, sourced from Baseline CO ₂ Emission Database, Version 20, December 2024 published by Central Electricity Authority (CEA), Government of India.
$EF_{grid,OM,y}$	0.9643 tCO ₂ /MWh	Operating margin CO ₂ emission factor for the project electricity system in year y .	Calculated as the last 3 year (2021-22, 2022-23, 2023-24) generation-weighted average, sourced from Baseline CO ₂ Emission Database, Version 20, December 2024 published by Central Electricity Authority (CEA), Government of India.
$EF_{grid,BM,y}$	0.5522 tCO ₂ /MWh	Build margin CO ₂ emission factor for the project electricity system in year y .	Baseline CO ₂ Emission Database, Version 20, December 2024 published by Central Electricity Authority (CEA), Government of India.

3.5 Additionality

Demonstrate and assess the additionality of the project, in accordance with the applied methodology and any relevant tools, taking into account the following additionality methods:

3.5.1 Regulatory Surplus

Is the project located in an UNFCCC Annex 1 or Non-Annex 1 country?

☐ Annex 1 country ☒ Non-Annex 1 country

Are the project activities mandated by any law, statute, or other regulatory framework?

☐ Yes ☒ No

If the project is located inside a Non-Annex 1 country and the project activities are mandated by a law, statute, or other regulatory framework, are such laws, statutes, or regulatory frameworks systematically enforced?

☒ Yes ☐ No

3.5.2 Additionality Methods

Not Applicable, since this is the 2nd renewal of crediting period for this project activity. As per VCS standard 4.7 A full reassessment of additionality is not required when renewing the project crediting period unless otherwise specified in the methodology. However, regulatory surplus shall be demonstrated in accordance with the requirements set out in the VCS Program rules and the project description shall be updated accordingly

Hence “In accordance with Section 3.9.8 of the VCS Standard4.7, there is no requirement to re-demonstrate additionality at this stage, as additionality was assessed and validated at the time of project registration.

The project activity complies with all applicable legal and regulatory requirements and has obtained all necessary statutory approvals; however, there are no enforcement mechanisms, penalties, or legal obligations that would compel the project proponent to implement the project activity. Therefore, the project activity goes beyond regulatory requirements and satisfies the regulatory surplus criterion under the VCS Program standard 4.7.

The project description has been updated accordingly to reflect the applicable regulatory framework and the voluntary nature of the project activity.

The demonstration of additionality as per registered PDD is mentioned below,

In line with VCS Standard version 3.5, the additionality of the Project activity is ascertained in line with the applicable guidance from the UNFCCC. The demonstration of additionality for the proposed Project activity is being carried out in accordance with the additionality tool provided by the UNFCCC i.e. “Tool for demonstration and assessment of Additionality” Version 07.0.0, The tool provides a step-wise approach to demonstrate additionality which is displayed below:

Step 0: Demonstration whether the proposed project activity is the first-of-its-kind;

No, this project activity is not first-of-its-kind project. The additionality of the project activity has demonstrated by using the investment barrier and the same has been discussed in the following steps.

Step 1: Identification of alternatives to the project activity consistent with current laws and regulations

Sub-step 1a: Define alternatives to the project activity:

Identify realistic and credible alternative(s) available to the project participants or similar project developers that provide outputs or services comparable with the proposed VCS project activity.

Alternative 1: The proposed project activity not undertaken as a VCS project activity.

The PP could proceed with the implementation of the project without Carbon credit benefits. The electricity produced from the renewable energy project would have been sold to the grid. This is in compliance with all applicable legal and regulatory requirements and can be a part of the baseline. However, the Project activity is not feasible without revenues from sale of Carbon Credits. This argument has been discussed in step 2 of the Additionality section.

Alternative 2: No proposed project activity and equivalent amount of energy would have been produced by the grid electricity system through its currently running power plants and by new capacity addition to the grid i.e. Continuation of the present situation.

The PP would have continued without investment in Project activity with usual business activities. The grid would continue with the fossil fuel based power projects and this would result in GHG emissions. Hence, the new capacity add-on from a fossil fuel based power plant is appropriate, realistic & credible baseline alternative for the project activity.

Outcome of Sub-step 1a: All the realistic alternatives for the project activity have been enlisted above.

Sub-step 1b: Consistency with mandatory laws and regulations:

The alternative(s) shall be in compliance with all applicable legal and regulatory requirements, even if these laws and regulations have objectives other than GHG reductions, e.g. to mitigate local air pollution. (This sub-step does not consider national and local policies that do not have legally-binding status.).

The relevant national laws and regulations pertaining to generation of energy in India are:

Electricity Act 2003

National Electricity Policy 2005

Tariff Policy 2006

The Project activity conforms to all the applicable laws and regulations in India:

Power generation using wind energy is not a legal requirement or a mandatory option.

There are state and sectoral policies, framed primarily to encourage wind power projects. These policies have also been drafted realizing the extent of risks involved in the projects and to attract private investments.

The Indian Electricity Act, 2003 (May 2007 Amendment) does not influence the choice of fuel used for power generation.

There is no legal requirement on the choice of a particular technology for power generation.

Outcome of Sub-step 1b: Hence, both the alternatives enlisted above are found to comply with the mandatory laws and regulations taking into account the enforcement of the legislations in the region or country and EB decisions on national and/or sectoral policies and regulations. However, Alternative 2 has been selected as the appropriate baseline alternative for this project activity.

Step 2: Investment analysis

Determine whether the proposed project activity is economically or financially less attractive than at least one other alternative, identified in step 1, without the revenue from the sale of emission reductions credits. To conduct the investment analysis, use the following sub-steps:

Sub-step 2a: Determine appropriate analysis method

The Project activity envisages to export the power to Indian grid and the revenues from the sale would be generated in accordance with the terms and tariffs established in the Power Purchase Agreement (PPA). Thus, simple cost analysis cannot be used as the analysis method as the sale of the units of generated electricity shall result in a revenue stream during the operations of the Project activity.

After eliminating Option I, the use of Benchmark analysis (Option III) is the method of analysis that has been selected as the most suitable method. This method determines the attractiveness of the project activity for the investors, as well as provides a measure of the viability of the investment to generate revenues during its operation, as compared with other avenues and investment options. Hence, the Benchmark analysis method is to be employed for analysis of the said project.

Sub-step 2b (Option III): Apply benchmark analysis

The investment analysis using Benchmark analysis approach (Option III) has been chosen. Further, this method illustrates the evaluation of the Project by the PP before the decision to undertake the project was taken and management approval granted.

Choice of Financial Indicator:

According to the “Tool for demonstration and assessment of Additionality”, the financial indicator can be based either on (1) project IRR or (2) equity IRR. There is no general preference between the approaches (1) or (2). The benchmark chosen for analysis shall be fully consistent with the choice of approach. Therefore in accordance with the guidance, the relevant financial indicator for project activity has been chosen as post tax equity IRR.

Choice of Benchmark:

As per para 15 of Guidelines on the assessment of the investment analysis (Annex 05, EB 62), the value for cost of equity is selected from Appendix A of Annex 05 of EB 62. The default value of Return on Equity for Group-1 projects in India is 11.75%.

As per paragraph 7 of Appendix A of the above-mentioned document, “In situations where an investment analysis is carried out in nominal terms, project participants can convert the real term values provided in the table below to nominal values by adding the inflation rate. 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”.

Investment decision made date for each WTG owner:

WTG Owner	Decision made date
Mytrah Vayu Krishna Private Limited (Karnataka)	25/04/2013
Mytrah Vayu Krishna Private Limited (Andhra Pradesh)	25/04/2013
Mytrah Vayu (Manjira) Private Limited (Taminadu)	10/08/2012

Default Value Benchmark Calculations:

As mentioned in Appendix A in EB62 Annex 5 and latest Clarification from UNFCCC in EB 73 (Applicability of the “Guidelines on the assessment of investment analysis” version 01.0), default value benchmark is presented below:

Appendix A in EB62 Annex 5 specifies default value of expected return on equity in real terms for Energy Industries (Group 1) in India = 11.75%

The Required return on equity (benchmark) was computed in the following manner:

Nominal Benchmark¹⁹ = $\{(1 + \text{Real Benchmark}) * (1 + \text{Inflation rate})\} - 1$

Where:

Default value for Real Benchmark = 11.75% (as per Appendix of Annex 5, EB 62)

Inflation Rate forecast by Reserve Bank of India (RBI) (i.e. Central Bank of India) for India

Inflation Forecast as per RBI:

WTG Owner	WPI Inflation Forecast (Median) ²⁰		Benchmark	
	5 Years	10 Years	5 Years	10 Years
Mytrah Vayu Krishna Private Limited (Karnataka)	6.50%	6.00%	19.01%	18.46%
Mytrah Vayu Krishna Private Limited (Andhra Pradesh)	6.50%	6.00%	19.01%	18.46%
Mytrah Vayu (Manjira) Private Limited (Taminadu)	6.50%	6.00%	19.01%	18.46%

As a conservative approach, benchmark of 18.46% has been selected for this project activity.

¹⁹ As per Pg. 320 of Corporate Finance, Second Edition of Aswath Damodaran

²⁰ https://rbidocs.rbi.org.in/rdocs/Publications/PDFs/01SPFMD250113_F.pdf

Please check below tables for input parameters of all three sites Based on input parameters, the IRR comes out to be:

WTG Owner	Equity IRR without CDM	Benchmark
Mytrah Vayu Krishna Private Limited (Karnataka)	7.66%	18.46%
Mytrah Vayu Krishna Private Limited (Andhra Pradesh)	14.07%	18.46%
Mytrah Vayu (Manjira) Private Limited (Taminadu)	10.66%	18.46%

Sub-step 2c: Sensitivity Analysis:

As per Guidance 20 and 21 of Annex 5 of EB 62 Annex 5, only variables, including the initial investment cost, that constitute more than 20% of either total project costs or total project revenues should be subjected to reasonable variation and the results of this variation should be presented in the PDD and be reproducible in the associated spreadsheets. Guidance also states, "All parameters varied need not necessarily be subjected to both negative and positive variations of the same magnitude". The Annex also states, as a general point of departure, variations in the sensitivity analysis should at least cover a range of +10% and -10%, unless this is not deemed appropriate in the context of the specific project circumstances.

Since the project cost is already firmed up, the cost is not variable. The tariff is determined by PPA which is fixed for years mentioned as per the tariff order and hence it need not be subjected to variation. All other expenses are much less than 20% of the total cost. Hence, only PLF needs to be subjected to reasonable variation. Nevertheless, following factors have been subjected to sensitivity analysis:

PLF

O&M Cost

Project Cost

Tariff Rate

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%
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For Andhra Pradesh (Mytrah Vayu Krishna Private Limited)

Variation %	-10%	Normal	10%	Breaching Value
PLF	10.10%	14.07%	18.25%	15.50%
O&M	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%

It can be observed from above table that in various scenarios wherein there are changes in tariff, O&M cost, net saleable units and project's capital cost, the Equity IRR does not cross the benchmark. Thus, it can be concluded that revenue from sale of VCUs is important to alleviate this gap and hence the project has been considered to be additional.

	Probability to breach the benchmark
PLF	Not possible as the PLF has been reported as per the Third Party Report based on long term data and hence a PLF fluctuation of more than 10% is unlikely to happen.
O&M	With the country experiencing 5% inflation on an average, the question of O&M coming down is ruled out. Moreover, the Term sheet also confirms the escalation of 5% in O & cost year on year basis.

Project Cost	The total project cost is higher than considered at the time of decision making cost. Since the project cost ²¹ is firm, there is no possibility of project cost going below this level. However, we have conducted sensitivity analysis for project cost being 10% less than that considered during decision making. Still, the IRR does not breach the Benchmark.
Tariff Rate	The tariff is determined by PPA which is fixed for years mentioned as per the State Electricity Board's tariff order. Hence, there is no probability to get variation for the same.

Step 3: Barrier analysis

Barrier analysis has not been used.

Step 4: Common practice Analysis

Sub-step 4a: Analyze other activities similar to the proposed Project activity:

Common practice analysis has been carried out as per “Methodological Tool on Common Practice, version 03.1²² EB84, Annex 7”. In the context of the project activity, the following parameters are defined as per Part I. Definitions of the Guidelines on Common Practice:

Applicable Geographical Area (Para 9): The host country, i.e. India has been considered as the applicable geographical area for this project.

Measure (Para 10): The project activity reduces greenhouse gas emissions by generating electricity using renewable energy source-wind. Therefore, the project activity falls under the following measure: (b) Switch of technology with or without change of energy source including energy efficiency improvement as well as use of renewable energies.

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Output (Para 11): The project activity produces electricity. Therefore, electricity is considered as output of the project activity.

Different Technologies (Para 12): The project activity uses wind energy for producing electricity and hence as per Para 12(a), the technologies which use energy source/ fuel other than wind will be considered as the different technologies for the project activity

The common practice analysis is carried out step by step as per Part 5 of the guideline.

²¹ CA certified specifying the actual project cost.

²² <https://cdm.unfccc.int/methodologies/PAMethodologies/tools/am-tool-24-v1.pdf>

Stepwise approach for common practice as follows:

Step (1): calculate applicable capacity or output range as +/-50% of the total design capacity or output of the proposed project activity.

Investment State	Range	Capacity in MW
Andhra Pradesh	+50%	56.1
	Capacity of the proposed project activity	37.4
	-50%	18.7

Karnataka	+50%	142.8
	Capacity of the proposed project activity	92.5
	-50%	47.6
Tamil Nadu	+50%	150.8
	Capacity of the proposed project activity	100.5
	-50%	50.3

Step (2): identify similar projects (both CDM and non-CDM) which fulfil all of the following conditions:

The projects are located in the applicable geographical area;

The projects apply the same measure as the proposed project activity;

The projects use the same energy source/fuel and feedstock as the proposed project activity, if a technology switch measure is implemented by the proposed project activity;

The plants in which the projects are implemented produce goods or services with comparable quality, properties and applications areas (e.g. clinker) as the proposed project plant;

The capacity or output of the projects is within the applicable capacity or output range calculated in Step 1;

The projects started commercial operation before the project design document (CDM- PDD) is published for global stakeholder consultation or before the start date of proposed project activity, whichever is earlier for the proposed project activity.

Identification of the similar projects (CDM and non-CDM) is carried out as per sub-steps of Step (2) as follows:

Project is located at Andhra Pradesh, Karnatak & Tamil Nadu, India. The applicable geographical area has been considered as INDIA (Host Country).

The project is a wind power investment. So the PP has considered only wind power projects for the analysis.

The project activity is implementing technology switch measure. Therefore, all projects which use the same energy source/ fuel-wind as being used by the project activity are candidates for similar projects.

Wind power projects are considered for the analysis i.e. projects those produce goods or services with comparable quality, properties and applications areas of the project activity.

The capacity range of the projects is within the applicable capacity range as calculated in Step 1.

The start date of the project activity is 21/02/2014 & the webhosting of the project was done on 29/01/2016. So wind projects prior to the start date of the project activity, and which has started commercial operation after India's ratification of Kyoto Protocol, are considered for the analysis.

As per above guidance, only wind power projects have been considered for the analysis. As per the assessment by the PP, the total CDM & non-CDM wind projects are as follows:

Investment State	Similar Projects ²³	Source
Andhra Pradesh	127	www.cdmpipeline.org & Wind Power Directory 2014, 14th edition
Karnataka	8	
Tamil Nadu	7	

Step 3: Within the projects identified in Step 2, identify those that are neither registered CDM project activities, project activities submitted for registration, nor project activities undergoing validation. Note their number Nall.

Outcome of Step 3:

Out of the identified projects under Step 2, PP has omitted projects under CDM consideration under CDM EB. The balance similar projects are as follows:

Investment State	Particulars	Values
Andhra Pradesh	Nall	117
Karnataka	Nall	8
Tamil Nadu	Nall	7

Step 4: Within similar projects identified in Step 3, identify those that apply technologies that are different to the technology applied in the proposed project activity. Note their number Ndiff.

Outcome of Step 4:

As per paragraph 4/d of the common practice analysis: Different technologies are technologies that deliver the same output and differ by the following (as appropriate in the context of the measure applied in the proposed clean development mechanism (CDM) project activity and applicable geographical area):

²³ Source: Common Practice Analysis Worksheet. The evidence is submitted to the DOE

Investment climate on the date of the investment decision, inter alia:

Access to technology;

Subsidies or other financial flows;

Promotional policies;

Legal regulations;

The similar projects considered for the analysis as per step 3 above are located in various States of the host country, India. The policies/tariff for each state is regulated by the State Electricity Regulatory Commission (SERC) of the respective states. So, each of the State is having its distinct investment climate/scenarios for wind power developers on the date of the investment decision, be it Access to technology; Subsidies or other financial flows; Promotional policies; Legal regulations etc. Thus, the projects in the State of Andhra Pradesh, Karnataka & Tamil Nadu are distinct over the rest in the host country India with regards to the investment climate on the date of the investment decision.

Thus the similar projects identified above located in other States apart from these states are considered as Ndiff.

Thus the identified projects under Step 3, projects that have applied different technology than that of the proposed project are as follows:

Investment State	Particulars	Values
Andhra Pradesh	Ndiff	114
Karnataka	Ndiff	7
Tamil Nadu	Ndiff	7

Step 5: Calculate factor $F = 1 - N_{diff}/N_{all}$ representing the share of similar projects (penetration rate of the measure/technology) using a measure/technology similar to the measure/technology used in the proposed project activity that deliver the same output or capacity as the proposed project activity.

From the information in step 2 and step 3, followings are the results:

Investment State	Particulars	Values	Conclusion
Andhra Pradesh	factor $F = 1 - N_{diff}/N_{all}$	0.0256	Dissatisfy the criteria i.e. $F > 0.2$
	$N_{diff} - N_{all}$	3	Dissatisfy the criteria i.e. $(N_{diff} - N_{all}) > 3$
Karnataka	factor $F = 1 - N_{diff}/N_{all}$	0.1250	Dissatisfy the criteria i.e. $F > 0.2$
	$N_{diff} - N_{all}$	1	Dissatisfy the criteria i.e. $(N_{diff} - N_{all}) > 3$
Tamil Nadu	factor $F = 1 - N_{diff}/N_{all}$	0.0000	Dissatisfy the criteria i.e. $F > 0.2$
	$N_{diff} - N_{all}$	0	Dissatisfy the criteria i.e. $(N_{diff} - N_{all}) > 3$

As per para 18 of “Methodological Tool on Common Practice” Version 03.1 – The proposed project activity is a common practice within a sector in the applicable geographical area if the factor F is greater than 0.2 and Nall-Ndiff is greater than 3.”

Outcome of Common Practice Analysis:

The project activity is not the common practice as factor F is less than 0.2 and Nall-Ndiff is less than 3. Hence, propose project is not the common practice & is additional.

3.6 Methodology Deviations

There is no methodology deviation

4 QUANTIFICATION OF ESTIMATED GHG EMISSION REDUCTIONS AND REMOVALS

4.1 Baseline Emissions

As per the approved consolidated Methodology ACM0002 (Version 22.0) para 57: Baseline emissions include only CO₂ emissions from electricity generation in fossil fuel fired power plants that are displaced due to the project activity. The methodology assumes that all project electricity generation above baseline levels would have been generated by existing grid-connected power plants and the addition of new grid-connected power plants. The baseline emissions are to be calculated as follows:

$$BE_y = EG_{PJ,y} * EF_{grid,CM,y}$$

Where:

BE_y	=	Baseline emissions in year y (t CO ₂ /yr)
$EG_{PJ,y}$	=	Quantity of net electricity generation that is produced and fed into the grid as a result of the implementation of the VCS project activity in year y (MWh/yr)
$EF_{grid,CM,y}$	=	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” (t CO ₂ /MWh)

Baseline Emissions

As per the equation 7 of the methodology ACM 0002 (Version 22.0),

$$BE_y = EG_{PJ, y} * EF_{grid, CM, y} \quad (1)$$

Where:

- BE_y : Baseline emissions in year y (tCO₂e/yr)
- $EG_{PJ, y}$: Quantity of net electricity generation that is produced and fed into the grid as a result of the implementation of the VCS project activity in year y (MWh/yr)
- $EF_{grid, CM, y}$: Combined margin CO₂ 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” (tCO₂e/MWh)

Calculation of $EF_{grid, CM, y}$

As per methodology, combined grid emission factor as per the “Tool to calculate the emission factor for an electricity system” version 06 is calculated as below.

CO₂ Baseline Database for the Indian Power Sector, Version 20, December 2024 published by Central Electricity Authority (CEA), Government of India has been used for the calculation of emission reduction.

As per Methodological tool: Tool to calculate the emission factor for an electricity system (Version 07.0, EB 100, Annex 4), following six steps have been followed:

STEP 1: Identify the relevant electricity systems;

STEP 2: Choose whether to include off-grid power plants in the project electricity system (optional);

STEP 3: Select a method to determine the operating margin (OM);

STEP 4: Calculate the operating margin emission factor according to the selected method; STEP 5: Calculate the build margin (BM) emission factor;

STEP 6: Calculate the combined margin (CM) emission factor.

The Central Electricity Authority (CEA) has published CO₂ baseline database in its version 20 (December, 2024). The values for OM, BM, CM are given excluding and including imports. For the present project activity, including imports are considered.

STEP 1: Identify the relevant electricity power systems

Grid/project electricity system is defined by the spatial extent of the power plants that are physically connected through transmission and distribution lines to the project activity (e.g. the renewable power plant location or the consumers where electricity is being saved) and that can be dispatched without significant transmission constraints.

The Indian power system now operates as a unified national grid, integrating all regional networks into a single electricity system. As the project activity is located in the states of Tamil Nadu, Andhra Pradesh, and Karnataka, it falls within the unified Indian grid framework. Each state meets its own demand through its generation facilities and allocations from central sector power plants, while also engaging in electricity exchanges across the national grid. Although there are imports and exports of electricity between states, the majority of power is produced and consumed locally within the same states. Consequently, it is appropriate to assume that the impacts of the project activity will be confined to the unified Indian grid in which it is situated. Hence, for the purpose of estimating the baseline emission factor, the unified Indian grid has been chosen as the relevant electricity system.

Table: Grid Classification

Northern	Eastern	Western	North-Eastern	Southern
Chandigarh	Bihar	Chhattisgarh	Arunachal Pradesh	Andhra Pradesh
Delhi	Jharkhand	Gujarat	Assam	Karnataka
Haryana	Orissa	Daman & Diu	Manipur	Kerala
Himachal Pradesh	West Bengal	Dadar & Nagar Haveli	Meghalaya	Tamil Nadu
Jammu & Kashmir	Sikkim	Madhya Pradesh	Mizoram	Telangana
Punjab	Andaman & Nicobar	Maharashtra	Nagaland	Puducherry
Rajasthan		Goa	Tripura	Lakshadweep
Uttar Pradesh				
Uttarakhand				

STEP 2: Choose whether to include off-grid power plants in the project electricity system (optional)

Project participants have the option of choosing between the following two options to calculate the operating margin and build margin emission factor:

Option I: Only grid power plants are included in the calculation.

Option II: Both grid power plants and off-grid power plants are included in the calculation. The Project Participant has chosen only grid power plants in the calculation.

STEP 3: Select a method to determine the operating margin (OM) method

The calculation of the operating margin emission factor (EF_{grid,OM,y}) is based on one of the following methods, which are described under Step 4:

- Simple OM, or
- Simple adjusted OM, or
- Dispatch data analysis OM, or
- Average OM.

The data required to calculate simple adjusted OM or Dispatch data analysis is not possible due to lack of availability of this activity data to the project developers. The choice of other two options for calculating the operating margin emission factor depends on the generation of electricity from low cost/must run sources. In the context of the methodology low cost/must run resources typically include hydro, geothermal, wind, low cost biomass, nuclear and solar generation.

Share of Must-Run (Hydro/Nuclear) (% of Net Generation)

	2019-20	2020-21	2021-22	2022-23	2023-24
Indian Grid	17.0%	16.5%	15.8%	15.33%	12.52%

Data Source: Central Electricity Authority (CEA) database Version 20, December 2024

The above data clearly shows that the percentage of total grid generation by low cost/must run plants (on the basis of average of three most recent years) for the Indian grids is less than 50 % of the total generation. Thus the average emission rate method cannot be applied, as low cost/must run resources constitute less than 50% of total grid generation.

The “Simple operating margin” has been calculated as per the weighted average emissions (in tCO₂/MWh) of all generating sources serving the system, excluding hydro, geo-thermal, wind, low-cost biomass, nuclear and solar generation;

For the simple OM, the simple adjusted OM and the average OM, the emissions factor can be calculated using either of the two following data vintages:

- **Ex ante option:** If the ex ante option is chosen, the emission factor is determined once at the validation stage, thus no monitoring and recalculation of the emissions factor during the crediting period is required. Or
- **Ex post option:** If the ex post option is chosen, the emission factor is determined for the year in which the project activity displaces grid electricity, requiring the emissions factor to be updated annually during monitoring.

PP has chosen ex ante option for the calculation of OM with 3 years generation weighted average of the most recent years available at the time of submission of VCS-PD to the DOE for validation.

OM determined at validation stage will be the same throughout the crediting period. There will be no requirement to monitor & recalculate the emission factor during the crediting period.

STEP 4: Calculate the operating margin emission factor ($EF_{grid,OM,y}$) according to the selected method.

The operating margin emission factor has been calculated using a 3 year data vintage:

Net Generation in Operating Margin (MWh) (incl. Imports)			
	2021-22	2022-23	2023-24
Indian Grid	1,035,672	1,117,846	1,248,868

Simple Operating Margin (tCO ₂ /MWh) (incl. Imports)			
	2021-22	2022-23	2023-24
Indian Grid	0.9605	0.9710	0.9615

Weighted Generation Operating Margin	
Indian Grid	0.9643

STEP 5: Calculate the build margin emission factor ($EF_{grid,BM,y}$)

As per Methodological tool: “Tool to calculate the emission factor for an electricity system” (Version 07.0, EB 100, Annex 4) para 73:

In terms of vintage of data, project participants can choose between one of the following two options:

- Option 1- for the first crediting period, calculate the build margin emission factor ex ante based on the most recent information available on units already built for sample group m at the time of PD submission to the DOE for validation. For the second crediting period, the build margin emission factor should be updated based on the most recent information available on units already built at the time of submission of the request for renewal of the crediting period to the DOE. For the third crediting period, the build margin emission factor calculated for the second crediting period should be used. This option does not require monitoring the emission factor during the crediting period.
- Option 2- For the first crediting period, the build margin emission factor shall be updated annually, ex post, including those units built up to the year of registration of the project activity or, if information up to the year of registration is not yet available, including those units built up to the latest year for which information is available. For the second crediting period, the build margin emissions factor shall be calculated ex ante, as described in Option 1 above. For the third crediting period, the build margin emission factor calculated for the second crediting period should be used.

Option 1 as described above is chosen by PP to calculate the build margin emission factor for the project activity. BM is calculated ex-ante based on the most recent information available at the time of submission of PD and is fixed for the entire crediting period.

Build Margin (tCO ₂ /MWh) (not adjusted for imports)	
	2023-24
Indian Grid	0.5522

(With sample group constituting most recent capacity additions to the grid comprising 20% of the system generation)

STEP 6: Calculate the combined margin (CM) emissions factor

Combined Margin – The combined margin is the weighted average of the simple operating Margin and the build margin. In particular, for intermittent and non-dispatchable generation types such as wind and solar photovoltaic, the Tool to calculate the emission factor for an electricity system, Version 07.0, EB 100, Annex 4, allows to weigh the operating margin and Build margin at 75% and 25%, respectively.

The baseline emission factor is calculated using the combined margin approach as described in the following steps:

Calculation of Baseline Emission Factor ($EF_{grid,y}$)

The baseline emission factor $EF_{grid,y}$ is calculated as the weighted average of the Operating Margin emission factor ($EF_{grid,OM,y}$) and the Build Margin emission factor ($EF_{grid,BM,y}$):

$$EF_{grid,y} = W_{OM} * EF_{grid,CM,y} + W_{BM} * EF_{grid,CM,y}$$

Where,

W_{OM}	75% weight of operating margin emissions factor (%)
W_{BM}	25% weight of operating margin emissions factor (%)
$EF_{grid,CM,y}$	Build margin CO ₂ emission factor of a particular grid in year y; calculated as described in Steps 3&4 above (tCO ₂ /MWh)
$EF_{grid,CM,y}$	Build margin CO ₂ emission factor of a particular grid in year y; calculated as described in Steps 5 above (tCO ₂ /MWh)

Baseline Emission factor:

$$EF_{grid,CM,y} = 0.75 * 0.9643 + 0.25 * 0.5522$$

$$= 0.8612 \text{ tCO}_2/\text{MWh}$$

Therefore, Baseline Emissions:

$$BE_y = EG_{PJ,y} \times EF_{grid,CM,y}$$

$$BE_y = 429,162.45 \times 0.8612 = 369,594 \text{ tCO}_2\text{e (Round down value)}$$

4.2 Project Emission

As per the approved consolidated Methodology ACM0002 (Version 22.0, EB 122 para 40: “For most renewable energy 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 as project emissions by using the following equation:

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

Where:

PE_y = Project emissions in year y (t CO₂e/yr)

$PE_{FF,y}$ = Project emissions from fossil fuel consumption in year y (t CO₂/yr)

$PE_{GP,y}$ = Project emissions from the operation of dry, flash steam or binary geothermal power plants in year y (t CO₂e/yr)

$PE_{HP,y}$ = Project emissions from water reservoirs of hydro power plants in year y (t CO₂e/yr)

$PE_{BESS,y}$ = Project emissions from charging of a BESS using electricity from the grid or from fossil fuel electricity generators (t CO₂e/yr)

$PE_{PSP,y}$ = Project emissions from utilizing electricity from the grid for pumping operation of PSP in excess to the production of the renewable power plant operating in coordination with the PSP (t CO₂e/yr)

As the project activity is the installation of a new grid-connected Wind Power plant and does not involve any project emissions from fossil fuel, operation of dry, flash steam or binary geothermal power plants, and from water reservoirs of hydro power plants. Therefore $PE_{FF,y}$, $PE_{GP,y}$, $PE_{HP,y}$, $PE_{BESS,y}$, $PE_{PSP,y}$ are equal to zero and thus, $PE_y = 0$.

4.3 Leakage Emission

As per the approved consolidated Methodology ACM0002 (Version 22.0, EB 122, para 71: “No other leakage emissions are considered. The emissions potentially arising due to activities such as power plant construction and upstream emissions from fossil fuel use (e.g., extraction, processing, transport etc.) are neglected.

Hence LE_y = 0.

4.4 Estimated GHG Emission Reductions and Carbon Dioxide Removals

Estimated GHG Reductions are calculated as follows:

$$ER_y = BE_y - PE_y$$

Where:

ER _y	=	Emission reductions in year y (t CO ₂ e/yr)
BE _y	=	Baseline emissions in year y (t CO ₂ /yr)
PE _y	=	Project emissions in year y (t CO ₂ e/yr)

Therefore, Net GHG Emission Reductions and Removals are calculated as follows:

$$ER_y = BE_y - PE_y$$

Vintage period	Estimated baseline emissions (tCO ₂ e)	Estimated project emissions (tCO ₂ e)	Estimated leakage emissions (tCO ₂ e)	Estimated reduction VCU (tCO ₂ e)	Estimated removal VCU (tCO ₂ e)	Estimated total VCUs (tCO ₂ e)
21-Feb-2024 to 31-Dec-2024	318,703	0	0	318,703	0	318,703
01-jan-2025 to 31-Dec-2025	369,291	0	0	369,291	0	369,291
01-jan-2026 to 31-Dec-2026	369,291	0	0	369,291	0	369,291
01-jan-2027 to 31-Dec-2027	369,291	0	0	369,291	0	369,291

01-jan-2028 to 31-Dec-2028	370,302	0	0	370,302	0	370,302
01-jan-2029 to 31-Dec-2029	369,291	0	0	369,291	0	369,291
01-jan-2030 to 31-Dec-2030	369,291	0	0	369,291	0	369,291
01-jan-2031 to 31-Dec-2031	369,291	0	0	369,291	0	369,291
01-jan-2032 to 31-Dec-2032	370,302	0	0	370,302	0	370,302
01-jan-2033 to 31-Dec-2033	369,291	0	0	369,291	0	369,291
01-jan-2034 to 20-Feb-2034	51,599	0	0	51,599	0	51,599
Total	3,695,943	0	0	3,695,943	0	3,695,943

5 MONITORING

5.1 Data and Parameters Available at Validation

Data / Parameter	$EF_{grid,OM,y}$
Data unit	tCO ₂ /MWh
Description	Operating Margin CO ₂ emission factor in year y
Source of data	Calculated from CEA database, Version 20 ²⁴ , December 2024
Value applied	0.9643
Justification of choice of data or description of measurement methods and procedures applied	Calculated as per “Tool to calculate the emission factor for an electricity system, version 07” as per the latest data available for the most three recent years (2021-22, 2022-23, 2023-24). The data is obtained from “CO ₂ Baseline Database for Indian Power Sector” version 20, published by the Central Electricity Authority, Ministry of Power, Government of India.
Purpose of data	For the calculation of the Baseline Emission
Comments	This parameter is fixed ex-ante for the entire crediting period.

Data / Parameter	$EF_{grid,BM,y}$
Data unit	tCO ₂ /MWh
Description	Build Margin CO ₂ emission factor in year y
Source of data	Calculated from CEA database, Version 20 ²⁵ , December 2024
Value applied	0.5522
Justification of choice of data or description of measurement methods and procedures applied	Calculated as per “Tool to calculate the emission factor for an electricity system, version 07” as per the latest data available for the most recent year 2023-24. The data is obtained from “CO ₂ Baseline Database for Indian Power Sector” version 20 December

²⁴ <https://img.saurenergy.com/2025/01/cea-report.pdf>

²⁵ <https://img.saurenergy.com/2025/01/cea-report.pdf>

	2024, published by the Central Electricity Authority, Ministry of Power, Government of India.
Purpose of data	For the calculation of the Baseline Emission
Comments	This parameter is fixed ex-ante for the entire crediting period.

Data / Parameter	$EF_{grid,CM,y}$
Data unit	tCO ₂ /MWh
Description	Combines Margin CO ₂ emission factor in year y
Source of data	Calculated from CEA database, Version 20 ²⁶ , December 2024
Value applied	0.8612
Justification of choice of data or description of measurement methods and procedures applied	The combined margin emissions factor is calculated as follows: $EF_{grid,CM,y} = EF_{grid,OM,y} * W_{OM} + EF_{grid,BM,y} * W_{BM}$ Where: $EF_{grid,BM,y}$ = Build margin CO₂ emission factor in year y (tCO₂/MWh) $EF_{grid,OM,y}$ = Operating margin CO₂ emission factor in year y (tCO₂/MWh) W_{OM} = Weighting of operating margin emissions factor (%) = 75% W_{BM} = Weighting of build margin emissions factor (%) = 25%
Purpose of data	For the calculation of the Baseline Emission
Comments	This parameter is fixed ex-ante for the entire crediting period.

5.2 Data and Parameters Monitored

Data / Parameter	$EG_{PJ,y}$
Data unit	MWh/year
Description	Quantity of net electricity generation supplied by the project (Wind) plant/unit to the grid in year y
Source of data	Credit note/ JMR/Form B reports from respective state electricity board
Description of measurement methods and procedures to be applied	Quantity of net electricity generation supplied by the project (Wind) plant/unit to the grid in year y $EG_{PJ,y} = EG_{BLKNy} + EG_{BLTNy} + EG_{BLAPy}$

²⁶ <https://img.saurenergy.com/2025/01/cea-report.pdf>

	Where, $EG_{BLKNy} = EG_{Export,KN} - 115\% * EG_{Import} - \text{Transmission Loss } (T_{E,KN})$ $EG_{BLTNy} = EG_{Export} - EG_{Import}$ $EG_{BLAPy} = EG_{Export} - EG_{Import}$ The value of net electricity generation supplied to the grid as per Monthly electricity form B /Credit Note or Joint Meter Reading Report forms the basis for calculation of the emission reductions; which can be cross checked from the invoice raised to DISCOM & Adjustment reports (in case of captive utility). Net electricity supplied to grid will be calculated as the difference of the measured values of “export” and “import” of electricity through the dedicated SEB energy meter installed at the delivery point. Monthly meter readings are taken from the main and check meter installed at metering point and certified by the representatives of SEB Officials and the representatives of the project proponent for apportioning procedure refer section 4.3
Frequency of monitoring/recording	Continuous monitoring, hourly measurement and at least monthly recording
Value applied	429,162.45
Monitoring equipment	Monitoring: Tri vector meter will be used Data type: Measured Type of meter: Static type meter (Main & Check). Both are Bidirectional meters. Class of meter: 0.2s.
QA/QC procedures to be applied	The calibration of all the meters will be undertaken at required intervals and faulty meters will be duly replaced immediately. The meters will be of accuracy class 0.2s. The meter accuracy class and calibration interval is under purview of state electricity board and PP do not have any control on it. It is also noted that apportioning procedure is under control of state electricity board and PP do not have any control on it. The available parameter to PP is the net electricity supplied to grid and same parameter is mentioned as monitoring parameter The Net electricity exported to the grid will be cross checked against the invoice raised by the PP towards the DISCOM and Adjustment Reports in case of captive consumption.
Purpose of data	Calculation of Baseline emissions
Calculation method	-
Comments	The data would be archived electronically and maintained for the entire crediting period plus two years.

5.3 Monitoring Plan

Aim of monitoring:

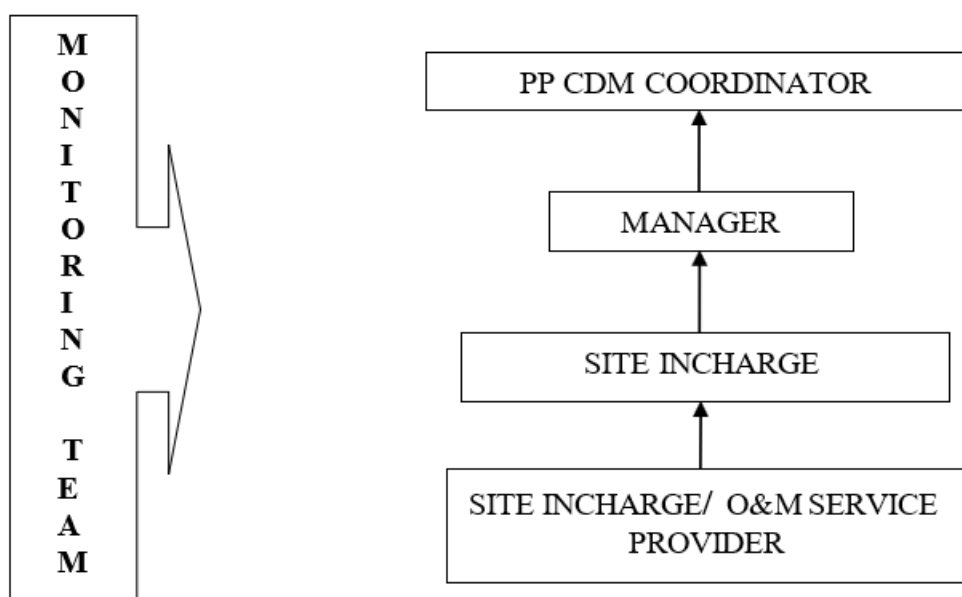
The monitoring procedure will set guidelines for the project investor to monitor the parameters regularly and to ensure quality and accuracy in monitoring. It elaborates on the functions of the monitoring team and procedures to be followed in monitoring of the CDM parameters.

The monitoring shall include all the equipments that contribute towards reduction in GHG emissions. Since the project activity focuses mainly on the generation of renewable power from the WTGs, it is important to monitor all the equipments involved in the metering of all the necessary instruments.

The monitoring plan has been prepared in accordance with the applied methodology, ACM0002 Version 22.0. The project investor has a well defined management structure for monitoring the project activity.

The O & M Contractor for the project activity are manufacturers mentioned in the section A.3 above for respective machines.

Organizational Structure for monitoring



Organizational Structure for monitoring (Common for all states):

Designation	Responsibilities
PP CDM COORDINATOR	Overall project monitoring including collecting and aggregating JMRs/Invoices for all WTG investors
MANAGER	Holds complete control over monitoring aspects pertaining to the project
SITE INCHARGE	- Recording - Verification - Storage of Data
SITE INCHARGE/ O&M SERVICE PROVIDER	- Operation and Maintenance - Storage of data - Data Recording

Monitoring Plan at Karnataka

The main parameter to be monitored for a wind project is the Quantity of net electricity supplied to the import and transmission loss, which was issued by BESCO officials and recorded in the B-Form and issued monthly to the project proponent. These monthly reports for the entire monitoring period form the basis to report the emission reductions achieved due to the project activity. The project proponent in turn raises the invoices to the BESCO for the electricity supplied to the grid. The electricity is measured by two way energy meters of an accuracy class of 0.2 which are calibrated periodically by officials from the BESCO/KPTCL.

The procedure for calculation of transmission loss as given in the PPA is set-out below:

$$Z = ((X1+X2+X3...+Xn)-Y)/((X1+X2+X3...+Xn)) \times 100$$

grid as a result of the implementation of the CDM project activity in year y. The parameter is measured as electricity export,

Z = Percentage transmission loss for export incurred in transmission line between the meter located at 33 kV metering point and the meters located at bulk 220 metering point (bulk meter: main and check) high voltage side of receiving sub-station.

X_i = Energy Export Reading of energy meter installed at 33 kV metering point

Y = Energy Export Reading at bulk meter installed at high voltage side of transformer of the receiving station 220kV.

X1, X2, X3,...Xn are the meters that are installed at 33kV metering point and are connected to the receiving substation by internally connected lines to the receiving station.

The Export Reading X_i is adjusted for transmission loss that is determined by the state utility and is applied directly to the JMR (Form B) taken at 33 kV metering point. This can be checked from the JMR signed jointly by the representatives of PP and the state utility.

Transmission Loss in Export (TE) = Percentage Transmission Loss (Z) * Energy Export at 33kV metering point ($EG_{Export,KN}$)

Empirical Formula for Energy Export after adjustment of transmission loss (Equation 1) Net Energy Export after adjustment of transmission loss = $EG_{Export,KN} - TE$

The transmission loss in export is generally less than 5%. However in case of Energy Import, the state utility conservatively applies adjustment of 15% to the import values noted at 33 kV metering point.

Transmission Loss in Import (TI) = 15% * Energy Import at 33kV metering point ($EG_{Import,KN}$) Empirical Formula for Energy Import after adjustment of transmission loss (Equation 2)

Net Energy Import after adjustment of transmission loss = $EG_{Import} + 15\% * EG_{Import}$

$$= 115\% * EG_{Import}$$

Therefore Energy Supplied to Grid after adjustment of transmission loss is difference of equation 1 and 2 as given in the Form B signed jointly by representatives of PP and the state utility.

$$EG_{BL,KN,y} = EG_{Export,KN} - 115\% * EG_{Import} - \text{Transmission Loss (TE,KN)}$$

The Joint meter reading noted at 33 KV metering location contains the following data:-

1. Electricity Export (EGExport,KN)
2. Electricity Import (EGImport,KN)
3. Transmission Loss (TE,KN) between 33 kV metering point and 220 kV metering point
4. Net Electricity supplied to the Grid [**EGBL,KN,y** = EGExport,KN -115%* EGImport,KN - TE,KN]

Form B is signed by the representatives of PP and the state utility. The net electricity supplied to the grid can be cross checked from the invoices raised on the state utility for supply of net electricity supplied to the grid.

Monitoring Plan at Tamil Nadu

Reading of net electricity imports & export is taken at the metering point of TNEB, located at yard approximately 5 to 7 meters from the WTG. Each WTG has its individual EB meter, installed by the SEB. Hence, T & D losses are considered between WTG and TNEB meter.

The import & export figure at WTG controller will be recorded in the logbooks (manual / electronic) of the O&M contractor / Investors representative on a daily basis. This data will be preserved both in paper & electronic form. The summary of the generation will be submitted by the O&M contractor / Investors representative to the investor on the monthly basis.

The TNEB meter will be the main source for monitoring net export to the grid. On mutually decided / SEB official availability date of each month, the reading from the TNEB meter will be recorded by the engineers of the SEB in presence of the O & M contractor/ Investors representative. Subsequently the Tamil Nadu Electricity Board statements will be prepared.

A monthly statement is issued by the State Utility every month to the Project investor against sale of power. Based on the monthly sale of power, invoice is raised to TNEB.

QA/QC procedures:

Energy meters will be calibrated once in a five year and faulty meters will be duly replaced immediately. The entire responsibility of this task lies with the state utility. The meters have an accuracy class of at least 0.5s. TNEB has an on-site testing & calibration arrangement; hence there is no need to dismantle the meter for calibration. In case the meters are found faulty and hard to calibrate against the prescribed accuracy class the meter will be replaced by the state utility.

If during any of monthly measurement, main meter is found to be beyond permissible limit of error, then meter shall be calibrated immediately & the correction factor applicable for the main meter shall be used for energy computation at time of such test checks. For the period thereafter the measurement shall be continued in accordance with the calibrated main meter.

Data Management and Data Archiving:

Copies of the break-up sheet, invoices raised on Discom and sales receipts will be retained and archived for the entire crediting period plus two years by the project investor.

Procedures for Data Adjustments / Uncertainties:

Data uncertainties are likely under following conditions:

- In case of error in TNEB meter
- When records are lost

If during any of monthly measurement, main meter is found to be beyond permissible limit of error, then meter shall be calibrated immediately & the correction factor applicable for the main meter shall be used for energy computation at time of such test checks. For the period thereafter the measurement shall be continued in accordance with the calibrated main meter.

When records are lost, the Tamil Nadu Electricity Board Statements will be used as reference.

Meter calibration: The meters are tested for accuracy and calibration of the meters is taken care of, following the applicable guidance. As per the national guidelines given by CEA, electricity meters have to be calibrated once in every 5 years,

Hence the meters are scheduled to be calibrated at least once in every five years²⁷

Calculation method

The generated electricity is exported to TNEB grid and the exported electricity is measured by the TNEB energy meter. Representative Officer from Tamil Nadu Electricity Board (TNEB) prepares and provides the TNEB Statement. Once in a month, the designated person takes the TNEB energy meter readings and records the initial and final readings for Export and Import. The difference between the initial and final readings will give net export and net import. The difference between the net export and net import is recorded as Net Generation.

Net exports for Tamil Nadu $EG_{BL, TN, y} = EG_{Export} - EG_{Import}$

Monitoring Plan at Andhra Pradesh

Metering system and monitoring plan:

- The reading will be taken at the individual WEG end by the technology operator on site.
- A Joint Meter Reading shall be taken by the representatives of PP and APTRANSCO at the high voltage side of the step up transformer installed at the substation at a particular date.
- In case the main metering system is not in service, then the check metering system shall be used until the main system is back to service.
- Meter reading would be jointly signed by both the representatives.
- The main and the check metering systems shall be sealed in presence of representatives of Power producers, and APTRANSCO.
- When any of these metering systems is found to be outside acceptable limits of accuracy or otherwise not functioning properly, it shall be repaired, recalibrated or replaced.
- PP will raise a monthly energy bill/statement based on the JMR at the end of each calendar month and the payment by State Electricity Board is done on this basis. The billing and payment records will be maintained by the PP.
- Calibration and Testing of Meters will be done once in 5 years.

Calculation of data:

Net exports for Andhra Pradesh $EG_{BL, AP, y} = EG_{Export} - EG_{Import}$

QA and QC Procedures

The electricity meter with accuracy class 0.2s at substation end (i.e. one main and one check meter) will be installed.

Data Storage and Archiving All the data items monitored under the monitoring plan will be kept for 2 years after the end of crediting period or till the last issuance of CERs for this project activity, whichever occurs later. The data will be archived both electronically and manually, and kept in safe storage by PP.

In the event when the individual verification period dates and billing cycle dates of the various WTGs in the project activity do not coincide, then the monitoring procedure will be as-

X	Sum of generation during partial days of the month recorded at controller meter (kwh) source – Electronic / Manual Log Book
Y	Total generation during the month recorded at controller meter (kwh/month)
$Z = X / Y$	Ratio

²⁷ <https://cdnbbsr.s3waas.gov.in/s303412aef4dcdee4f934f7bf599f89783/uploads/2025/07/202507181967025239.pdf>

B	<i>Net Energy export by the WTG as per Monthly Report on Generation and Consumption</i>
Z*B	<i>Generation of partial days for calculating emission reduction (kwh)</i>

APPENDIX 1: COMMERCIALLY SENSITIVE INFORMATION

Not Applicable

APPENDIX II: METER DETAILS

Vagarai Tamil Nadu state 55.5 MW (37*1.5 MW WTGs)⁹ 33 KV Substation:

Serial. No.	HTSC No.	Meter S. No.	Calibration date ¹⁰	Due date of calibration ¹⁴
1.	DRA 002	4321945	25-May-2017	24-May-2022
2.	DRA 010	4322515	23-May-2017	22-May-2022
3.	DRA 019	4322252	22-May-2017	21-May-2022
4.	DRA 037	4322069	20-May-2017	19-May-2022
5.	DRA 038	4321884	20-May-2017	19-May-2022
6.	DRA 039	4322063	05-May-2017	04-May-2022
7.	DRA 042	4321949	20-May-2017	19-May-2022
8.	DRA 050	4322064	20-May-2017	19-May-2022
9.	DRA 052	4321888	20-May-2017	19-May-2022
10.	DRA 055	4322067	22-May-2017	21-May-2022
11.	DRA 011	4322519	23-May-2017	22-May-2022
12.	DRA 014	4322517	23-May-2017	22-May-2022
13.	DRA 016	4322521	23-May-2017	22-May-2022
14.	DRA 020	4322433	23-May-2017	22-May-2022
15.	DRA 028	4322566	22-May-2017	21-May-2022
16.	DRA 029	4322574	22-May-2017	21-May-2022
17.	DRA 030	4322374	22-May-2017	21-May-2022
18.	DRA 034	4321977	23-May-2017	22-May-2022
19.	DRA 035	4322581	22- May- 2017	21-May-2022
20.	DRA 036	4322582	22- May- 2017	21- May -2022
21.	DRA 040	4322160	25- May- 2017	24- May -2022
22.	DRA 041	4321952	25- May -2017	24- May -2022
23.	DRA 045	4321943	20- May -2017	19- May -2022
24.	DRA 051	4322065	20- May -2017	19- May -2022
25.	DRA 053	4321944	20- May -2017	19- May -2022
26.	DRA 065	4322579	22- May -2017	21- May -2022
27.	DRA 061	4322154	20- May -2017	19- May -2022
28.	DRA 056	4321973	25- May -2017	24- May -2022

⁹ PP is claiming VCS benefits for only 37 WTGs out of 67 WTGs. Rest 30 WTGs are availing Renewable Energy Certificate (REC) benefits. Meter calibration of the 37 WTGs claiming VCS benefits was done at the date of commissioning. Later on, these meters were changed in the year 2017 (respective dates are mentioned in the table above). The calibration records of newly installed meters have been submitted to the DOE and the due date of calibration for the respective meters are mentioned in the above table.¹⁰ As, meters were not calibrated during current monitoring period, hence error factor is applied for reporting months.

29.	DRA 060	4321948	20- May -2017	19- May -2022
30.	DRA 058	4322514	23- May -2017	22- May -2022
31.	DRA 057	4322513	23- May -2017	22- May -2022
32.	DRA 059	4322068	20- May -2017	19- May -2022
33.	DRA 064	4322066	20- May -2017	19- May -2022
34.	DRA 067	4322573	22- May - 2017	21- May -2022
35.	DRA 062	4321892	25- May-2017	24-May-2022
36.	DRA 063	4322158	20- May- 2017	19-May-2022
37.	DRA 066	4321947	20- May- 2017	19-May-2022

Sr. No.	HTSC No.	Meter Serial number	Meter change date	Meter serial no	Calibration date (New)	Due date of calibration (New)
1	DRA 002	4321945	15-November-2024	TNW06301	18-November-2024	17-November-2029
2	DRA 010	4322515	Meter Not Changed	4322515	18-November-2024	17-November-2029
3	DRA 011	4322519	17-July-2020	1379293	18-November-2024	17-November-2029
4	DRA 014	4322517	Meter Not Changed	4322517	18-November-2024	17-November-2029
5	DRA 016	4322521	Meter Not Changed	4322521	18-November-2024	17-November-2029
6	DRA 019	4322252	15-November-2024	24007833	18-November-2024	17-November-2029
7	DRA 020	4322433	Meter Not Changed	4322433	18-November-2024	17-November-2029
8	DRA 028	4322566	11-July-2019	HT2180394	18-November-2024	17-November-2029
9	DRA 029	4322574	Meter Not Changed	4322574	18-November-2024	17-November-2029
10	DRA 030	4322374	12-June-2023	TNW04955	18-November-2024	17-November-2029
11	DRA 034	4321977	21-January-2020	HT2180114	18-November-2024	17-November-2029
12	DRA 035	4322581	Meter Not Changed	4322581	18-November-2024	17-November-2029
13	DRA 036	4322582	16-August-2024	24007054	18-November-2024	17-November-2029
14	DRA 037	4322069	08-May-2024	24001195	18-November-2024	17-November-2029
15	DRA 038	4321884	05-September-2020	5840137	18-November-2024	17-November-2029
16	DRA 039	4322063	11-August-2023	TNW04980	18-November-2024	17-November-2029
17	DRA 040	4322160	16-August-2024	24007055	18-November-2024	17-November-2029
18	DRA 041	4321952	19-May-2022	TNW03741	18-November-2024	17-November-2029
19	DRA 042	4321949	Meter Not Changed	4321949	18-November-2024	17-November-2029
20	DRA 045	4321943	Meter Not Changed	4321943	18-November-2024	17-November-2029
21	DRA 050	4322064	Meter Not Changed	4322064	18-November-2024	17-November-2029
22	DRA 051	4322065	08-July-2024	23010990	18-November-2024	17-November-2029
23	DRA 052	4321888	11-August-2023	TNW04981	18-November-2024	17-November-2029
24	DRA 053	4321944	Meter Not Changed	4321944	18-November-2024	17-November-2029
25	DRA 055	4322067	20-November-2020	5840091	18-November-2024	17-November-2029
26	DRA 056	4321973	19-April-2021	5840034	18-November-2024	17-November-2029
27	DRA 057	4322513	08-July-2024	23010998	18-November-2024	17-November-2029
28	DRA 058	4322514	08-May-2024	24001200	18-November-2024	17-November-2029

29	DRA 059	4322068	08-July-2024	23010989	18-November-2024	17-November-2029
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30	DRA 060	4321948	27-January-2020	HT2180113	18-November-2024	17-November-2029
31	DRA 061	4322154	11-July-2019	HT2180144	18-November-2024	17-November-2029
32	DRA 062	4321892	08-May-2024	24001198	18-November-2024	17-November-2029
33	DRA 063	4322158	27-January-2020	HT2180036	18-November-2024	17-November-2029
34	DRA 064	4322066	08-July-2024	24007005	18-November-2024	17-November-2029
35	DRA 065	4322579	19-May-2022	TNW03743	18-November-2024	17-November-2029
36	DRA 066	4321947	08-May-2024	24001196	18-November-2024	17-November-2029
37	DRA 067	4322573	Meter Not Changed	4322573	18-November-2024	17-November-2029

Calibration details for Karnataka site WTGs 95.2 MW (112*0.85 MW WTGs) 33 KV Substation

S No.	Location	Meter type	Meter serial Number	Make	Accuracy class	Calibration date/Meter change date	Due date of calibration
1	Feeder 1	Main meter (Old)	13191120	L&T	0.2 S	23-September-2020	22-September-2025
		Main meter (New)	23007141	L&T	0.2 S	29-September-2023	28-September-2028
		Check meter (Old)	13191121	L&T	0.2 S	23-September-2020	22-September-2025
		Check meter (New)	23008036	L&T	0.2 S	29-September-2023	28-September-2028
2	Feeder 2	Main meter (Old)	13191094	L&T	0.2 S	23-September-2020	22-September-2025
		Main meter (New)	23007165	L&T	0.2 S	26-September-2023	25-September-2028
		Check meter (Old)	13191095	L&T	0.2 S	23-September-2020	22-September-2025
		Check meter (New)	23007169	L&T	0.2 S	26-September-2023	25-September-2028
3	Feeder 3	Main meter (Old)	13191100	L&T	0.2 S	23-September-2020	22-September-2025
		Main meter (New)	23007160	L&T	0.2 S	26-September-2023	25-September-2028
		Check meter (Old)	13191104	L&T	0.2 S	23-September-2020	22-September-2025
		Check meter (New)	23007168	L&T	0.2 S	26-September-2023	25-September-2028
4	Feeder 4	Main meter (Old)	13191096	L&T	0.2 S	23-September-2020	22-September-2025
		Main meter (New)	23007158	L&T	0.2 S	26-September-2023	25-September-2028
		Check meter (Old)	13191097	L&T	0.2 S	23-September-2020	22-September-2025

		<i>Check meter (New)</i>	<i>23007159</i>	<i>L&T</i>	<i>0.2 S</i>	<i>26-September-2023</i>	<i>25-September-2028</i>
<i>5</i>	<i>Feeder 5</i>	<i>Main meter (Old)</i>	<i>13191114</i>	<i>L&T</i>	<i>0.2 S</i>	<i>23-September-2020</i>	<i>22-September-2025</i>
		<i>Main meter (New)</i>	<i>23007142</i>	<i>L&T</i>	<i>0.2 S</i>	<i>29-September-2023</i>	<i>28-September-2028</i>
		<i>Check meter (Old)</i>	<i>13191122</i>	<i>L&T</i>	<i>0.2 S</i>	<i>23-September-2020</i>	<i>22-September-2025</i>
		<i>Check meter (New)</i>	<i>23007164</i>	<i>L&T</i>	<i>0.2 S</i>	<i>29-September-2023</i>	<i>28-September-2028</i>
<i>6</i>	<i>Feeder 6</i>	<i>Main meter (Old)</i>	<i>13191159</i>	<i>L&T</i>	<i>0.2 S</i>	<i>23-September-2020</i>	<i>22-September-2025</i>
		<i>Main meter (New)</i>	<i>23007142</i>	<i>L&T</i>	<i>0.2 S</i>	<i>27-September-2023</i>	<i>26-September-2028</i>
		<i>Check meter (Old)</i>	<i>13191380</i>	<i>L&T</i>	<i>0.2 S</i>	<i>23-September-2020</i>	<i>22-September-2025</i>
		<i>Check meter (New)</i>	<i>23007164</i>	<i>L&T</i>	<i>0.2 S</i>	<i>27-September-2023</i>	<i>26-September-2028</i>

Calibration details for Andhra Pradesh site WTGs 37.4 MW (44*0.85 MW WTGs) 33K Kv wind metering

<i>S No.</i>	<i>Meter type</i>	<i>Make</i>	<i>Class</i>	<i>Meter serial Number</i>	<i>Date of calibration</i>	<i>Due date of calibration</i>
<i>1</i>	<i>Main meter</i>	<i>L&T</i>	<i>0.2s</i>	<i>APX01701</i>	<i>14-February-2022</i>	<i>13-February-2027</i>
<i>2</i>	<i>Check meter</i>	<i>L&T</i>	<i>0.2s</i>	<i>APX01702</i>	<i>14-February-2022</i>	<i>13-February-2027</i>
<i>3</i>	<i>Standby meter</i>	<i>L&T</i>	<i>0.2s</i>	<i>APX01703</i>	<i>14-February-2022</i>	<i>13-February-2027</i>

<i>S No.</i>	<i>Meter type</i>	<i>Make</i>	<i>Class</i>	<i>Meter serial Number</i>	<i>Date of calibration</i>	<i>Due date of calibration</i>
<i>1</i>	<i>Main meter</i>	<i>L&T</i>	<i>0.2s</i>	<i>APX01701</i>	<i>10-February-2021</i>	<i>09- February-2026</i>
<i>2</i>	<i>Check meter</i>	<i>L&T</i>	<i>0.2s</i>	<i>APX01702</i>	<i>10-February-2021</i>	<i>09- February-2026</i>
<i>3</i>	<i>Standby meter</i>	<i>L&T</i>	<i>0.2s</i>	<i>APX01703</i>	<i>10-February-2021</i>	<i>09-April-2026</i>