6 MW WIND POWER PROJECT IN MAHARASHTRA BY PTC INDIA

Document Prepared by EKI Energy Services Limited

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1 PROJECT DETAILS

1.1 Summary Description of the Implementation Status of the Project

The main purpose of the project activity is to generate electricity using clean and renewable energy source thereon replacing the current electricity supplied to the grid using fossil fuels. The project is a green field project, no power generation facility existed at the project site in the pre-project scenario.

The installed capacity of the project activity is 6 MW. The 6 MW Wind Power Project comprises of four numbers of Wind Electric Generators (WEG's) that are connected to the NEWNE grid. The individual capacity of each WTG is 1500 kW. The project activity is located in Sinnar in district Nashik in the state of Maharashtra. The net electricity generated by the WTGs will be purchased by MSEDCL (Maharashtra State Electricity Distribution Company Limited) and a Power Purchase Agreement has been signed between PTC and MSEDCL for evacuation of the power to the grid.

The relevant implementation dates:

Name of the Project Participant	WTG Location No.	capacity	Commissioning Date
PTC India	S-30	1500 kW	31/03/2008
	S-31	1500 kW	31/03/2008
	S-53	1500 kW	31/03/2008
	S-54	1500 kW	31/03/2008

During the reported monitoring period 31/03/2014 to 30/03/2018 (First and last date included) the project activity has supplied 51,291.70 MWh of electricity, and thus contributing to the GHG reductions of 47,316 tCO_2e.

1.2 Sectoral Scope and Project Type

Sectoral Scope: 1 Energy industries (renewable - / non-renewable sources)

Project is not grouped project activity as per VCS guidelines

1.3 Project Proponent

Organization name	PTC India
Contact person	Mr. Amitabh Deepak
Title	Director (Finance) and CFO
Address	2nd Floor, NBCC Tower 15 Bhikaji cama, New Delhi, 110066
Telephone	91-11-41659500, 41659127
Email	info@ptcindia.com

1.4 Other Entities Involved in the Project

Organization name	EKI Energy Services Limited
Role in the Project	Project Consultant
Contact person	Sushma Ramindla
Title	Executive
Address	EnKing Embassy, Office No. 201, Plot 48, Scheme 78, Part 2, Vijay Nagar, Indore- 452010 Madhya Pradesh, India
Telephone	6301143307
Email	sushma@enkingint.org / registry@enkingint.org

1.5 Project Start Date

The project was commissioned on 31/03/2008 and started reduction of emission on 31/03/2008 and hence is taken as the project start date.

1.6 Project Crediting Period

Start Date of Crediting Period: 31/03/2008

End Date of Crediting Period: 30/03/2018

Crediting Period of the Project: 10 years 0 Months

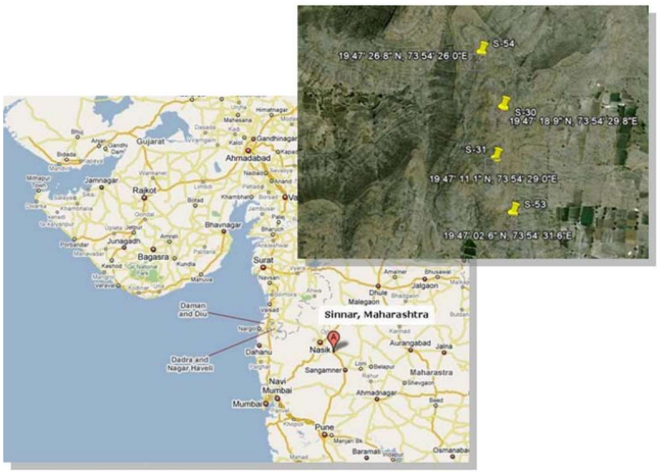
Type of crediting period: Fixed

1.7 Project Location

The project is located at Gut No 968, Village Konambe, Taluka Sinnar, in the district of Nashik in the state of Maharashtra, India.

The GPS coordinates of the project are as follows

Windmill	Latitude	Longitude
S-30	N 19°47' 18.9"	N 73°54' 29.8"
S-31	N 19°47' 11.1"	N 73°54' 29.0"
S-53	N 19°47' 02.6"	N 73°54' 31.6"
S-54	N 19°47' 26.8"	N 73°54' 26.0"



1.8 Title and Reference of Methodology

Title of Approved Baseline Methodology: 'Grid Connected Renewable Electricity Generation'

Reference of the Approved Baseline Methodology: Category I.D - Renewable Energy Projects: Approved Small Scale Methodology AMS –I.D. / Version 15[1] of the Appendix B of Simplified Modalities and Procedures (M & P) of Small Scale CDM Project Activities

The tools used in conjunction with this methodology are

1. Methodological Tool "Tool to calculate the emission factor for an electricity system". (Version 02)

2. Attachment A to Appendix B of the simplified modalities and procedures for small scale CDM project activities[2].

1.9 Participation under other GHG Programs

The project has neither been registered nor seeking registration under any other GHG programs. The project is seeking registration only in VCS program

1.10 Other Forms of Credit

Emission Trading Programs and Other Binding Limits:

Net GHG emission reductions or removals generated by the Project are be used for compliance with an emissions trading program or to meet binding limits on GHG emissions in any Emission Trading program or other binding limits.

Other Forms of Environmental Credit:

[1] https://cdm.unfccc.int/UserManagement/FileStorage/UQ8WZYCH5IVSPBNF276OMGE10TDX9A
[2] http://cdm.unfccc.int/Reference/Guidclarif/ssc/methSSC_guid05.pdf

Not applicable, as the project is not registered in any other GHG mechanism other than VCS. Also, the project activity is not availing any REC benefits and the same can be confirmed from publically available link of REC generators

1.11 Sustainable Development

The contribution of the project activity to the sustainable development of the host country India is evident from the following:

Social Well Being	• The project generates clean power without negative impacts on surroundings • No human displacement due to the project activity and hence no requirement of relocation • The local population has been employed during the installation, commissioning and operation of the wind mills, thus proper training imparted to the people involved results in the skill development of the local inhabitants and also improvement in their economic condition.
Economic Well being	• The project activity is responsible for creating business opportunities for many local stakeholders • It is an effort on the part of the project proponent to contribute towards grid stability and bridging the demand-supply gap in electricity in the regional grids and in turn in the national grid • The project activity contributes towards the conservation of fossil-fuels and makes these non-renewable sources of energy available for other important purposes. • It indirectly contributes towards industrial development of the region by creating a support in terms of supplying power for industries to come up in due course of time
Technological Well being	• The project activity generates clean power by harnessing the potential wind energy for power generation • It also helps in reducing the losses due to power transmission and distribution from the existing generating stations of the grid to remote areas
Environmental Well being	• The project activity displaces an equivalent quantum of power generated by the combustion of fossil fuels, the non-renewable energy sources at the grid connected thermal power plants, thus reducing GHG emissions and contributing to the overall cause of mitigation of global warming • The project activity by setting up wind-mills for power generation does not cause environmental disturbance or ecological imbalance to the surroundings • The project activity also contributes to the reduction in the emissions of SOx, NOx, and SPM associated with combustion of fossil fuels for generation of thermal power

2 SAFEGUARDS

2.1 No Net Harm

Under the govt of India rules for renewable energy projects EIA is not required for the project as it does not fall either under Schedule I of the MoEF Notification on Environmental Impact Assessment. Hence no EIA was conducted for the project. (http://envfor.nic.in/divisions/iass/eia/Annex1.htm).

2.2 Local Stakeholder Consultation

The local stakeholder meeting was carried out for the project activity and the details of the same can be referred from the registered VCS PD.

As a part of continuous feedback from stakeholders, the PP also placed a grievance register onsite where-in, the stakeholders can put down their complaint and the same if found genuine are addressed immediately.

During the current monitoring period, no comments/feedback was received.

2.3 AFOLU-Specific Safeguards

The project activity deals with generation of electricity using wind energy by Wind Turbine Generator (WTG) and not from AFOLU projects. Hence not applicable.

3 IMPLEMENTATION STATUS

3.1 Implementation Status of the Project Activity

The project consists of the supply, erection and commissioning of 4 numbers of 1500 KW rated Wind Turbine Generators (WTG) supplied by Suzlon India. The WTG's are new and not been transferred from a previous installation. The project was commissioned on 31/03/2008.

The energy generated by WTG's are connected to the NEWNE grid via the 132 KV Khaparale substation (the WTG's were earlier connected 33 KV Pandhurli sub-station, but was shifted in July 2008).

Technical Details of the WTG

Rotor Diameter	82 m
Installed Electrical Output	1500 kW
Cut in Speed	4 m/s
Rated wind Speed	14 m/s
Cut Out Wind Speed	20 m/s

Rotational Speed	16.3 RPM
Regulation	Pitch
Generator	
Type	Asynchronous Generator
Rated Output	1500 kW
Rotational Speed	1511 RPM
Operating Voltage	690 V
Frequency	550 Hz
Protection	IP 54
Insulation Class	H
Cooling System	Air Cooled
Gear Box	
Manufacturer	Winergy
Gear Ratio	95.09
Nominal Load	1650 kW
Type of Cooling	Oil Cooling System
Yaw Drive System	4 Active electrical Yaw motors
Yaw Bearing	Polyamide Slide Bearing
Safety System	
Aerodynamic Brake	3 times Independent Pitch regulation
Mechanical Brake	Spring Powered disc brake, hydraulically released fail safe
Control Unit	Microprocessor Controlled, indicating actual operating conditions, UPS Back System
Design Standard	GL/IEC

3.2 Deviations

3.2.1 Methodology Deviations

There is no request for methodology deviation applied during current monitoring period.

3.2.2 Project Description Deviations

There is no request for methodology deviation applied during current monitoring period.

3.3 Grouped Projects

This project activity is not a grouped project activity. Hence not applicable.

4 DATA AND PARAMETERS

4.1 Data and Parameters Available at Validation

Data / Parameter	**EF $_{grid,OM,y}$**
Data unit	tCO_2/ MWh
Description	Simple operating margin CO_2 emission factor in year y (tCO_2/MWh)
Source of data	CO_2 Baseline Database Version 5
Value applied	1.0050
Justification of choice of data or description of measurement methods and procedures applied	Information available from CO_2 Baseline Database Version 5
Purpose of Data	For the calculation of Baseline Emission
Comments	The emission factor has been fixed ex-ante for the duration of the entire crediting period of the project activity. The relevant data is recorded in electronic form and the same is archived for two years beyond the crediting period.

Data / Parameter	**EF $_{grid,BM,y}$**
Data unit	tCO_2/ MWh
Description	Build margin CO_2 emission factor in year y (tCO2/MWh)
Source of data	CO_2 Baseline Database Version 5
Value applied	0.6752
Justification of choice of data or description of measurement methods and procedures applied	Information available from CO_2 Baseline Database Version 5
Purpose of Data	For the calculation of Baseline Emission
Comments	The emission factor has been fixed ex-ante for the duration of the entire crediting period of the project activity. The relevant data is recorded in electronic form and the same is archived for two years beyond the crediting period.

Data / Parameter	**EF_{CO2}**
Data unit	tCO_2/ MWh
Description	Combined Margin CO_2 emission factor y (tCO2/MWh)
Source of data	CO_2 Baseline Database Version 5
Value applied	0.9225

Justification of choice of data or description of measurement methods and procedures applied	Information available from CO_2 Baseline Database Version 5
Purpose of Data	For the calculation of Baseline Emission
Comments	The emission factor has been fixed ex-ante for the duration of the entire crediting period of the project activity. The relevant data is recorded in electronic form and the same is archived for two years beyond the crediting period.

4.2 Data and Parameters Monitored

Data / Parameter	**$EG_{net,y}$**
Data unit	KWh
Description	Net Electricity Exported to the grid
Source of data	Import KWh Generation (Energy delivered at MSEDCL Grid) report provided by MSEDCL
Description of measurement methods and procedures to be applied	The joint reading is taken at the substation and the reading is apportioned based on individual WTG generation. The resultant net electricity exported is provided in the Import KWh Generation (Energy delivered at MSEDCL Grid) report to the PP.
Frequency of monitoring/recording	The data is captured on a monthly basis
Value monitored	51,291,697.17
Monitoring equipment	Electronic trivector meter
QA/QC procedures to be applied	Both main and check meters will be electronic tri-vector meters of accuracy class 0.2%. The meters are calibrated annually.
Purpose of the data	The data is used to calculate the baseline emission
Calculation method	To calculate the net energy exported by individual WTG, the generation data recorded at the substation is bifurcated in the proportion of generation at individual WTG, recorded by controller at the WTG. Based on the generation reading at the substation (taken on the 1st of every month for all WTG connected to Khaprale-I substation) and individual WTG generation recorded at the WTG controller, a bifurcation of generation is arrived at by MSEDCL. This data is used by MSEDCL to prepare net energy exported reports for all customers connected to the Khaprale - I substation, VCS Project Description 33 including PTC. This report is called “Import KWh Generation (Energy delivered at MSEDCL Grid)” report.

	This report is then sent across to the PP & the PP raises an invoice to MSEDCL based on this report. The PP is not involved in the bifurcation and the bifurcation is done by MSEDCL and the PP gets the final report called "Import KWh Generation (Energy delivered at MSEDCL Grid)" for its own windmill.
Comments	Data will be archived for a period of two years beyond the crediting period or the date of last issuance whichever is later.

Data / Parameter	$EG_{Gen,WTG,i}$
Data unit	KWh
Description	Electricity generated by the WTG at site i (i=1 to 4)
Source of data	Controller installed in the control panel of WTG,i
Description of measurement methods and procedures to be applied	The parameter is measured using a controller available in the control panel of the WTG at the site.
Frequency of monitoring/recording	Both main and check meters will be electronic tri-vector meters of accuracy class 0.2%. The meters are calibrated annually.
Value monitored	53,280,380
Monitoring equipment	Electronic trivector meter
QA/QC procedures to be applied	The controller at WTG are programmable logic controllers (PLC). These meters have built in logic where in case of discrepancy of the recording of the electricity generation by the WTG, it shuts down the WTG and stops any further generation. These meters cannot be calibrated.
Purpose of the data	This data/Parameter is used to calculate the Baseline emissions
Calculation method	The daily and hourly generation at individual WTG is recorded by the controller at the WTG and collated by Suzlon.
Comments	Data will be archived for a period of two years beyond the crediting period or the date of last issuance whichever is later.

4.3 Monitoring Plan

The project is owned by PTC and acts as a point of contact for the project activity. The O&M for the project is carried out by SISL (Suzlon Infrastructure and Services Limited).

Roles and responsibilities

The O&M structure is as follows

PTC VCU Coordinator: VCU Coordinator is responsible for all review of data related to generation and invoicing. Will also initiative corrective action in case of errors in data.

Customer Relationship Manager (Suzlon): Customer Relationship Manager is the contact point between PTC and Suzlon on all matters related to generation data and invoicing. The customer

relationship manager is responsible for review, check, and authorisation and forward of monitoring data.

Site Manager (Suzlon): The site manager is responsible for monitoring, recording, reporting and archiving data. The authority and responsibility of the overall project coordination is with PTC.

(1) Metering Equipment

Metering Equipment

The primary metering equipment is the main meters at substation, which is electronic trivector meter of 0.2% accuracy class. In addition, there is a check meter, which is also a electronic trivector meter of 0.2% accuracy class. Check meters for the project activity have been installed after commissioning of the project

Controller at WTG.

The daily and hourly generation at individual WTG is recorded by the controller at the WTG and collated by Suzlon.

Substation

The electricity is monitored at Khaprale-I substation of MSEDCL with facility to record import and export of electricity. The 4 WTG's of PTC India Ltd are connected on feeder number 4 at the substation. Metering is done by main and check meter installed on the 33 KV line before the 132/33 KV transformer.

Note: At the time of commissioning the WTG were connected to the 33/11KV Pandhurli substation as the 132/33 KV Khaprale- I substation was not commissioned. Subsequently, in July 2008, the connection was shifted to Khaprale –I substation. The monitoring at Pandhurli was the same as the monitoring being undertaken at Khaprale - I.

(2) Metering of electricity

Metering of electricity exported to the grid

The only monitoring parameter in AMS ID is the net electricity supplied to the grid. The meter reading is done on the first of every month, jointly by representatives of Suzlon and MSEDCL. The meter reading at the substation is a measure of the electricity exported to the grid by all the WTG's connected to the grid, including the PP. Other windmills of other owners are also connected to the Khaprale-I substation.

Bifurcation of Net Electricity Exported

To calculate the net energy exported by individual WTG, the generation data recorded at the substation is bifurcated in the proportion of generation at individual WTG, recorded by controller at the WTG.

Based on the generation reading at the substation (taken on the 1st of every month for all WTG connected to Khaprale-I substation) and individual WTG generation recorded at the WTG controller, a bifurcation of generation is arrived at by MSEDCL. This data is used by MSEDCL to prepare net energy exported reports for all customers connected to the Khaprale - I substation,including PTC. This report is called "Import KWh Generation (Energy delivered at MSEDCL Grid)" report.

This report is then sent across to the PP & the PP raises an invoice to MSEDCL based on this report.

The PP is not involved in the bifurcation and the bifurcation is done by MSEDCL and the PP gets the final report called "Import KWh Generation (Energy delivered at MSEDCL Grid)" for its own windmill.

(3) Apportioning (in case verification period does not match with dates of "Import KWh Generation (Energy delivered at MSEDCL Grid)")

In case of dates of verification periods and the date of import KWh generation report is not matching then apportioning is done based on WTG controller data, as described below.

The ratio of generation for the corresponding apportioning period and the entire month (based on generation data measured by the WTG controller) is calculated. This ratio is used to apportion the net energy export data for that month as per Import KWh Generation (Energy delivered at MSEDCL Grid) report.

(4) Cross-checking of Data

Based on the Import KWh Generation (Energy delivered at MSEDCL Grid) report provided by MSEDCL, the PP raises the invoice and the payment is made by MSEDCL to the PP. Suzlon has been authorised by the PP to collect payment on behalf of the PP. On release of payment, Suzlon intimates the PP of confirmation of payment made by MSEDCL. Cross checking will be done based on the invoices raised, intimation by Suzlon and matching the amount with the bank statement.

Some charges are deducted by MSEDCL on account of administrative charges etc.

(5) Quality and data uncertainty procedure

Annual accuracy checks

- The main and check meters will be tested for accuracy as per MSEDCL's procedures once a year using portable standard meter. The main and check meter will be calibrated by MSEDCL once a year.
- During the meter tests, the meters shall be deemed to be working satisfactorily if the errors are within MSEDCL's specifications for meters of 0.2% accuracy class.

The PP has no control over the accuracy checks as the meter testing can only be carried out by MSEDCL.

Data Uncertainty

- The reading of main meter is cross checked with readings of check meter as per MSEDCL procedures, including procedures for accuracy check.
- Calibration of main and check meter will be carried out every year, and the highest of the error observed in main and check meter will be applied in the data from the date of last calibration.
- If during meter reading, the main meter is not functional, reading of check meter is taken for calculation purposes. In the report sent to PP, this will be noted. The main meter will be replaced.
- If during meter reading, the check meter is not functional, reading of main meter only is taken for calculation purposes. In the report sent to PP, this will be noted. The check meter will be replaced.

(6) Archiving of data

All the necessary data i.e the MSEDCL monthly statements will be kept in electronic form for a minimum of two years after the end of the crediting period or the last issuance whichever is later.

The monitoring, recording and reporting are the responsibility of Suzlon personnel. The authority and responsibility of project registration and overall project management would be with the VCU coordinator from PTC.

5 QUANTIFICATION OF GHG EMISSION REDUCTIONS AND REMOVALS

5.1 Baseline Emissions

As per AMS I.D, the baseline emissions are calculated as the net electricity generated by the project activity, multiplied with the baseline emission factor for the project grid as provided:

$BE_y = EG_{net,y} * EF_{co2}$

BE_y = Baseline Emissions in year y; t CO_2

$EG_{BL,y}$ = Energy baseline in year y; MWh

EF_{CO2} = CO_2 Emission Factor in year y; t CO_2e/MWh

BE_y = 51,291.70 * 0.9225

= 47,316 tCO_2e/annum (Round down value)

5.2 Project Emissions

As per para 14 of AMS ID, for most renewable energy project activities, PE_y = 0.

5.3 Leakage

As per para 15 of AMS ID, if the energy generating equipment is transferred from another activity, leakage is to be considered. However as there is no transfer of WTG in the project activity hence LE_y is 0.

5.4 Net GHG Emission Reductions and Removals

Year	Baseline emissions or removals (tCO_2e)	Project emissions or removals (tCO_2e)	Leakage emissions (tCO_2e)	Net GHG emission reductions or removals (tCO_2e)
2014	10,931	0	0	10,931
2015	10,744	0	0	10,744
2016	13,046	0	0	13,046
2017	11,814	0	0	11,814
2018	781	0	0	781

Total	**47,316**	**0**	**0**	**47,316**

It is to be noted here that as per the estimated emission reduction to be achieved from the project activity for the current monitoring period is 46,280 tCO_2e, whereas actual emission reductions achieved are 47,316(Round down value) tCO_2e, which is approximately 2.24% higher than the estimated emission reductions. Due to the higher generation, there is no impact on the additionality of the project activity.

The electricity generation from wind power projects is seasonal and not equally distributed throughout the year. Thus, the variation in wind resource basically determines the variation in wind power generation which is beyond the control of PP. Further, wind generation is a cyclic process with peaks and lows. Hence, this deviation is justified.

APPENDIX 1: < CALIBRATION & BREAKDOWN DETAILS >

Meter Calibration Details

Meter Serial No		Make	Accuracy Class	Year of Calibration	Date of Calibration	Due date of next calibration[3]
Main Meter	14796425	Elster	0.2s	2013	22/09/2013	22/09/2014
Check Meter	14796423	Elster	0.2s	2013	22/09/2013	22/09/2014
Main Meter	14796425	Elster	0.2s	2014	22/09/2014	22/09/2015
Check Meter	14796423	Elster	0.2s	2014	22/09/2014	22/09/2015
Main Meter	14896425	Elster	0.2s	2015	22/09/2015	22/09/2016
Check Meter	14796423	Elster	0.2s	2015	22/09/2015	22/09/2016
Main Meter	14796425	Elster	0.2s	2016	22/09/2016	22/09/2017
Check Meter	14796459[4]	Elster	0.2s	2016	22/09/2016	22/09/2017
Main Meter	14796425	Elster	0.2s	2017	22/09/2017	22/09/2018
Check Meter	14796459	Elster	0.2s	2017	22/09/2017	22/09/2018

Breakdown Details

Sr. No.	WTG	Breakdown Date	Breakdown Hrs	Breakdown Remark
1	S-30	20-06-14	8	Substation Maintenance
2	S-30	25-10-14	5.4	Feeder Forced Backdown
3	S-30	13-09-15	4.5	EXTL_WTG Forced Backdown
4	S-30	16-12-15	6.8	EXTL_Shut Down Taken By EB
5	S-30	05-12-16	6	EXTL_Feeder Forced Backdown
6	S-30	06-12-16	6.6	EXTL_WTG Forced Backdown
7	S-30	29-12-17	13.8	INTL_Feeder BreakDown
8	S-30	30-12-17	4.8	Feeder Forced Backdown
9	S-30	19-02-18	5	Shut Down Taken By OMS Team
10	S-30	20-02-18	8	Substation Maintenance

Sr. No.	WTG	Breakdown Date	Breakdown Hrs	Breakdown Remark
1	S-31	20-06-14	8	Substation Maintenance
2	S-31	25-10-14	5.4	Feeder Forced Backdown
3	S-31	13-09-15	4.5	EXTL_WTG Forced Backdown
4	S-31	16-12-15	6.8	EXTL_Shut Down Taken By EB

[3] During the current monitoring period, there was no delay in calibration.

[4] In the year 2016 The Check Meter having serial no. 14796423 was replaced and new Check Meter having serial no. 14796459 was calibrated and installed on 22/09/2016.

5	S-31	05-12-16	6	EXTL_Feeder Forced Backdown
6	S-31	06-12-16	6.6	EXTL_WTG Forced Backdown
7	S-31	29-12-17	13.8	INTL_Feeder BreakDown
8	S-31	30-12-17	4.8	Feeder Forced Backdown
9	S-31	19-02-18	5	Shut Down Taken By OMS Team
10	S-31	20-02-18	8	Substation Maintenance

Sr. No.	WTG	Breakdown Date	Breakdown Hrs	Breakdown Remark
1	S-53	20-06-14	8	Substation Maintenance
2	S-53	25-10-14	5.4	Feeder Forced Backdown
3	S-53	13-09-15	4.5	EXTL_WTG Forced Backdown
4	S-53	16-12-15	6.8	EXTL_Shut Down Taken By EB
5	S-53	05-12-16	6	EXTL_Feeder Forced Backdown
6	S-53	06-12-16	6.6	EXTL_WTG Forced Backdown
7	S-53	29-12-17	13.8	INTL_Feeder BreakDown
8	S-53	30-12-17	4.8	Feeder Forced Backdown
9	S-53	19-02-18	5	Shut Down Taken By OMS Team
10	S-53	20-02-18	8	Substation Maintenance

Sr. No.	WTG	Breakdown Date	Breakdown Hrs	Breakdown Remark
1	S-54	20-06-14	8	Pitch ResolverEncoderDiff3Stop
2	S-54	25-10-14	5.4	Pitch ResolverEncoderDiff3Stop
3	S-54	13-09-15	4.5	Red Pirch Emergency Run
4	S-54	16-12-15	6.8	Grid Down From EB
5	S-54	05-12-16	6	SFS RotorCurrent DCPart DiodeFail Stop
6	S-54	06-12-16	6.6	Elec PowerConsumptionStop
7	S-54	29-12-17	13.8	Elec MFR ErrStop
8	S-54	30-12-17	4.8	Mech DriveTrainVib Stop
9	S-54	19-02-18	5	Rep Pitch CANComFail
10	S-54	20-02-18	8	Hyd GearOilLevel LowStop