

**BEFORE THE HONOURABLE KERALA STATE ELECTRICITY REGULATORY  
COMMISSION**

At its office at CV Raman Pillai Road, Vellayambalam, Thiruvananthapuram.

**FILING NO**            /2023

**CASE No.**

**IN THE MATTER OF:**

**Petition in the matter of redetermination of Project Specific Levelised Tariff for Electricity generated from M/s INOX under Section 22 (3) of KSERC (Renewable Energy) Regulation, 2015.**

AND

**PETITIONER:**

Kerala State Electricity Board Limited,  
Vydyuthi Bhavanam, Pattom, Thiruvananthapuram

Applicant

**Chief Engineer (Commercial & Tariff)  
Kerala State Electricity Board Limited**

## **AFFIDAVIT VERIFYING THE APPLICATION**

I, Sajeev G., son of N. Gopalakrishnan aged 52 years residing at MURALEEGOPALAM, TC 2/990(4), KPRA-A59(2), KOONAMKULAM LANE, MURINJAPALAM, MEDICAL COLLEGE P.O., Trivandrum – 695 011, do solemnly affirm and say as follows:

I am Chief Engineer (Commercial & Tariff) of the Kerala State Electricity Board Ltd., Vydyuthi Bhavanam, Pattom, Thiruvananthapuram, and the Petitioner in the above matter and I am duly authorized by the Board to make this affidavit on its behalf. I solemnly affirm at Thiruvananthapuram on this the 07th day of Sep 2023 that the contents of the above submission are true to my information, knowledge and belief. I believe that no part of it is false and no material has been concealed there from.

Deponent

Chief Engineer (Commercial & Tariff)  
Kerala State Electricity Board Limited  
Vydyuthi Bhavanam, Pattom  
Thiruvananthapuram – 695 004

## **VERIFICATION**

I, the above named deponent, solemnly affirm at Thiruvananthapuram on this, 7th day of Sep 2023 that the contents of the affidavit are true to my information, knowledge and belief, that no part of it is false and that no material has been concealed there from.

Deponent

Chief Engineer (Commercial & Tariff)  
Kerala State Electricity Board Limited  
Vydyuthi Bhavanam, Pattom  
Thiruvananthapuram – 695 004

Solemnly affirmed and signed before me

Advocate and Notary

**BEFORE THE HONOURABLE KERALA STATE ELECTRICITY  
REGULATORY COMMISSION**

**IN THE MATTER OF:**                    **Petition in the matter of redetermination of Project Specific Levelised Tariff for Electricity generated from M/s INOX under Section 22 (3) of KSERC (Renewable Energy) Regulation, 2015.**

**PETITIONER:**                        **Kerala State Electricity Board Limited  
Vydyuthi Bhavanam, Pattom,  
Thiruvananthapuram – 695 004**

**RESPONDENT:**                        **1. INOX Renewables Ltd.  
2. M/s Damodar Jagannath Malpani**

**THE PETITIONER MOST HUMBLY SUBMITS THE FOLLOWING**

The petitioner, KSEBL, respectfully submits this petition based on the provisions of the Section 22 (3) of KSERC (Renewable Energy) Regulation, 2015.

1. M/s. INOX Renewables Limited (M/s INOX) had developed 16 MW WEGs at the KINFRA land at Kanjikode, Palakkad. The strategic investor of the project is M/s Damodar Jagannath Malpani.
2. The Project was synchronised with the grid on 28.03.2017 and commercial operation date of the plant has been declared as with effect from 16.08.2017 by the developer on satisfactory completion of the performance test.
3. M/s. INOX has filed a petition No. OP 08/2017 for determination of tariff for 16 MW wind power project at Kinfra Park at Kanjikode, Palakkad, before the Hon'ble KSERC.
4. Hon'ble Commission vide interim order dated 29.12.2017 has ordered that KSEBL shall pay M/s. Inox Renewable Ltd an interim tariff at the rate of Rs. 3.90 per unit for the energy injected by M/s. INOX from the CoD of the project till such time, a final tariff is determined by the Commission.
5. Later, KSERC vide order dtd 03.10.2018 in petition No. OP 8/2017 has approved a project specific levelised tariff for the electricity generated from 16

MW wind energy generator installed by M/s. INOX, at the rate of Rs. 4.09 per unit. The Hon'ble Commission also ordered that KSEB Ltd shall reimburse, any tax paid on the RoE, limited to the amount of specified in this order. For claiming the tax, developer shall furnish the proof of the payment of such tax to KSEB Ltd.

6. The relevant portion of the order is reiterated below;

*(1) The levelised tariff for the electricity generated from the 16 MW WEG installed by M/s INOX at the KINFRA land at Kanjikode, Palakkad is approved @Rs 4.09/unit, duly considering the benefit of accelerated depreciation.*

*(2) The levelised tariff approved by the Commission is applicable for the entire electricity injected into the grid from the date of synchronization.*

*(3) KSEB Ltd shall reimburse, any tax paid on the RoE, limited to the amount of equity specified in this Order. For claiming the tax, developer shall furnish the proof of payment of such tax to KSEB Ltd.*

7. Subsequently, the Hon'ble Commission vide Order dated 02.12.2019 in Review Petition, RP 01/2019 has modified the Order dated 03.10.2018 as follows. *"(1) In the Order dated 03.10.2018 in OP No. 08/2018, at the end of the paragraph 53(1), the following words shall be added 'and the levelized tariff without the benefit of accelerated depreciation is approved @Rs 4.54/unit'. All other terms in the Order dated 03.10.2018 remains unchanged."*

8. Vide Letter dated 20.08.2020, M/s. Damodar Jagannath Malpani informed the acceptance and willingness to enter into a tripartite power purchase agreement with M/s KSEBL and M/s. INOX to sell energy generated from the 16 MW wind plant at Kanjikode, Palakkad at a tariff of Rs. 4.09 per unit.

9. Accordingly, a draft tripartite power purchase agreement duly initialled by M/s. INOX, M/s. DJ Mapani, the strategic investor of the project and KSEBL was submitted before the Hon'ble Commission for approval and Hon'ble Commission

vide order dated 31.03.2022 in OP No. 19/2021 has approved the draft PPA and KSEBL entered into tripartite power purchase agreement on 24.08.2022.

10. It is submitted that, the Hon'ble Commission in the order dated 03.10.2018 in OP No. 08/2017 had fixed the tariff for the project considering the CUF of 22% by observing the following:

*" the minimum CUF specified by CERC for WEG is 22%. The petitioner has also claimed the tariff with a CUF of 22%. The Commission while determining the tariff for the WEG in Palakkad region during the past had adopted the CUF @ 22%, and where as the actual CUF of these plants is in the range of 23 to 24%. Considering all these factors, the Commission adopt the CUF of the plant at 22% for determining the project specific tariff of the 16 MW WEG installed by M/s INOX at KINFRA land at Kanjikode, Palakkad."*

11. Under Regulation 26 of the CERC RE Regulations, 2017, the capacity utilization factor (CUF) of wind energy power plants at annual mean wind power density (W/m<sup>2</sup>) up to 220 is specified as 22%. The relevant Regulation is extracted below.

*" 26. Capacity Utilisation Factor (CUF)*

*(1) CUF norms for this control period shall be as follows:*

Annual Mean Wind Power Density (W/m <sup>2</sup> )	CUF
Upto 220	22%
221-275	24%
276-330	28%
331-440	33%
>440	35%

*(2) The annual mean wind power density specified in sub-regulation (1) above shall be measured at 100 meter hub-height.*

*(3) For the purpose of classification of wind energy project into particular wind zone class, as per MNRE guidelines for wind measurement, wind mast either put-up by NIWE or a private*

*developer and validated by NIWE, would be normally extended 10 km from the mast point in all directions for uniform terrain and limited to appropriate distance in complex terrain with regard to complexity of the site. Based on such validation by NIWE, state nodal agency should certify zoning of the proposed wind farm complex’.*

12. The Regulations of Hon’ble Commission prevalent during the year of Commissioning of the project was KSERC (Renewable Energy) Regulations, 2015 issued on 11-11-2015.
13. The Regulation 22 (3) of the KSERC (Renewable Energy) Regulations, 2015 provides the provision for revision of the tariff of the wind projects in case the actual average capacity utilization factor for three consecutive years immediately following the date of commissioning of a wind energy projects varies by more than ten percent of the capacity utilization factor adopted earlier for the determination of the project specific tariff applicable to that project due to site specific reasons.

The relevant provisions of the KSERC (Renewable Energy) Regulation, 2015 regarding the determination of tariff for wind projects are extracted below,

*'22. Project specific tariff for the electricity generated from renewable sources of energy.-*

*(2) The Commission may, on application from the generator or the purchaser of electricity from a renewable energy project, for which a project specific tariff has been determined under sub-regulation (1) above, revise such project specific tariff applicable to the said project and issue appropriate orders, **in case the actual average capacity utilization factor for three consecutive years immediately following the date of commissioning of the said project varies due to site specific reasons**, by more than ten percent of the capacity utilization factor adopted earlier for the determination of the project specific tariff applicable to that project.'*

14. Duly considering the provision for revision of tariff based on CUF as stipulated above, KSEBL humbly submit the following project and site-specific reasons necessitating redetermination of tariff for the project.

i. As per the request of KSEBL, the National Institute of Wind Energy (NIWE) Chennai had conducted study on wind potential at Kanjikode, prepared a report and was submitted on 16.02.2016. The details of the study are submitted below

a. Site Description – Kanjikode

The study area is located at Kanjikode which is in Palakkad Pass. The site is situated approximately 12 kM East of Palakkad Town. The terrain of the site is flat with gentle undulation, dense plantation and Industries are surrounding the proposed region. The study area has already 9 numbers of 225 kW VESTAS-RRB made turbines are operational with the cumulative capacity of 2.025 MW.

The reference mast (Kanjikode) geographical details are given below,

Latitude: 10°47'15.03"N

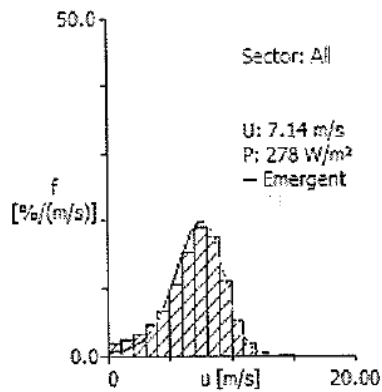
Longitude: 76°46'30.00"E

Elevation: 125.5 M

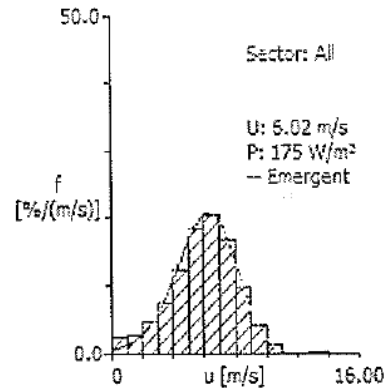
They reported that Kanjikode site is having very good wind potential based on the 80 meter mast.

b. Wind characteristics of region-

The study was conducted at the Kanjikode wind monitoring station and the period of measurement from March 2012 to February 2014 was used in the analysis. Wind characteristics at 80 m and 50 m level of Kanjikode wind mast as per the report of NIWE is as below.



**Fig. 4. Wind Speed Frequency Distribution at 80m**



**Fig 5. Wind Speed Frequency at 50m (Both Histogram & Weibull Fit)**

The mean wind power density at 80 meter is 278 W/m<sup>2</sup> and 50 meter is 175 W/m<sup>2</sup>, comparing the wind profiles, 80 meter level has high wind power density than 50 meter.

The comparison of wind profiles at 80 m and 50 m is as below.

Monthly wind profiles at 80 m and 50 m are illustrated in table below.

Year	Month	Mean Wind Speed (m/s) @ 80 m	Mean Wind Speed (m/s) @ 50 m
2012	March	5.5	4.7
2012	April	5.7	4.8
2012	May	8.6	7.4
2012	June	8.2	6.9
2012	July	8.1	6.8
2012	August	7.7	6.5
2012	September	7.4	6.2
2012	October	5.9	4.8
2012	November	5.5	4.5
2012	December	7.2	6
2013	January	6.6	5.6
2013	February	6.1	5.3
2013	March	5.6	4.8
2013	April	6.3	5.6
2013	May	8.3	7.3
2013	June	8	6.8
2013	July	8.2	7
2013	August	8.1	6.8
2013	September	7.5	6.3
2013	October	6.5	4.4
2013	November	5.4	5.5
2013	December	6.7	6.2



2014	January	7.4	5.1
2014	February	6.1	5.9
	Average	6.94	5.88

C. The hub height specified by the WEG M/s. Inox Renewable Ltd for their 16 MW wind project is 80 meter and the rotor diameter is 93.3 meter.

The wind power density at 80 meter height as per the report of NIWE is 278 W/m<sup>2</sup>. A copy of the report is enclosed as **Annexure**.

d. As per the Regulation 26 of the CERC Renewable Energy Regulation, 2017, the CUF of wind energy power plants at annual mean wind power density upto 330 W/m<sup>2</sup> is 28% (276-330 W/m<sup>2</sup>).

e. As per the Regulation 52(2) of KSERC (Renewable Energy & Net metering) Regulations, 2020, the CUF of wind energy power plants, the annual mean wind power density between 276-330 W/m<sup>2</sup>, is 28%.

15. Based on the actual generation details of the plant for the last years, the annual CUF of the plant is found to be in the range of 24% to 27%. The details are given below.

Month	Total Units (kWh) 2018-19	Total Units (kWh) 2019-20	Total Units (kWh) 2020-21	Total Units (kWh) 2021-22	Total Units (kWh) 2022-23
April	1977600	2128280	1265280	2225920	1522840
May	2462360	4863000	3482560	3020160	3560120
June	4162680	4737240	3607760	3814520	4344680
July	6159240	4249840	3421680	4419440	4661720
August	6780840	4513360	4492400	4182400	4086440
September	3679920	3052440	3468960	3861680	3890160
October	1348160	1483280	3248800	1435120	1843720
November	2089640	2180560	2231160	1386840	1217120
December	2000480	2856320	3234040	2589120	2345960
January	3166400	2886960	3208760	2217040	2717400
February	2408480	2870560	2322800	1538920	2385960
March	1913960	1387920	1779960	2275040	2284840
Total units	38149760	37209760	35764160	32966200	34860960
% CUF	27.22	26.55	25.52	23.52	24.87

16. It is also submitted that in the subsequent KSERC (Renewable & Net Metering regulations 2020 notified by Hon'ble Commission on 7-2-2020, clause 52 (2) permits tariff redetermination on completion of two years from the commercial operation date, if the actual CUF varies by (+) or (-) 5 % for that project.
17. It is submitted that, in a similar case, Hon'ble Regulatory commission vide order dated 10.10.2022 in OP No 29/2022, has re-determined the generic tariff of M/s. Ahalia Wind Energy Pvt Ltd on the ground that the actual CUF of the wind project of the M/s. Ahalia wind energy Pvt Ltd varies between 25 to 28% against the normative CUF of 22% adopted by the Commission for generic tariff determination. The regulation 21 (6) (b) of KSERC (Renewable Energy) Regulation, 2015 permitted the Hon'ble Commission to revise the generic tariff based on the CUF considerations.
18. Further, the possibility of excess generation over the normative CUF of 22% from the project, M/s. INOX Renewables Limited was raised by KSEBL during various hearings conducted by the Commission in connection with approval of PPA of M/s. INOX Renewables Limited. In the order dated in 31.03.2022 in OP No. 19 /2021 in connection with the approval of draft tripartite power purchase agreement, the Hon'ble Commission has observed in para 21 (iii) that, *'Considering all these aspects in detail, the Commission is of the considered opinion that, KSEB Ltd shall, sign the TPPA agreement with the developer M/s INOX Wind Energy Limited and the co-petitioner M/s DJ Malpani, duly incorporating the observations of the Commission on various clauses of the TPPA as detailed in paragraph-4 above. Thereafter, KSEB Ltd, if they so desire, can file a separate petition for re-determination of tariff of the 16MW Wind Power Plant at Kanjikode as per Regulation 22(3) of the RE Regulations, 2020, with all supporting details.'*
19. The Hon'ble Commission in the order portion of the order dated 31.03.2022 reiterated that **"After executing the TPPA, KSEB Ltd, if they so desire, can file a separate petition for re-determination of tariff of the**

***16MW Wind Power Plant at Kanjikode as per Regulation 22(3) of the RE Regulations, 2020, with all supporting details.”***

20. It is further submitted that due to higher end variation in CUF with respect to the CUF adopted by the Hon'ble Commission for determining the tariff, M/s INOX is benefited with higher returns from the date of CoD. Such undue benefit shall be passed on to the consumers of the state, by re-determining the tariff. The Hon'ble Commission determined project specific levelised tariff for a useful period of 25 years from date of CoD. Hence, re-determination project specific levelised tariff shall be made applicable from the date of CoD.
21. Further, it is submitted that, the audit wing of CAG is repeatedly raising questions on the optimising the power purchase cost.
22. Accordingly, in line with the KSERC (Renewable Energy) Regulation, 2015 and as directed by Hon'ble Commission in Para 22(4) of the order dated 31.03.2022 in OP No. 19 /2021 and also considering the facts and other details submitted above, KSEBL humbly request before Honourable Commission to redetermine the tariff for the electricity generated by M/s. INOX Renewables Limited from date of commercial operation, considering the actual CUF of the project.

**Prayer**

KSEBL humbly request before Honourable Commission to redetermine the tariff for the electricity generated by M/s. INOX Renewables Limited from the date of CoD, considering the actual CUF of the project in accordance with Section 22 (3) of KSERC (Renewable Energy) Regulation, 2015 and as directed by Hon'ble Commission in Para 22(4) of the order dated 31.03.2022 in OP No. 19 /2021.

**Chief Engineer  
Commercial & Tariff**