

KERALA STATE ELECTRICITY REGULATORY COMMISSION
THIRUVANANTHAPURAM

Present: Shri. Preman Dinaraj, Chairman

OP No 06/2020

In the matter of : Fixing tariff for proposed 6 MW ISWM Waste to Energy (WtE) Project, Njalianparambu, Kozhikode for a period of 25 years

Petitioner : M/s. Malabar Waste Management Pvt Ltd

Respondent : Kerala State Electricity Board Ltd.

Date of the hearing : 15.10.2020

Order dated 10.02.2021

1. M/s. Malabar Waste Management Pvt Ltd (hereinafter referred as M/s. MWMPL or the petitioner) filed a petition before the Commission on 29.01.2020 with the following prayers:
 - (1) Take the accompanying Tariff petition of Malabar Waste Management Private Limited on record and treat it as complete.
 - (2) The Levelized Tariff of Rs 8.13 or any other as determined by the Commission be approved for the 6MW gross power output produced for 25 years from the Commercial Operation Date (CoD) of the project being life of the project.
 - (3) Any electricity generated by MWMPL from the project in excess of the levels mentioned in the Power Purchase Agreement be bought by Kerala State Electricity Board (KSEB Limited) at the same Levelized Tariff approved by the Commission.
 - (4) The electricity generated from the project of MWMPL be ordered to be treated as a MUST-RUN project by KSEB.
 - (5) The project be ordered to be exempted from Merit Order Dispatch of the KSEB and SLDC of the State.
 - (6) Condone any inadvertent omissions/errors/shortcomings and permit the petitioner to add/change/modify/alter portion(s) of this filing and make further submissions as may be required at a later stage; and
 - (7) Pass such an order as the Hon'ble Commission deems fit and proper as per the facts and circumstances of the case.
2. The summary of the petition filed by the petitioner given below.

- (1) Government of Kerala has taken a policy decision for the setting up of Waste to Energy (WtE) Plants at 7 sites in the State, one each at Thiruvananthapuram, Kollam, Thrissur, Palakkad, Malappuram, Kozhikode and Kannur District on Design, Build, Finance, Operate and Transfer (DBFOT) basis in Public Private Partnership (PPP) mode. Government has appointed Kerala State Industrial Development Corporation (KSIDC) as the nodal agency for the for the setting up of WtE plants in collaboration with the Concessionaires & Local Bodies, to float RFP, to select the Concessionaire and to execute the Concession Agreement. Njaliamparambu in Kozhikode District is one of the seven sites identified for the setting up of Waste-to-Energy Plant.
- (2) KSIDC invited bid from suitable bidders to undertake development of an ISWM project with WtE plant of minimum 300 TPD processing capacity for Kozhikode Cluster through TPD under DBFOT basis for a period of 27 years. The bidding process initiated on 22.11.2018.
- (3) M/s. Zonta Infratech Private Limited (ZIPL) as the lead member has been awarded with the contract. In accordance with tender, a Special Purpose Vehicle (SPV), Malabar Waste Management Private Limited (MWMPL) has been incorporated as the Concessionaire for undertaking the project. The Concession Agreement has been executed between the Concessionaire, GoK, KSIDC and the Participating Local Bodies (PLBs) on 04.09.2019.
- (4) As per the Concession Agreement the project has two streams of revenue.
 - (i) Tipping fee per ton, for waste collection and transportation, payable by KSIDC on behalf of all the Participating Local Bodies (PLBs).
 - (ii) Power tariff, for sale of power generated, payable by KSEBL, at a tariff to be determined by this Commission.
- (5) As per the petition, the Kozhikode Cluster comprises of the following Local Self Government Institutions (LSGIS) of Kozhikode District in the State of Kerala and referred as the participating Local Bodies.
 - (i) Kozhikode Municipal Corporation;
 - (ii) Faroke Municipality;
 - (iii) Quilandy Municipality;
 - (iv) Ramanattukara Municipality;
 - (v) Olavanna Gramapanchayath;
 - (vi) Kadalundi Gramapanchayat; and
 - (vii) Kunnamangalam Gramapanchayat.
- (6) The brief scope of work and services of the petitioner mainly include the secondary collection, segregation, transportation, processing and disposal of solid wastes in the identified cluster, that include the following;
 - Project financing;
 - Obtaining project related Approvals;
 - Bin based secondary collection and transport;
 - Setting up of the plant (Waste segregation, treatment, Biomethanation, WtE plant, Power evacuation etc.)
 - Develop, construct and operate the Sanitary Landfill site; and
 - Operation and Maintenance for an initial period of 25 years.

- Any other product, by products, inerts, rejects or residue so obtained or derived during the waste to energy process during pre and post MSW processing shall be processed to the maximum extent possible to manufacture or produce any marketable product. Such produce will be sold by the Concessionaire at his own cost to reduce or avoid landfill area requirement for residue, in compliance with applicable laws, if any.
 - Any other obligations deemed fit for the successful operation of the plant with no or minimum down time and quick restoration.
 - Enter in to a Power Purchase Agreement with the Power Purchasing Agency for the sale of net output of electricity generated by the project.
 - Feed the net output of electricity as and when generated to the grid of the Power Purchasing Agency.
 - Transfer the project and its related assets in good working condition to the Authority upon completion of the concession period.
- (7) The petitioner proposes “a Biomethanation cum Advanced Controlled Combustion Incineration Technologies course, as the apt solution for the type of wastes generated in the Kozhikode region”.
- (8) At present, the Participating Local Bodies (PLBs) are responsible for collection, transportation and disposal of Solid Waste except for untreated bio medical waste and hazardless Industrial waste in their respective locations. Storage and segregation of waste at source is currently not very prominent in this PLBs.
- (9) About 281.99 MT of MSW is generated in Kozhikode Corporation every day. Out of this, 150 tons is collected by the Corporation on daily basis.
- Kozhikode Municipal Corporation (KMC) has a compost plant at Njalianparambu, 8 km away from city centre, in Cheruvannur Panchayat. This plant was erected in the year 2000 and is in operation since then. But this plant has problem of irregular operation due to various reasons which include absence of reject landfill sites and consequent accumulation, inadequate roof coverage for monsoon processing, issues with private entrepreneurs operating the plant, foul smell from uncovered dumps etc.
- (10) In other PLBs the dry waste after separating recyclables are being sent to cement plants in neighboring States for co-processing.
- (11) The proposed plant is within the existing compost plant facility and landfill site of 12.67 acres at Cheruvannur village, located on the Kozhikode Palakkad Highway at Njalianparambu in Kerala.
- (12) The proposed capacity of the power plant using MSW is 6MW. The power generated will be evacuated at 66 kV level, through the nearest Nallalam Substation grid. This would be sold to KSEBL as per PPA. Transmission line from plant site up to the substation for power evacuation will be executed with the assistance of KSEBL.
- (13) The total capital cost of project is estimated at Rs. 214.38 crore. Out of it, capital grant / viability gap funding (VGF) is available for Rs 48.44 crore. Accordingly, the net project cost of electricity business claimed by the petitioner is Rs. 165.94 Cr.

(14) The split up details of project cost is as follows:

Particulars	Amount (Rs. Cr)
Site Development Costs	3.54
Design, Engineering and Consultancy	7.27
Biomethanation Plant etc	15.23
WTE Plant along with all ancillary facilities	147.12
Scientific Landfill for the rejects and fly ash generated	9.86
Insurance	7.06
Spares	7.21
Financing Charges and IDC	17.09
Total Project Cost	214.38
Capital Grant / VGF	48.44
Net Project Cost of Electricity Business	165.94

(15) The source for funds for project is as given below:

Source	Amount (Rs. Cr)
Capital Grant / VGF from Government	48.44
Equity (30% of the Net project cost excluding grant / VGF)	49.78
Debt	116.16

(16) The technical and financial parameters adopted for estimating tariff of project is given below:

Assumptions	Value	Unit	Comments
Technical			
Gross Power	6.0	MW	Annexure 1 – DPR
Auxiliary Consumption	15%		Assumption as per CERC
Net Power	5.1	MW	
Waste Processed / Design Capacity	450	TPD	Annexure 1-DPR
Construction Period	2	Year	Annexure 1-DPR
Project Duration	25	years	Annexure 1-DPR
PAF			
-Year 1	65%		assumption as per CERC
-Year 2	75%		
Procurement			
GST on WTE Core Equipment/IGST	5.00%		assumption as per GST Notifications
GST on related services	18.00%		
Financial			
External Debt Percentage	70.00%		assumption as per CERC
Moratorium Period incl. interest	2	Years	
Repayment Period	10	years	
Interest rate on Debt	12.00%		Prevailing bank rate
Interest rate on WC	13.00%		

Depreciation rate	5.28%		KSERC Tariff Reg
Operational expenses	6%		As per the Order of KSERC for WTE plant in Kochi
Escalation in O&M expenses	5.72%		
Discounting factor	11%		
Tax exemption period	0.00	Years	
MAT	17.47%		
Corporate Tax rate	25.63%	Normal provision	

(17) Accordingly, petitioner arrived the tariff as follows:

Particulars	Rate
Levellerised Tariff (without benefit of accelerated depreciation)	Rs 8.44 /unit
Accelerated depreciation benefit	Rs 0.31/ unit
Net tariff after accounting the benefit of accelerated depreciation	Rs. 8.13 /unit

3. The Government of Kerala, vide its Order No G.O.(Ms)No.50/2019/LSGD, dated, Thiruvananthapuram, 14.5.2019, approved the tipping fee of Rs 3500/tonne offered by M/s Zonta Infratech Pvt. Ltd, the concessionaire. As per the Government Order, the maximum VGF expected is Rs 58 Cr, consisting of Rs 20.30 cr. Central share, Rs 13.50 cr. State share and Rs 24.18 cr Urban Local Bodies share.
4. KSEB Ltd, vide the letter dated 13.10.2020 submitted its comments and its summary is given below.
 - a) KSEBL has not initialled any draft Power Purchase Agreement (PPA) with the petitioner so far, nor has the petitioner approached KSEBL for signing the PPA. However, considering the mandate under Regulation 7 of the Kerala State Electricity Regulatory Commission (Renewable Energy and Net Metering) Regulations, 2020 that considering the environmental concerns, the distribution licensee shall necessarily purchase the electricity generated from municipal solid waste, with the prior approval of the Commission at the tariff approved by the Commission, KSEB Ltd. is bound to enter into PPA with the petitioner. Also, as per the Tariff Policy 2016, notified by the Central Government in compliance of the Section-3 of the Electricity Act, 2003, the distribution licensees shall compulsorily procure the entire electricity generated from 'Waste to Energy plants' at the tariff determined by the Commission.
 - b) The methodology of computation of tariff as furnished by the petitioner is not correct. The various parameters taken for computation of tariff are wrongly arrived at and is not in line with the provisions in the Regulations of Hon'ble Commission.
 - c) With the cost components adopted by the petitioner and the period of levelization of 10 years as taken by the petitioner, the levelized tariff will come to around Rs.12.71/Unit, whereas the levelized tariff as worked out by the petitioner is only Rs.8.13/unit. Therefore, the tariff computation of the petitioner is not correct and the petitioner may be directed to revise the computation.

- d) KSEB Ltd requested that the tariff of the project may be fixed as per the Regulations of Hon'ble KSERC.

Capital cost:

- e) As per Regulation 55(2) of KSERC (Renewable Energy and Net Metering) Regulations 2020, the Commission shall determine only project specific capital cost and the tariff will be based on the prevailing market trends for MSW projects. The capital cost claimed by the petitioner is Rs.214.38 cr. for 6 MW, i.e. Rs.35.73 cr/MW. The project has been granted viability gap funding (VGF) of Rs.48.45 Cr. The net project cost after deducting the VGF for tariff computation is Rs.165.93 cr., i.e. Rs. 27.66 cr/MW. As per Regulation 36(4), for the determination of project specific tariff, the generating company shall submit the break-up of all the capital cost items accompanied by relevant paid vouchers/ tax receipts and other verifiable documents with its petition in the manner specified in the Regulation for determining the project specific tariff. However, the petitioner is yet to furnish the said details.
- f) KSEB Ltd further submitted that the cost of some of the elements of the project in the petition differs from the cost in the DPR as submitted below.

Sl. No	Description	Cost claimed in the petition (Rs.Cr.)	Cost in DPR (Rs.Cr.)
1	Biomethanation plant for organic waste	15.23	13.87
2	WTE plant along with all ancillary facilities	147.11	138.71

The petitioner has not furnished justification for the above difference.

- g) This project cost is exorbitantly high by any standards. The normative capital cost approved by CERC and other SERCs in the country for determining the tariff for electricity generated from MSW projects, are given below.

Name of the Commission	Date of Order/ Regulation	Capital Cost approved
CERC	Regulation dated 07-10-2015	Rs.15.00 Crores/MW.
Telangana	Order dated 13-06-2016 in O.P.No.18 of 2016 (RDF/MSW)	MSW – Rs.14.00 Crores/MW
Madhya Pradesh	SMP-10/2016, Order dated 29-06-2016	Rs.15.00 Crores/MW
Gujarat	Order No. 4 of 2016, dated 10-11-2016.	Rs.16.00 Crores/MW for Mass Incineration Technology.
Chhattisgarh	SMP No. 39 of 2016, dated 8-9-2016	Rs.15.75 Crores/MW for MSW
Haryana	Suo-moto/HERC/RA-4 of 2016, dated 28-9-2016	Rs.15 Crores/MW for MSW
Jharkhand	Order dated 21 st June 2017 in Case No. 12 of 2016	Rs 16.20 crore/MW
Tamil Nadu	Order dated 28-3-2017	Rs.16 Crore/MW for 2017-18 & 2018-19

The normative capital cost adopted by CERC and other SERCs for determining the tariff for MSW projects is in the range of Rs 15.00 crore/MW

to Rs 16.20/MW, as against the capital cost Rs 35.73 crore /MW claimed by the petitioner. The capital cost approved by Hon'ble Commission for the waste to energy plant at Brahmapuram is Rs.15 Cr/MW. KSEB Ltd. therefore humbly requested the Hon'ble Commission that the capital cost of the project may be fixed by considering Rs.15 Cr/MW as the ceiling cost.

Financial Norms:

- h) As per Regulation 36(2) of the Regulations of KSERC, the financial norms as specified under these Regulations, shall be ceiling norms while determining the project specific tariff for such Renewable projects. It is requested that Hon'ble Commission may consider the financial norms specified in KSERC (Renewable Energy and Net Metering) Regulations, 2020, as ceiling norms while fixing tariff for the project.
- i) **Depreciation:** The methodology adopted by the petitioner for the computation of depreciation is not in line with the tariff norms mentioned in the Regulation. The annual depreciation amount shown in tariff calculation is Rs.10.19 cr. Considering the capital cost of Rs.165.93 cr. after the VGF amount and adopting a depreciation rate of 5.28% per annum, the depreciation amount comes to Rs. 8.76 cr. only. The petitioner has not reduced the VGF amount from the capital cost while computing depreciation.
- j) **Interest on Loan:** The petitioner has claimed an interest rate of 12% for the loan availed for the project. As per the Regulation, a normative interest rate of two hundred (200) basis points above the average State Bank of India Marginal Cost of Funds based Lending Rate (MCLR) prevalent during the last available six months shall be considered for allowing interest during loan tenure. The MCLR for the last six months is in the range of 7.60 to 8.35%. Therefore, it is requested that an interest rate of 10% may only be considered for fixing the tariff.
- k) **Return on Equity:** The petitioner has claimed return on equity of 15%. As per Regulation, the normative Return on Equity shall be 14% on the normative equity. Income Tax/Minimum Alternate Tax (MAT) on ROE if any, paid by the generator, shall be reimbursed separately by the distribution licensee on production of documentary evidence of remittance, annually for the entire useful life of the project. Therefore, it is humbly requested that an RoE of 14% may only be considered for fixing tariff.
- l) **Interest on Working Capital:** The computation of Interest on Working capital is not as per tariff norms. Further, the petitioner has included two months O&M in the working capital, whereas the Regulations stipulates 1 month O&M cost only in working capital. As per Regulation, the Interest on Working Capital shall be at interest rate equivalent to the normative interest rate of three hundred (300) basis points above the average State Bank of India MCLR (One Year Tenor) prevalent during the last available six months for the determination of tariff. Since, the MCLR for the last six months is in the range of 7.60 to 8.35%. It is requested that an interest rate of 11% may only be considered for fixing the tariff.
- m) **Operation & Maintenance Cost:** KSEB Ltd requested that, 5% of the capital cost may be considered as O&M cost for the project. Moreover, it is requested that the tipping fee received for waste collection may be reduced from the O&M cost.

- n) **Tipping fee:** As per the projected P&L Statement provided in the petition, the petitioner is expecting a revenue of around Rs. 60 Cr per annum from processing fee of waste. However, the same has not been factored in tariff computation. It is requested that the tariff of the project may be fixed considering the revenue from tipping fee also.
- o) **Tariff:** The tariff quoted by the petitioner for the project is exorbitantly high. The tariff fixed by various State Electricity Regulatory Commissions for the electricity generated from MSW/RFD is much lower than that claimed by the petitioner. Further, the tariff of WtE plant at Kochi determined by Hon'ble Commission is only Rs.6.17/unit. The tariff in different States is furnished in the table below.

Name of the Commission	Generator/ Generic	Tariff (Rs/kWh)	Order
CERC	RDF based MSW	7.90 (without AD)	CERC order dated 7-10-2015
MERC	Sholapur Bioenergy Systems Pvt Ltd	4.88	Case no. 65 of 2009. Order dated 3-9-2009
MERC	Rochem Green Energy Ltd	5.86	Case no. 77 of 2014. Order dated 25-6-2014
MPERC	Generic Tariff	6.39	SM Petition 36/2013. Order dated 1-10-2013
DERC	Timarpur integrated waste management complex plant	3.53	Petition no. 30/2005. Order dated 26-2-2006
GERC	Hanjer Green Power Pvt Ltd	6.8	Petition no. 1052/2010. Order dated 30-7-2011
TNERC	Order No. 3 of 2017, dated 28-03-2017	6.16	
KSERC	Kochi plant of GJ Eco	Rs 6.17/unit	Order dtd.6-3-2018 of KSERC

KSEB Ltd further submitted the following.

- (i) The power procured from the project may be allowed to be accounted against the RPO obligations of KSEB Ltd. Similarly, the project shall abide by the provisions in the renewable energy regulation notified by the Hon Commission.
- (j) The petitioner has requested that any electricity generated from the project in excess of the levels mentioned in the power purchase agreement be bought by KSEBL at the same levelized tariff approved by the Commission. KSEB Ltd submitted that electricity generated from the project in excess of the levels mentioned in the power purchase agreement may be only at 75% of the PPA tariff.
- (k) **Making available Government Funds for PPP projects:** It is additionally submitted that it is not fair to load the entire project cost in the tariff of Electricity since the project cost is high. Different models of financing PPPs are available at present, to take care of the commercial viability of such projects.
- (l) **Exception from Excise /Customs Duty:** Ministry of New and Renewable Energy, Government of India is granting exemption of Excise duty /customs duty on all items of machinery for setting of projects for generation of power

using urban and industrial wastes of renewable nature namely agro-industrial, municipal and urban waste etc. If such benefits are availed, there is chance to reduce the capital cost considerably and thereby reducing the tariff.

5. The Commission admitted the petition as OA No 6/2020 and originally posted for hearing on 13.3.2020 at Kozhikode. However, this hearing was postponed due to the outbreak of Covid 19 pandemic. Thereafter, the Commission decided to conduct public hearing on 12.10.2020 at Kozhikode. Due to restrictions imposed by the District Collector, Kozhikode due to the Covid 19 Pandemic, the Commission, after completing all the procedure formalities, conducted the hearing through video conference on 15.10.2020. The list of participants attended the hearing is enclosed as Annexure-1. Summary of the deliberations during the hearing is given below.
- (i) Sri Raj Kumar, Director, representing the petitioner submitted that the project has received all statutory clearances and approvals. By implementing the project, the inhabitants in the Kozhikode Corporation and nearby areas get benefitted. The petitioner is claiming that the project is being developed in a most scientific way, with due care and without causing any hazard to people in and around Kozhikode. He thanked all stakeholders for the support extended to the project.
 - (ii) Sri Abdul Majeed, Deputy Chairman, Ferok Municipality extended full support for the project. However, he raised the concern that, whether the waste will be transported in time.
 - (iii) Sri Mohanan representing general public, submitted that the plant will be helpful in making the area waste free. The disposal of non degradable and degradable waste helps in developing a clean city.
 - (iv) Secretary, Kozhikode Corporation informed that, at present Kozhikode Corporation is handling 200 MT of Municipal waste daily and out of it 50% is non-gradable type. Handling of non-degradable waste is always a problem to the Corporation. The quantity of non-degradable waste shows an increasing trend. The Kozhikode Corporation unanimously decided to establish a WtE plant with the modern technology. The Corporation and Government agencies are promoting the project on public private partnership basis.
 - (v) Sri Ujin, representing general public also extended full support for the project. He submitted that, the Chicken waste alone comes to around 6 to 8 T per day in Corporation area and 1 to 1.5 T in Koyilandi Municipality.
 - (vi) Sri Suresh Kumar, Secretary, Koyilandi Municipality submitted that the project is a welcome step in the waste management of Kozhikode.
 - (vii) Dr. Ajmal, representing public stated that the waste management is one of the major concerns in the present-day social system. He added that, there had been instances of waste not being taken away from the

collection points in time, resulting in the accumulation of waste. He hoped that such events may not happen here.

- (viii) Smt Greena Jose, representing public supported the project. Smt. Pushpalatha stated that she and her neighbours wholeheartedly support the project, as the project will be a final solution for the people in the locality to get rid of the issues connected with accumulation of large volume of waste.
- (ix) Sri Harikesh, Project Director, KSIDC, informed that the project is awarded through a transparent process of bidding. The Zonta Infratech Pvt. Ltd was selected and formed a Special Purpose Vehicle (SPV), Malabar Waste Management Limited. The project includes collection, transportation of waste, its disposal, generation of electricity and land filling. Bio degradable waste and non bio degradable waste are disposed through separate processes. The existing collection system is not disturbed and is integrated into the project for better management of waste.
- (x) Smt. Mariyam Nazer a resident Calicut supported the project. Sri Adam Malik, an engineer said that, he views the project with great hope and wished it to be completed as per schedule. Sri Abdul Jabbar, a retired Deputy Secretary of the Kozhikode Corporation stated that the existing system may be continued and the project is to be developed as an additional facility, for smooth functioning. Sri Sreejith, a builder stated that the people in the locality is presently under threat due to accumulation of waste. Sri Padmarajan working with Shalimar Paints expressed the view that the proposed project will benefit the people and hence to be promoted and installed without delay. Smt. Anu Mariya, working with Kerala Development and Innovation Strategic Council wished that, the proposed plant may become a matter of pride for the whole State.
- (xi) Sri Sijan Alappat, Under Secretary, representing the Government of Kerala submitted that the project is being developed with the co-operation of all agencies concerned and the Power Department is also extending full support for the project.
- (xii) Sri Surendran, Councillor, Koylandi Municipality, opined that the project gives a good signal in the waste management in Kozhikode area. Presently, the Municipality is managing the waste in a commendable manner. He added that his only concern is on the accumulation of waste at the collecting station due to non removal of waste in time. The process of removal must be done on regular basis. Care is required in rainy seasons. Smt Jaseetha, Secretary, Ramanattukara Municipality welcomed the project.
- (xiii) Sri. KGP Nampoothiri, Ex. Engineer, representing KSEB Ltd submitted that, it had already filed detailed comments on the petition. KSEB Ltd clarified that, the licensee shall purchase power from the project at the tariff approved by the Commission.

- (xiv) Sri Rajkumar, MWMPPL clarified that the project is developed in an enclosed area and hence there will not be any issue in the surrounding areas of the proposed plant. He further added that, the waste accumulated at present at the project site will be scientifically disposed and the smell will also cease to exit. The project is conceived complying with the norms issued by Central Pollution Control Board. The Company gives due importance to waste collection which will continue to be done with the help of Kudumbasree, the cleaning staff of Corporation as is being done at present. Sri Sai Santhosh, MWMPPL clarified that the tariff is worked out for 25 years. Sri Antony Ponraj on behalf of MWMPPL submitted that the technology is generally provided as a package with a bulk cost. On the query by the Commission on the choice of manufacturer, he submitted that the company will provide all the offers received from various manufacturers and suppliers. Sri Rajkumar added that the project is envisaged as a 'Make in India' project and has undergone a proper risk analysis.

About financing of the project, the company clarified that SBI is financing the project. The company further clarified that they have taken steps to enter into PPA with K S E B Ltd.

- (xv) Secretary, Kozhikode Corporation informed that out of the 17.65 Acres of land used at present for the waste filling, 12.5 Acres were allotted to KSIDC for development of the project. The waste collection centers of Kozhikode Corporation will continue with small storage provisions in between, which is handed by the SPV. He confirmed that the present waste collection system will not halt during the construction of the project. He added that the Agreement terms with MWMPPL include conditions for primary and secondary collection. The intermediary storage facilities will be sufficient to store 2 days waste. There is strict regulatory mechanism to enforce these conditions and will be monitored regularly. The waste will be removed from the collection centers during the break down of the plant also.

The Secretary in his concluding remarks stated that the concern raised by the stakeholders will be addressed. Corporation will provide detailed information of the project before the affected persons in the area.

6. The petitioner vide the letter dated 21.10.2020 submitted their reply to the comments of KSEB Ltd and its summary is given below:

S No	Comments by KSEBL	Reply by MWMPPL
3a	KSEBL has not initialed any draft PPA with the petitioner so far nor has the petitioner approached KSEBL for signing PPA	MWMPPL had approached KSEBL for PPA signing in December 2019 and subsequently received the draft PPA vide CE(C&P)/CML-EEI-AEE VI/WTE/ 2019-20/310 dated 01.01.2020 However, the draft PPA is yet to be initialed as it was informed then that it can only be done

		<p>after submitting the petition and public hearing.</p> <p>MWMPL shall immediately do the necessary action in this regard.</p>
3b	<p>The methodology of computation of tariff as furnished by petitioner is not correct. The various parameters taken for computation of tariff are wrongly arrived at and is not in line with the provisions in the Regulations of the Hon'ble Commission.</p>	<p>M/s MWMPL submitted that, they have adopted the methodology as provided in the ARR & Tariff Formats of the Regulations of the Hon'ble Commission.</p> <p>However, we have updated the model with the specific observations stated by KSEBL and attached for consideration.</p>
3c	<p>With the cost components adopted by the petitioner and the period of levelization of 10 years as taken by the petitioner, the levelized tariff will come to around Rs. 12.71/unit whereas the levelized tariff as worked out by petitioner is only Rs. 8.13/unit. Therefore, the tariff computation of the petitioner is not correct, and the petitioner maybe directed to revise the computation.</p>	<p>MWMPL agree that there is a computation error in the levelized tariff calculation and rectified in the attached model. Also as discussed during the Public Hearing, updating the model for entire concession period of 25 years (excluding 2 years of construction).</p>
3d,3,f	<p>The net project cost after accounting VGF for tariff computations is Rs. 165.93 Crores i.e., Rs. 27.66 Cr/MW. As per Regulation 36(4), break up of cost item accompanied with relevant paid vouchers/ tax receipts and other verifiable documents with its petitions in the manner specified in the Regulation for determining the project specific tariff. However, the petitioner has not furnished the details.</p>	<p>We enclose here with the final quotations for the major packages based on which the cost has been arrived. As we are awaiting the financial closure, the paid vouchers/ tax receipts are not applicable, and we request to consider the quotations from the prospective vendors as the verifiable document.</p>
3g	<p>KSEB Ltd submitted that the cost of some of the elements of the project in the petition differs from the cost in DPR as below: Biomethanation plant: 15.23 v/s 13.87 WTE Plant: 14711 v/s 138.71</p>	<p>Petitioner submitted that the cost claimed in the petition is including GST while the cost in DPR is excluding GST. GST is separately mentioned in DPR. Hence, the difference in the cost in Petition and DPR. However, please note that the base cost in both petition and DPR remain same.</p>
3hj	<p>The project cost is exorbitantly high by any standards. KSEBL humbly request Hon'ble Commission that the capital cost of the project may be fixed by considered the ceiling cost of Rs.15 Cr./MW.</p>	<p>MWMPL submitted that, the Waste to Energy project cost is dependent on the project location, type of waste and its characteristics as the civil cost and other plant equipment & its specific design would be done accordingly to comply with Emission and SWM norms.</p> <p>Accordingly, MWMPL highlight the following aspects on the project cost of MWMPL WTE Plant:</p> <ul style="list-style-type: none"> • Municipal solid waste is a very tough fuel to

		<p>burn and especially Kozhikode being in the coastal region has high moisture content wastes. For Kozhikode WtE project, larger grate, higher residential time and higher turbulence grate design is required for emission control and complete burning. Grate design is proprietary in nature and specially designed for handling only municipal wastes.</p> <ul style="list-style-type: none"> • Latest SWM Rules 2016 currently being adapted is more stringent compared to earlier Draft SWM Rules 2000 in terms of furnace temperature and sizing of furnace. • Due to Chlorine corrosion and considering lower calorific value of Municipal Waste in the Kozhikode region, refractory lining of entire furnace is considered for sustained combustion process. • Due to high moisture, low CV of MSW, MWMPPL has considered an elaborate fuel segregation facility at site for segregating organic and balance incinerable dry waste. Both Biomethanation and Incineration processes have been considered for processing of waste. Biogas produced by biomethanation process is co-fired in incineration boiler for steam generation and electricity production. • Compared to conventional plant NOx control and flue gas treatment process is elaborate and expensive to meet all emission norms as per Kerala Pollution Control Board and SWM Rules. Project site is congested with uneven boundaries due to which the plant layout and equipment arrangement cannot be optimized. • Final inert/ash disposal quantity for Kozhikode is restricted only to 10% compared to higher quantities permitted in other plants • Kozhikode WtE plant is designed for wide range of heterogeneous fuel characteristics. • Project cost also includes power evacuation system for connecting power at Nallalam sub-station. • MWMPPL has considered Incineration, Flue gas treatment and Emission guarantees based on proven European technology. • The above systems are designed, manufactured, quality controlled as per European norms which are in full compliance with CPCB Emission norms and SWM Rules 2016; and will be supervised at all stages by the European parent companies.
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		<ul style="list-style-type: none"> • Cost per MW is generally less for higher plant capacities and rating, Kozhikode project size is in the bottom range and hence cost per MW is expected to be higher.
3k	<p>Depreciation: The methodology adopted for the computation of depreciation is not correct and not in line with the tariff norms in the Regulations. The annual depreciation shown in tariff calculation is Rs. 10.19 Cr. Considering the capital cost of Rs. 165.93 Cr after VGF and adopting 5.28% depreciation rate, the depreciation amount comes to Rs. 8.76 Cr only. The petitioner has not reduced the VGF amount from capital cost while computing depreciation.</p>	<p>N/s MWMP submitted that, the VGF provided by Government is only a Capital Grant and not as any Equity or Debt.</p> <p>As per the GAAP, the capitalization of the asset is based on the Original cost in line with the accounting standards. Hence as per the GAAP, MWMP must account the depreciation for the entire Capital Cost and reducing of VGF is thus not applicable.</p> <p>Accordingly, for the tariff petition, considered depreciation for the Capital Cost of Rs.214.38Cr, adopting Depreciation rate of 5.28% per annum for first 13 years and remaining depreciation to be spread during remaining useful life of the project considering the salvage value of the project as 10% of project cost, is considered as per tariff norms in the Regulations. The annual depreciation as shown in tariff petition is accordingly Rs. 10.19 Cr.</p>
3l	<p>Interest on Loan: The petitioner claimed interest @ 12% p.a., for the loan for the project. As per Regulation a normative interest rate of 200 bps above average State Bank of India Marginal Cost of Funds based Lending Rate prevalent during the last available six months shall be considered and requested that an interest rate of 10% may only be considered for fixing the tariff.</p>	<p>MWMP submitted that, SBI has provided the indicative terms for the loan for the project and the interest rate as per these terms is 375 bps above MCLR-6M i.e., at present effective rate is 10.70%. We request the Hon'ble Commission to consider the same while fixing the tariff and the same is updated in the model.</p>
3m	<p>Return on Equity: The petitioner has claimed return on equity of 15%. As per regulation, the normative ROE shall be 14% on the normative equity.</p>	<p>MWMP agree to have update the model with 14% ROE as per the Regulation norms.</p>
3n	<p>Interest on Working Capital: the computation of interest on working capital is not as per tariff norms. The petitioner included 2 months O&M cost in WC. As per Regulation, 1 month O&M cost only is included in WC and the interest rate shall be 300 bps above average MCLR. It is requested that an interest rate of 11% may only be considered for fixing tariff.</p>	<p>MWMP agree to have update the model with interest working capital at 11% per annum as the working capital is applicable during O&M stage after two years.</p>
3o	<p>O&M costs: It is requested that Hon'ble Commission may</p>	<p>MWMP submitted that, in the tariff petition, O&M cost for the Waste to Energy facilities at</p>

	consider only 5% of the capital cost as O&M cost norm for the project. Moreover, it is requested that the tipping fee received for the waste collection may be reduced from the O&M cost.	6% of the capital cost as per norms of KSERC and CERC Regulations and particularly considering higher chemical consumption to meet the emission norms. Hence, the petitioner requested to retain the same. Further, the petitioner submitted that, the tipping fee received is towards the waste collection & transportation which includes operational cost for the waste collection & transportation for the entire cluster of Kozhikode i.e., for total 7 ULBs and also includes the capital recovery for assets deployed for secondary collection through containers both underground, overground, transportation vehicles and transfer stations. Thus, the tipping fee would be towards the O&M of Waste Collection & Transportation only as said above and it is not viable to reduce the O&M cost of WTE Plant from the tipping fee.												
3p	Tipping Fees: As per the projected P&L statement provided in the petition, the petitioner is expecting a revenue around Rs. 60 Cr per annum from the processing fee of waste. However, the same has not been factored in tariff computation. It is requested that the tariff of project may be fixed considering the revenue from tipping fee also.	The petitioner submitted that, in the Tariff petition, the capital cost towards waste collection and transportation and its corresponding O&M cost in the cluster of Kozhikode consisting of 7 ULBs are not considered. Thus, the tipping fee revenues are toward collection and transportation only. Further, it is also mentioned in the concession agreement in Article 9, the tipping fee is towards the MSW collected in the Project Area and transported to the Processing site. However, in the interest of the project and early determination of the tariff, the petitioner considered a part of the tipping fee revenue i.e., Rs. 865 per ton towards sharing with the WTE Plant. The same has been updated in the model.												
3q	Tariff: The tariff quoted by the petitioner is exorbitantly high..... Further, the tariff of WtE plant at Kochi by Hon'ble Commission is only Rs. 6.17/unit.....	The petitioner brought the following tariff orders pertains to WtE plants before the attention of the Commission. <table border="1"> <thead> <tr> <th>Order Ref#</th> <th>Project, Capacity</th> <th>Levelized Tariff/unit</th> </tr> </thead> <tbody> <tr> <td>O.P. No.14 of 2020 dated 18.04.2020 TSERC</td> <td>Generic Tariff for MSW (RDF)/Energy</td> <td>Rs. 7.84 / kWh</td> </tr> <tr> <td>Order dated 21.08.2020 KSERC</td> <td>Generic Tariff for MSW to Energy</td> <td>Rs. 7.08 per unit</td> </tr> <tr> <td>Order No. 4 of 2016 GERC</td> <td>Municipal Solid Waste to Energy Projects in the State of Gujarat</td> <td>Rs.7.03/kWh</td> </tr> </tbody> </table>	Order Ref#	Project, Capacity	Levelized Tariff/unit	O.P. No.14 of 2020 dated 18.04.2020 TSERC	Generic Tariff for MSW (RDF)/Energy	Rs. 7.84 / kWh	Order dated 21.08.2020 KSERC	Generic Tariff for MSW to Energy	Rs. 7.08 per unit	Order No. 4 of 2016 GERC	Municipal Solid Waste to Energy Projects in the State of Gujarat	Rs.7.03/kWh
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		CERC	RDF based MSW	Rs. 7.59/kwh (after adjusting AD)
		Further, the petitioner submitted that, they are setting up a Bio-methanation plant for wet waste and RDF based Waste to Energy plant along with a scientific landfill.		
4	It is submitted that the power procured from the project may be allowed to be accounted against the RPO obligations of KSEB Ltd. Similarly, the project shall abide by the provisions in the renewable energy regulation notified by the Hon Commission	Agreed		
5	The petitioner has requested that any electricity generated from the project in excess of the levels mentioned in the power purchase agreement be bought by KSEBL at the same levelised tariff approved by the Commission. In this matter it is submitted that electricity generated from the project in excess of the levels mentioned in the power purchase agreement may be only at 75% of the PPA tariff	Petitioner requested to consider 100% of the PPA tariff for the excess power as this project is a special project benefitting the whole population and involves high capital investment.		
6	Making available Government Funds for PPP projects: It is additionally submitted that it is not fair to load the entire project cost in the tariff of Electricity since the project cost is high. Different models of financing PPPs are available at present, to take care of the commercial viability of such projects	The petitioner submitted that, they have not loaded the entire project cost in the tariff and have only considered cost of WTE plant & its ancillary facilities after reducing the proportionate VGF being provided by the Government.		
7	Exception from Excise / Customs Duty: Ministry of New and Renewable Energy, Government of India is granting exemption of Excise duty / customs duty on all items of machinery for setting of projects for generation of power using urban and industrial wastes of Renewable Natures namely Agro-Industrial, Municipal and Urban Waste etc. if such benefits are availed, there is a chance to reduce the capital cost considerably and thereby reducing the tariff	Petitioner claimed to have considered all the available exemptions and accordingly estimated the capital cost.		

7. In compliance of the direction of the Commission to submit the details of the cost estimate of the project, the petitioner, vide letter dated 21.10.2020 submitted the quotes received from bidders/manufactures for few of the items of the proposed 6MW WtE plant at Kozhikode, and its summary is given below.

Sl No	Description	Supply (Rs. Cr)	Erection (Rs.Cr)	GST (Rs.Cr)	Total (Rs. Cr)	Remarks
1	Biomethanation plant	13.100	1.668	Extra	14.768	Offer from KIS group dated 20.02.2020- Rs 14.78 Cr) without GST).
2	300 TPD WtE Feed material sieving line	1.027		Extra	1.027	Offer from ALFA Therm Ltd dated 29.07.2015 (offer very old)
3	1x 315 TPD combustion line package	70.200		Extra	70.200	Offer from CNIM Martin dated 22.11.19
4	Design, Manufacture & Supply of 10T Double Girder EOT crane.	0.273			0.273	Quote dated 28.11.2016 of Arvind Crane for Chennai Project.
5	Supply of 1 No. TG set	5.700		Extra	5.700	Quote dated 19.02.2020 from Triveni Tubines
6	ACC offer for 1 x 6MW WtE plant	4.200		Extra	4.200	Quote dated 27.08.2020 of C.Doctor & India Pvt Ltd
7	O&M spares for two years	3.500		Extra	3.500	Quote dated 02.12.19 from CNIM Martin
8	Piping Package				0.000	
	Supply	2.800		Extra	2.800	
	Erection and commissioning	0.350		Extra	0.350	
9	Erection and commissioning of 1 No. 315 TPD WtE boiler	8.400		Extra	8.400	
10	Effluent Treatment Plant	3.380		Extra	3.380	Quote from KIS group dated 26.02.2020
11	Water Treatment plant	1.013		Extra	1.013	Quote from M/s Toya Tech Eco Solutions dated 21.07.2017, which is much before the State Government selecting the petitioner as Concessionaire.
12	Fire protection and Detection system	0.816			0.816	Quote from M/s Heba Fire Fighting Systems dated 17.08.2017 is for a different plant.
13	Electrical package solution	9.150		Extra	9.150	Quote from HITACHI dated 18.10.2020
14	Distributed control system	1.250		Extra	1.250	Quote dated 28.08.2018 from M/s Yokogawa India Ltd. This quote also seems to be old.
15	Engineering consultation fee	0.750			0.750	Aquatherm offer dated 15.07.2020
		125.909	1.668	0.000	127.577	

Analysis and Decisions of the Commission

8. The Commission has examined in detail, the petition filed by M/s Malabar Waste Management Pvt Ltd, to determine the levelized tariff for the electricity generated from the 6MW Waste to Energy Power plant at Njalianparambu, Kozhikode District as per the provisions of the Electricity Act, 2003, Tariff Policy 2016, KSERC (Net Metering & Renewable Energy) Regulations, 2020, and other Rules and Regulations in force.

9. Background of the petition

The background of the petition is summarized below.

- (1) The State Government had taken the policy decision to setup Waste to Energy (WtE) Plants at 7 sites in the State, one each at Thiruvananthapuram, Kollam, Thrissur, Palakkad, Malappuram, Kozhikode and Kannur Districts, on Design, Build, Finance, Operate and Transfer (DBFOT) basis in Public Private Partnership (PPP) mode. Government has appointed, M/s Kerala State Industrial Development Corporation (KSIDC) as the nodal agency for the setting up of WtE plants in collaboration with the Local Bodies.
- (2) KSIDC invited bid from bidders to undertake development of an ISWM project with WtE plant of minimum 300 TPD processing capacity for Kozhikode Cluster under DBFOT basis for a period of 27 years. The bidding process initiated on 22.11.2018. M/s. Zonta Infratech Private Limited (ZIPL) as the lead member has been awarded with the contract. In accordance with tender condition, a Special Purpose Vehicle (SPV), Malabar Waste Management Private Limited (MWMPL) has been incorporated as the Concessionaire for undertaking the project.
- (3) Kozhikode Cluster comprises of the following Local Self Government Institutions (LSGIS) of Kozhikode District in the State of Kerala and referred as the participating Local Bodies.
 - (i) Kozhikode Municipal Corporation;
 - (ii) Faroke Municipality;
 - (iii) Quilandy Municipality;
 - (iv) Ramanattukara Municipality;
 - (v) Olavanna Gramapanchayath;
 - (vi) Kadalundi Gramapanchayat; and
 - (vii) Kunnamangalam Gramapanchayat.
- (4) The State Government vide its Order No G.O.(Ms)No.50/2019/LSGD, dated 14.5.2019, approved the tipping fee of Rs 3500/tonne, offered by M/s Zonta Infratech Pvt Ltd, the concessionaire for setting up of Waste-to-Energy plant at Kozhikode. Government also ordered that, the proposal for Viability Gap Fund/ Grant support as admissible for the

project under Swatch Bharath Mission (Urban) shall be recommended to Ministry of Housing and Urban Affairs, Government of India, on submission of Detailed Project Report by the Concessionaire.

Further, as per the above Government Order dated 14.05.2019, the maximum VGF expected is Rs 58 cr., consisting of Rs 20.3 Cr central share, Rs 13.5 Cr State share and Rs 24.18 cr. Urban Local Bodies share.

- (5) The petitioner, as the 'Concessionaire' entered into Concession Agreement between the Concessionaire, GoK, KSIDC and the Participating Local Bodies (PLBs) on 04.09.2019. As per the Concession Agreement, the petitioner is entrusted with the 'design, engineering, finance, procure, construct, install, commission, operate and maintain the project for a period of 27 years.

Further, the Article 9 of the Concession Agreement envisages following stream of revenue available to the petitioner.

- (i) Tipping fee @ Rs 3500 per Ton of MSW collected in the Project Area and transported to the Processing/ disposal site by the Concessionaire during the post COD period.
 - (ii) In addition to the above, the financial assistance as per the guidelines of Swatch Bharat Mission (SBM) - Urban 2017, including the financial assistance as approved and released by Swatch Bharat Mission (SBM), Ministry of Housing & Urban Affairs (MoH & UA) and the corresponding GoK share if any will be released as reimbursement to the concessionaire based on the progress of the project development.
 - (iii) Payment made by KSEB Ltd at the tariff approved by KSERC for the electricity generated and supplied from the proposed WtE plant, as per the PPA to be signed between the Concessionaire and KSEB Ltd.
- (6) Further, as per the clause 2.6.3(j) of the Article-2 of the Concession Agreement, the concessionaire has to file a petition before the KSERC for fixing the tariff for the electricity generated from the WtE plant to be supplied to KSEB Ltd.

The concessionaire filed the current petition in the above back ground.

10. As detailed above, the Concessionaire was selected by KSIDC on behalf of the State Government for establishing a WtE plant for Kozhikode cluster, on Design, Build, Finance, Operate and Transfer (DBFOT) basis. The State Government vide Order G.O (Ms) No. 50/2019/LSGD dated 14.05.2019 approved the tipping fee of Rs 3500/- per tonne quoted by M/s Zonta Infratech Pvt Ltd, the concessionaire, for setting up of Waste to Energy Plant at Njeliamparambu, Kozhikode.

M/s KSIDC vide the letter No. KSIDC/TVM/3606/2019/316 dated 27.05.2019, issued Letter of Intent (LoI) to the concessionaire M/s Zonta Infratech Pvt Ltd for the development of Integrated Solid Waste Management project with a Waste to Energy (WtE) plant of minimum 300 TPD processing capacity on DBFOT basis at Njalianparambu, Kozhikode District, Kerala.

Further, the 31st Meeting of the State Level Advisory Committee on waste management held on 15.11.2019 resolved to approve the DPR of the project based on the recommendations of the DPR evaluation committee.

The project is based on incineration technology and will convert waste to energy with minimum residual content. The proposed capacity of the power plant is 6 MW and as per the concession agreement, and the power generated from the project is intended to be supplied to KSEB Ltd.

As per the provisions of the Electricity Act, 2003, KSEB Ltd as the distribution licensee has to purchase the electricity generated from the project at the tariff determined by this Commission. Hence, the primary role of this Commission is to determine the tariff for the electricity generated from the project, for supplying the same to KSEB Ltd by the concessionaire.

11. Legal provisions

The Commission has examined the petition filed by M/s Malabar Waste Management Private Limited, as per the provisions of the Electricity Act, 2003, National Tariff Policy 2016, and the relevant regulations issued by the Commission under sub-section (1) of Section 181 of the Electricity Act, 2003. The details are given below.

- (i) Clause (a) of sub-section (1) of Section 86 of the Electricity Act, 2003, empowers the Commission to determine the tariff for generation, supply, transmission and wheeling of electricity within the State. Section 86(1) (b) of the Electricity Act, 2003 empowers the Commission to regulate the power purchase by the distribution licensees including the price at which the electricity shall be purchased from generating companies through agreements.

Section 61 of the Act empowers the Commission to issue regulations specifying the terms and conditions for determination of tariff for generation, transmission, distribution and supply in accordance with the guidelines stipulated under the said Section. Section 62 of the Act empowers the Commission to determine tariff for supply of electricity by a generating company to a distribution licensee. Section 64 of the Act specifies the procedure for determination of tariff and issuance of tariff order.

- (ii) The Central Government vide the notification 23/2/2005-R&R dated 28.01.2016 has notified the Tariff Policy 2016. Clause 6.4 (ii) of the Tariff Policy, 2016 deals with electricity generated from Waste-to-Energy projects and its sale to distribution licensees. The relevant portion is extracted below:

'Distribution Licensee(s) shall compulsorily procure 100% power produced from all the Waste-to-Energy plants in the State, in the ratio of their procurement of power from all sources including their own, at the tariff determined by the Appropriate Commission under Section 62 of the Act.'

- (iii) As per the first proviso to Regulation 7 of the KSERC (Renewable Energy and Net Metering) Regulations, 2020, considering the environmental concerns, the distribution licensees have to purchase the electricity generated from the waste to energy plants at the tariff approved by the Commission. The relevant Regulation is extracted below.

“7. Preference for the purchase from the renewable energy generating units within the State.-

Every distribution licensee shall purchase the quantum of renewable energy required to meet its renewable purchase obligation preferentially from the renewable energy generating units within the State if available, with the prior approval of the Commission, and at the tariff approved by the Commission.

Provided that, considering the environmental concerns, the distribution licensee shall necessarily purchase the electricity generated from municipal solid waste, with the prior approval of the Commission at the tariff approved by the Commission.”

12. The Commission, by invoking the statutory powers conferred on it as per the provisions of the Electricity Act, 2003, and also as per the provisions of the Tariff Policy 2016 and also as per the provisions of the KSERC (Renewable Energy & Net Metering) Regulations, 2020 decided to determine the tariff of the electricity generated from the project for supplying the same to KSEB Ltd.
13. The norms, parameters and other basis adopted for determination of tariff for the electricity generated from the proposed MSW plant at Kozhikode is discussed below.

Capital cost

14. The capital cost of the project is the basis for determining the project specific tariff for the electricity generated from a generating plant. The tariff components including the interest on loan, depreciation, O&M cost etc. are calculated on the basis of the capital cost of the project.
15. As per the petition filed by the Concessionaire, the project cost claimed for the electricity business of the project is Rs 214.38 crore. Further, the concessionaire is expecting Rs 48.44 crore as Viability Gap Fund (VGF)/ grant from Swachh Bharath Mission (Urban) from Ministry of Housing and Urban Affairs, Government of India. The details of the capital cost claimed by the petitioner is given below.

Sl No	Particulars	Amount (Rs. Cr)	(%) of total	(Rs Cr / MW)
1	Site Development Costs	3.54	1.7%	0.6
2	Design, Engineering and Consultancy	7.27	3.4%	1.2
3	Bio methanation Plant etc	15.23	7.1%	2.5
4	WTE Plant along with all ancillary facilities	147.12	68.6%	24.5
5	Scientific Landfill for the rejects and fly ash generated	9.86	4.6%	1.6
6	Insurance	7.06	3.3%	1.2
7	Spares	7.21	3.4%	1.2
8	Financing Charges and IDC	17.09	8.0%	2.8

9	Total Project Cost	214.38	100.0%	35.7
10	Capital Grant / VGF	48.44	22.6%	8.1
11	Net Project Cost of Electricity Business	165.94	77.4%	27.7

The cost per MW claimed by the petitioner without the benefit of VGF is Rs 35.70 crore and the project cost recommended for determination of tariff after accounting the expected VGF is Rs 27.70 crore per MW.

But as per the DPR, the total project cost claimed by the Concessionaire is Rs 256.37 crore, which is inclusive of the cost of secondary waste collection and its Transportation. However, this cost is not claimed by the petitioner for tariff determination.

16. The WtE plant is proposed to be constructed by the Concessionaire on Design, Build, Finance, Operate and Transfer (DBFOT) basis with their own funds as per the specifications and standards. As per the details submitted before the Commission, the DPR Evaluation Committee has recommended the DPR for approval. The State Level Advisory Committee on Waste Management headed by the Chief Secretary, while approving the DPR did not appraise the capital cost of the project in detail.
17. At this stage, the Commission does not intend to appraise the techno economic feasibility and viability of the project. Hence, the Commission in this petition is limiting its role to determining the tariff for the electricity generated from the project based on the capital cost incurred for generating electricity from the project. Moreover, the project is yet to commence construction and at this stage, the Commission does not intend to appraise the capital cost claimed for the project. Further, the petitioner is yet to provide the detailed estimates and supporting documents justifying the capital cost of the project. Hence, the Commission during the public hearing held on 15.10.2020, directed the petitioner to submit the details of the project cost claimed including supporting documents justifying the project cost for determining the tariff for electricity generated from the project.
18. In compliance to the direction of the Commission during the public hearing, the petitioner vide letter dated 21.10.2020 submitted budgetary quotes amounting to Rs 127.58 crore, received from suppliers/manufacturers for a few items/components of the project. Its summary is given under paragraph-7 of this Order.

The Commission has examined the budgetary quotes submitted by the petitioner and noted the following:

- (i) The cost claimed for most of the items including Bio-methanation plant, TPD combustion line packages etc. are based on single quotes.
- (ii) Some of the quotes presented pertain to the years 2016 and 2017, i.e., even before KSIDC invited the bids for the proposed WtE project at Kozhikode during October 2018.
- (iii) Some of the budgetary quotes submitted pertain to some other WtE plants established in other States.
- (iv) The petitioner has not submitted the detailed estimates of the civil works of the project.

- (v) The budgetary quotes do not include all items required for the project and amount to Rs 127.58 crore (excluding GST) only as against the proposed capital cost of Rs. 214.38 Cr. submitted by the petitioner.
19. Considering the above, the Commission is not in a position to accept the capital cost as claimed by the petitioner for tariff determination. The project is at its initial stage and without detailed estimates and supporting documents, the Commission cannot establish the correctness or prudence of the capital cost claimed by the petitioner.
20. Since this project relies on incineration and bio-methanation processes in the processing of municipal waste collected and there is no similar plant operating within Kerala, the Commission decided to examine the capital cost of similar/equivalent projects adopted by CERC and other State Commissions for tariff determination. The details are given below:

Name of the Commission	Date of Order/ Regulation	Capital Cost approved
CERC	Regulation dated 07-10-2015	Rs. 15.00 Crores/MW.
Telangana	Order dated 13-06-2016 in O.P.No.18 of 2016 (RDF/MSW)	MSW – Rs.14.00 Crores/MW
Madhya Pradesh	SMP-10/2016, Order dated 29-06-2016	Rs. 15.00 Crores/MW
Chhattisgarh	SMP No. 39 of 2016, dated 8-9-2016	Rs. 15.75 Crores/MW for MSW
Karnataka	Order dated 19.09.2016	Rs 17.00 crore/MW
Gujarat	Order No. 4 of 2016, dated 10-11-2016.	Rs.16.00 Crores/MW for Mass Incineration Technology.
Jharkhand	Order dated 21 st June 2017 in Case No. 12 of 2016	Rs 16.20 crore/MW
Tamil Nadu	Order dated 28-3-2019	Rs 17.00 crore/MW

As detailed above, the normative capital cost adopted by CERC and other SERCs for determining the tariff from MSW based projects is in the range of Rs 15.00 to Rs 17.00 crore per MW, as against the capital cost of Rs 27.70 crore per MW (after availing the VGF benefit) claimed in this petition. The commission however notes that the above orders pertaining to prior periods and may not truly reflect the present capital costs. The Commission also noted the justifications given by the petitioner towards the high capital cost.

In their submission, the petitioner has contended that Waste to Energy project cost depends on the project location, type of waste and its characteristics. The cost of civil construction, its plant equipment and its specific design would have to be made compliant to the emission and Solid Waste Management norms. The petitioner submitted that municipal solid waste is a very tough fuel to burn, especially in Kozhikode which is located in the coastal region and therefore has high moisture content wastes. Hence, for the Kozhikode WtE project, a larger grate, higher residual time and higher turbulence grate design is required for emission control and complete burning. The grate design is proprietary in nature and specially designed for handling only municipal wastes.

The petitioner further submitted that the Solid Waste Management Rules 2016 is far more stringent when compared to the Draft SWM Rules 2000 in terms of furnace temperature and sizing of furnace. Considering the high level of chlorine corrosion and the lower calorific value of municipal waste in the Kozhikode region, refractory lining of the entire furnace is essential for sustained combustion process. Due to the high moisture content and low calorific value of MSW, the petitioner has facilitated an elaborate fuel segregation facility at the site for segregating the organic and the residual incinerable dry waste. Both bio-methanation and incineration processes have been integrated into the processing of waste. The biogas produced by the bio-methanation process is co-fired in the incineration boiler for steam generation and electricity production.

The Commission also took note of the petitioner's submission that compared to any conventional plant, the NOx control and flue gas treatment process is elaborate and expensive. However, they are duty bound to meet all emission norms as prescribed by the Kerala Pollution Control Board and the SWM Rules, 2016. It is also to be noted that the project site is congested and has uneven boundaries due to which the plant layout and equipment arrangement cannot be economically optimized further. In addition, the final inert/ash disposal quantity for Kozhikode is restricted only to 10% compared to higher quantities permitted in plants located in other states; the Kozhikode WtE plant is designed for a wide range of heterogeneous fuel characteristics; the project cost includes the cost of constructing the power evacuation system for connecting power to the Nallalam sub-station.

The petitioner also mentioned that MWMPL has considered incineration, flue gas treatment and emission guarantees based on proven European technology. These systems are designed, manufactured and quality controlled as per European norms which are in full compliance with the Central Pollution Control Board emission norms and SWM Rules 2016; and will be supervised at all stages by the European parent companies. They also submitted that the cost per MW is generally lower for plants having higher capacity and rating. The Kozhikode project of only 6 MW falls in the bottom range and hence the cost per MW is expected to be higher.

21. The Commission is well aware that while determining the generation tariff of any project, it is duty bound to examine the prudence of the capital cost. Any additional capital cost incurred, which is not directly linked to the power generation project cannot be considered for tariff determination. The Commission also noted that the State Government in its Order dated 14.05.2019 has mentioned that the project is eligible for Viability Gap Fund (VGF)/Grant support under Swachh Bharath Mission (Urban) of Ministry of Housing and Urban Affairs, GoI. The Suchitwa Mission, Local Self Government Department, Government of Kerala, vide their letter dated 25.02.2020, had recommended for approval to the Govt. of India, Rs 64.03 crore as VGF for the project.
22. The Commission also noted that as per the provisions of the Electricity Act, 2003, National Tariff Policy 2016, notified by the Central Government in compliance to Section 3 of the Electricity Act, 2003 and the KSERC (Renewable Energy & Net Metering) Regulations, 2020 issued by the Commission under sub-section (1) of Section 181 of the Electricity Act, 2003, KSEB Ltd. as the incumbent distribution licensee of the State has to procure the entire electricity generated from the

proposed MSW project at Kozhikode at the tariff as determined by the Commission. To elaborate,

Clause (a) of sub-section (1) of Section 86 of the Electricity Act, 2003, empowers the Commission to determine the tariff for generation, supply, transmission and wheeling of electricity within the State. Section 86(1) (b) of the Electricity Act, 2003 empowers the Commission to regulate the power purchase by the distribution licensees including the price at which the electricity shall be purchase from generating companies through agreements.

Section 61 of the Act empowers the Commission to issue regulations specifying the terms and conditions for determination of tariff for generation, transmission, distribution and supply in accordance with the guidelines stipulated under the said Section. Section 62 of the Act empowers the Commission to determine tariff for supply of electricity by a generating company to a distribution licensee. Section 64 of the Act specifies the procedure for determination of tariff and issuance of tariff order.

The Central Government vide the notification 23/2/2005-R&R dated 28.01.2016 has notified the Tariff Policy 2016. Clause 6.4 (ii) of the Tariff Policy, 2016 deals with electricity generated from Waste-to-Energy projects and its sale to distribution licensees. The relevant portion is extracted below:

'Distribution Licensee(s) shall compulsorily procure 100% power produced from all the Waste-to-Energy plants in the State, in the ratio of their procurement of power from all sources including their own, at the tariff determined by the Appropriate Commission under Section 62 of the Act'

As per the first proviso to Regulation 7 of the KSERC (Renewable Energy and Net Metering) Regulations, 2020, considering the environmental concerns, the distribution licensees have to purchase the electricity generated from the waste to energy plants at the tariff approved by the Commission. The relevant Regulation is extracted below.

"7. Preference for the purchase from the renewable energy generating units within the State.-

Every distribution licensee shall purchase the quantum of renewable energy required to meet its renewable purchase obligation preferentially from the renewable energy generating units within the State if available, with the prior approval of the Commission, and at the tariff approved by the Commission.

Provided that, considering the environmental concerns, the distribution licensee shall necessarily purchase the electricity generated from municipal solid waste, with the prior approval of the Commission at the tariff approved by the Commission."

23. The Regulation 36(3) and 36(4) of the KSERC (Renewable Energy Net Metering) Regulations, 2020 (herein after referred as the RE Regulations, 2020) specifies the various documents to be submitted in support of the claim of capital cost, which is extracted below for ready reference.

"36(3) A petition for determination of project specific tariff shall be accompanied by such fee as may be determined by Regulations and be accompanied by:

- a) *Detailed Project Report outlining technical and operational details, site*

specific aspects, premise for capital cost, financing plan, project economic viability etc.;

- b) Estimates of cost of all major components for the project with evidence to its reliability.*
- c) A statement indicating the project completion cost, evidence for all major expenditures incurred, sources of financing with its terms/ conditions etc for the period, for which tariff is to be determined;*
- d) A statement containing full details of any subsidy and incentive available, claimed and received, due or assumed to be due from the Central Government and/or the State Government;*
- e) Any other information as decided by the Commission, for determining the project specific tariff for the project.*

(4) For the determination of project specific tariff, the generating company shall submit the break-up of all the capital cost items accompanied by relevant paid vouchers/ tax receipts and other verifiable documents with its petition in the manner specified above.

Provided that, the project specific tariff so determined shall be limited to the generic tariff determined by the Commission for the particular year of CoD, if it exceeds the generic tariff for that year and shall be based on the norms and parameters specified in these Regulations.”

- 24. As already stated, the DPR submitted by the petitioner does not contain the detailed estimates of the project capital cost. Further, the project is still in the development stage and hence the actual cost of the project will be known only on completion of the project. The supporting documents for claiming the project cost including the paid vouchers/tax receipts and other verifiable documents as per Regulation 36 (4) of the RE Regulations, 2020 may be available only after the completion of the project.
- 25. The Commission has examined all these aspects in detail. It is not prudent and justifiable to determine the final tariff of the project with the preliminary estimates of the project cost and without due supporting documents. However, in order to achieve the financial closure of the project, the Commission has decided to approve a provisional tariff. However the petitioner as the generator can enter into a PPA with KSEB Ltd. only after the final tariff and the PPA is approved by this Commission.
- 26. Hence, the Commission, by invoking the statutory powers conferred on it as per the above-mentioned provisions has decided to provisionally determine the tariff of the electricity generated from the project. As already mentioned, the DPR submitted by the petitioner does not contain the detailed estimates of the capital cost of the project. Since, the project is still in the planning stage, the actual cost incurred on the project will be known only on completion of the project. In addition, the supporting documents for establishing the cost of the project including the paid vouchers/tax receipts and other verifiable documents as per the Regulation 36(4) of the RE Regulations, 2020 may be available only after the completion of the project.

The Commission has duly considered these aspects in detail. The Commission is well aware that it is neither prudent nor justifiable to determine the final tariff, based only on the DPR and the preliminary estimate of the project cost. However, considering the social relevance of this project, its impact on improving the health and well-being of the beneficiary residents and to facilitate the project financial closure, the Commission has decided to approve a provisional tariff at this stage and to direct the petitioner and KSEB Ltd. to initial a Power Purchase Agreement (PPA) and submit it to the Commission for its approval. The final tariff of this project will be determined by the Commission on completion of the project and submission of all the

relevant documents to the Commission for tariff fixation. Thereafter, the petitioner and the distribution licensee KSEB Ltd. can sign the Power Purchase Agreement after its formal approval by the Commission.

27. Considering all these aspects and constraints in detail, the Commission has proceeded to provisionally determine the tariff of the electricity generated from this project, based on the capital cost of similar projects as adopted by CERC and other State Commission. As mentioned in pre-paras, once the project is commissioned and COD declared, the petitioner, if they so desire can approach the Commission for re-determination of tariff with all details as per Regulation 36 of the RE Regulations, 2020.
28. To this end, the Commission has provisionally considered the generic capital cost of Rs 15.00 crore/MW, as specified by CERC, in the CERC (Terms and Conditions for Tariff Determination from Renewable Energy Sources) (fourth amendment) Regulations, 2015 notified on 7th October, 2015 as the primary basis for tariff determination for the base year 2015. However, as mentioned in pre para, it is a fact that the above generic capital cost was determined by CERC prior to the introduction of the more stringent Solid Waste Management Rules, 2016 and hence did not consider the additional costs required to comply with the new Rules. The petitioner too has vide Para 21 clearly mentioned the reasons for the project's capital cost to be on the higher side.
29. The Commission is of the firm view that all costs incurred to meet the environmental laws must be allowed in the project's capital cost. In addition, considering the site-specific requirements, additional costs for site development, scientific landfill for the rejects, end of process waste etc. the Commission has provisionally decided to provide an additional Rs 1.00 crore/ MW for the proposed MSW project at Kozhikode. Accordingly, the Commission has provisionally considered the capital cost for tariff determination for the base year 2015 at Rs 16.00 crore per MW as detailed below.

Sl. No	Particulars	(Rs. Cr/MW)	Remarks
1	Base capital cost	15.00	CERC RE fourth amendment Regulation dated 07.10.2015
2	Additional provision to address site specific requirements	1.00	Addl. amount considered
	Total	16.00	Approved for the base year 2015

The capital cost of Rs 16.00 crore/MW arrived at as above is then escalated to the year 2020, based on the increase in Whole Sale Price Index (WPI) during the period from the year 2014-15 to 2019-20. The month wise average WPI for the FY 2014-15 and FY 2019-20, is given in the Table below.

Month wise variation of WPI (base year 2011-12 =100)

Month	2014-15	2019-20
April	114.1	121.1
May	114.8	121.6
June	115.2	121.5
July	116.7	121.3
August	117.2	121.5
September	116.4	121.3

October	115.6	122.0
November	114.1	122.3
December	112.1	123.0
January	110.8	123.4
February	109.6	122.2
March	109.9	120.4
Average	113.875	121.8
% Average increase	7.0%	

As detailed above, the overall average increase in WPI from FY 2014-15 to 2019-20 is 7.0%. Accordingly, duly considering this increase in WPI, the Commission has decided to allow an increase of 7% on the provisional capital cost of Rs 16.00 per MW from the base year 2015 onwards. Based on this criteria, the provisional per MW capital cost of MSW at Kozhikode provisionally approved for tariff determination is $(16 \times 1.07) = \text{Rs } 17.12 \text{ crore/MW}$ for the year 2019-20. Hence, the provisional capital cost approved for the 6 MW project is Rs 102.72 crore for tariff determination. The details are given below.

Sl No	Particulars		Remarks
1	Installed capacity (MW)	6.00	As given in the tariff petition
2	Escalated capital cost/ MW (Rs. crore)	17.12	For the Year 2020
3	Provisional capital cost considered for the project (Rs. Cr)	102.72	For provisionally determining the tariff for this project only

The Commission hereby clarifies that, the above consideration is only for arriving at a provisional capital cost for determining the provisional tariff of this project. It is further clarified that the Commission has not limited the overall capital cost of the entire WtE project at Rs 17.12/MW. As already mentioned, a detailed appraisal of the DPR and the assessment of its techno-commercial viability is not the intent of this petition. The Commission is also aware that, the actual project capital cost may differ from the provisional capital cost considered by the Commission here for determining the provisional tariff. However, considering the uncertainties involved in this project, its impact on the capital cost and also the fact that the project cost as projected by the petitioner has not been considered at this stage for reasons mentioned in paras aforesaid, the Commission is constrained to adopt the above methodology in provisionally estimating the capital cost and tariff for this project.

Hence as detailed above, the Commission has decided to provisionally adopt Rs 17.12 crore per MW as the capital cost for determining the tariff provisionally for electricity generated from the proposed WtE project at Kozhikode. The Commission hereby clarifies that the petitioner is free to approach the Commission to determine the final tariff as mandated under Section 62 of the Electricity Act, 2003 and the Commission's RE Regulations 2020.

Useful life of the project

30. The petitioner in the petition has proposed the useful life of the project as 25 years. However, as per Regulation to (1) (bu) (e) of KSERC (Renewable Energy and Net Metering) Regulations 2020, the useful life of MSW projects is mentioned as 20 years

from the date of commercial operation. Since the norms adopted by the petitioner is better than the Commission's norms, the useful life of the project is adopted as 25 years.

Hence, the Commission has adopted 25 years as the useful life of this project for tariff determination.

Plant Load Factor (PLF)

31. The petitioner has proposed the PLF of the plant at 65% for first year and 75% from second year onwards.

As per the Regulation 55(3) of the KSERC (Renewable Energy & Net Metering) Regulations, 2020, the threshold PLF for determining tariff for MSW projects is as detailed below.

	Particulars	PLF
a)	During the first year of CoD	65%
b)	From 2 nd year onwards	75%

Provided that, the stabilization period shall not be more than 6 months from the date of commissioning of the project.”

Since the petitioner's proposal is consistent with the Commission Regulation 55(3) of the KSERC (Renewable Energy & Net Metering) Regulations, 2020 the Commission hereby accepts the above PLF for determining the tariff of electricity generated from the project.

Auxiliary Consumption

32. In the petition, the petitioner has proposed to adopt the auxiliary consumption at 15%.

As per the Regulation 55(4) of the KSERC (Renewable Energy & Net Metering) Regulations, 2020, the auxiliary consumption for the MSW based power projects shall be 15%. Hence the Commission hereby adopts the same for determination of the tariff for the electricity generated from the project.

Debt: Equity Ratio

33. The petitioner proposed to adopt the normative debt: equity ratio at 70:30 for determining the tariff of the project.

As per the Regulation 40 of the KSERC (Renewable Energy & Net Metering) Regulations, 2020, the debt-equity ratio for determining the tariff for all renewable projects shall be 70:30. Hence, the Commission hereby adopts the debt-equity ratio of 70:30 for determining the tariff for the electricity generated from the project of the petitioner.

Loan repayment period

34. The petitioner has proposed a loan moratorium period including for interest of 2 years and a further loan repayment period of 10 years.

As per the Regulation 41 (1) of the KSERC (Renewable Energy & Net Metering) Regulations, 2020, the normative loan tenure of 13 years shall be considered for the purpose of tariff determination. Hence the Commission has decided to adopt the loan repayment period as 13 years without any moratorium period for tariff determination.

Interest on loan

35. The petitioner has claimed the interest on loan at 12% for tariff determination.

However, as per the Regulation 41 (2) (ii) of the KSERC (Renewable Energy & Net Metering) Regulations, 2020, the normative interest rate to be adopted for tariff determination is ‘two hundred (200) basis points above the average SBI Marginal Cost of Funds based Lending Rate (MCLR) for one month tenor prevalent during the last available six months’. The average SBI MCLR rate for past six months prior to January 2021 is 6.65% (one month tenor). Accordingly, as per the KSERC (Renewable Energy & Net Metering) Regulations, 2020, the normative interest rate @ 8.65% is adopted for determination of tariff. The Commission adopts the same for determination of tariff for electricity generated from the project.

Depreciation

36. The petitioner has proposed depreciation @ 5.28% for first 13 years for tariff determination on the presumption of 25 years as useful life of the project.

As already mentioned, Regulation 2(1)(bu) of KSERC (Renewable Energy & Net Metering) Regulations, 2020 has specified the useful life of MSW based projects as 20 years. However, the Commission notes that the petitioner has proposed a better useful life of 25 years post-construction. ***Since this useful life proposed by the petitioner is better than the provisions of the KSERC (Renewable Energy & Net Metering) Regulations, 2020, the depreciation rate for determination of tariff is fixed @5.28% per annum for the first ‘13’ years and at 1.78% per annum for the remaining useful life of ‘12’ years is adopted by the Commission for tariff determination of this project.***

Interest on working capital

37. The petitioner had proposed the interest on working capital at the rate of 13% for determination of tariff.

Regulation 44 (2) of the KSERC (Renewable Energy & Net Metering) Regulations, 2020, the normative interest on working capital shall be at interest rate equivalent to the normative interest rate of three hundred (300) basis points above the average SBI Marginal Cost of Funds based Lending Rate (MCLR) for one month tenor prevalent during the last available six months’. The average SBI MCLR rate for past six months prior to January 2021 is 6.65% (one month tenor). Accordingly, as per the KSERC (Renewable Energy & Net Metering) Regulations, 2020, the normative interest rate to be adopted for computing interest on working capital is @ 9.65% for determination of tariff. The Commission decided to adopts the same for determining the tariff for electricity generated from the project.

Operation and Maintenance Expenses

38. The petitioner had claimed operational expense at 6% of the capital cost of the project for the first year, and 5.72% escalation for the subsequent years.

As per the Regulation 55(5) of the KSERC (Renewable Energy & Net metering) Regulations, 2020, the Commission shall determine only project specific O&M expenses based on prevailing market trends for MSW based projects. Since the plant is still under implementation stage and also no MSW based power plants are existing in the State, the trend of the O&M costs of MSW plants is not available within the State. Hence, the Commission has referred to the O&M cost adopted by CERC and other Commissions for the determination of the tariff for MSW projects as given below.

Name of the Commission	Date of Order/ Regulation	O&M expenses
CERC	CERC Regulation dated 07-10-2015	@6% of the normative capital cost for the year 2015-16, and there after escalated @5.72% per annum.
CERC	RE Regulation dated 17.04.2017	Not specified. The Commission shall determine the project specific O&M cost based on the prevailing market trends for MSW projects. O&M expenses for the base year shall be escalated at the rate of 5.72%.
Telangana	Order dated 13-06-2016 in O.P.No.18 of 2016 (RDF/MSW)	@6% of the normative capital cost with an escalation @5.72% per annum.
Madhya Pradesh	SMP-10/2016, Order dated 29-06-2016	@5% of the normative capital cost with an escalation @5.72% per annum.
Gujarat	Order No. 4 of 2016, dated 10-11-2016.	@6% of the normative capital cost with an escalation @5.72% per annum.
Chhattisgarh	SMP No. 39 of 2016, dated 8-9-2016	Rs 94.5 lakh/MW for the year 2016-17, escalated @5.72% per annum.
Haryana	Suo-moto/HERC/RA-4 of 2016, dated 28-9-2016	@6.5% of the normative capital cost for the year 2016-17, with an escalation @5.72% per annum.
Jharkhand	Determination of Tariff for procurement of Power from Wind, Biogas, Municipal Solid Waste and Refuse Derived Fuel based Power Projects) Regulations, 2016 (in force up to 31-3-2020)	@6% of the normative capital cost with an escalation @5.72% per annum.
Karnataka	Order dated 19.09.2016 in petition No. N/26/16	@6% of the normative capital cost with an escalation @5.72% per annum.
Tamil Nadu	Order dated 28-3-2019	5.5% on the 85% of the normative capital cost with an annual escalation of 5.72%, and 0.90% on the 15% the capital cost with an annual escalation of 5.72% per annum.

As specified in the CERC RE Regulations, 2015 and as adopted by most of the SERCs in the country and also duly considering more the abrasive nature of MSW plants and its wear and tear of the boilers etc, the Commission has decided to allow 6% of the provisional capital cost for tariff determination as O&M expenses for the first year of operation and from the second year onwards, the O&M cost of the first year be escalated @5.72% per annum.

Return on equity

39. The petitioner has claimed the RoE @ 14% for tariff determination.

As per the Regulation 43 of the KSERC (Renewable Energy & Net Metering) Regulations, 2020, the Return on Equity shall be 14% on the normative equity. Further, Income Tax/ Minimum Alternate Tax (MAT) on ROE if any, paid by the generator, shall be reimbursed separately by the distribution licensee on production of documentary evidence of remittance, annually for the entire useful life of the project.

Hence, as per the Regulation 43 of the KSERC (Renewable Energy & Net Metering) Regulations, 2020, the Commission has decided to provide RoE @14%. This RoE shall be for a maximum equity of 30% of the provisionally approved capital cost or the actual equity brought in by the developers of this project. Any tax paid on the RoE shall be allowed as a pass through, limited to the amount of equity considered in this Order, which shall be claimed separately from KSEB Ltd, duly furnishing proof of payment of such tax.

Discounting factor for computing levelised tariff

40. The petitioner has proposed a discounting factor @11% for arriving at the levelized tariff.

As per the second proviso to Regulation 37(2) of the KSERC (Renewable Energy & Net Metering) Regulations, 2020, 'the discounting factor equivalent to pre-tax weighted average cost of capital shall be considered for determination of tariff.

The WACC has been computed as under:

WACC = Cost of Debt + Cost of Equity, where
Cost of Debt = 70% x interest on debt
Cost of equity = 30% x return on equity

Accordingly, the Commission has arrived at a discounting factor for determining the levelised tariff as follows:

Particulars	WACC
Cost of debt	
0.7 * 8.65%	6.06%
Cost of Equity	
0.3 * 14%	4.20%
Weighted Average cost of capital	10.26%

Accordingly, the Commission has decided to adopt the WACC @10.26% for determining the levelized tariff of the project.

Summary of the technical and financial parameters

41. The summary of the technical and financial parameters adopted for determining the tariff of the proposed MSW project is given below.

SINo	Particulars		Remarks
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1	Installed capacity	6.0	MW	As per the petition
2	Life of the plant	25	Years	As per the petition
3	Plant load factor			
	(1) First year	65	%	KSERC (RE) Reg-2020
	(2) Second year onwards	75	%	KSERC (RE) Reg-2020
4	Auxiliary consumption	15	%	KSERC (RE) Reg-2020
5	Capital cost of the project	17.12	Rs.Cr./MW	Provisionally adopted by the Commission for the base year 2020
6	Debt: Equity	70:30		KSERC (RE) Reg-2020
7	Loan tenure	13	Years	KSERC (RE) Reg-2020
8	Interest rate (MCLR rate+ 2%) (MCLR- last six months- 6.65%)	8.65	%	KSERC (RE) Reg-2020
9	RoE (pre-tax)	14	%	KSERC (RE) Reg-2020
10	MAT/ Income tax	Pass through at actual		KSERC (RE) Reg-2020
11	Working capital			KSERC (RE) Reg-2020
	(i) O&M cost for one month			
	(ii) Receivable equivalent to two months			
	(iii) Maintenance of spares @ 15% of the O&M expenses			
12	Interest on WC (MCLR+3%)	9.65	%	KSERC (RE) Reg-2020
13	O&M cost (first year)	6% of the approved capital cost		
14	O&M cost (second year onwards)-	5.72% escalation on base year O&M [KSERC (RE) Reg-2020]		
15	Depreciation	5.28%	for first 13 years	KSERC (RE) Reg-2020
		1.78%	For remaining 12 years	KSERC (RE) Reg-2020
16	Discount rate = weighted average cost of capital	10.26	%	KSERC (RE) Reg-2020

Subsidy or incentive by the Central / State Government

42. Regulation 50 the KSERC (Renewable Energy & Net Metering) Regulations, 2020 specifies that, the Commission shall take into consideration any incentive or subsidy offered by the Central / State Government including accelerated depreciation if availed by the generating company while determining the tariff. The relevant regulation is extracted below.

“50.Subsidy or Incentive by the Central / State Government. -

(1) The Commission shall take into consideration any incentive or subsidy offered by the Central or State Government, including accelerated depreciation benefit if availed by the generating company, for the renewable energy power plants while determining the tariff under these Regulations.

Provided that the following principles shall be considered for ascertaining income tax benefit on account of accelerated depreciation, for the purpose of tariff determination:

- i) Assessment of benefit shall be based on the Commission approved capital cost, accelerated depreciation if availed by the developer at the rate as per relevant provisions under Income Tax Act and corporate income tax rate.*
- ii) Capitalization of RE Projects for the full financial year;*
- iii) Per unit benefit shall be derived on levellized basis at a discounting*

rate equivalent to weighted average cost of capital.”

However, the petitioner is yet to obtain this subsidy/incentives/central financial assistance available to the Municipal Solid Waste projects. As per the Order of the MNRE, Central Government dated 28.02.2020 and 17.06.2020 in File No. 20/222/2016-17, the Central Finance Assistance up to Rs 5.00 crore/MW is available to MSW projects. **The Commission hereby direct that, the project developer shall avail the CFA for this project and this benefit shall be passed on to the ultimate electricity consumers of the state through a reduction in the cost of electricity produced from this project.**

43. Benefit of accelerated depreciation.

The petitioner in the petition claimed that, they intended to avail the benefit of accelerated depreciation. Hence the Commission computed the benefit of accelerated depreciation as detailed below.

In terms of the KSERC (Renewable Energy & Net Metering) Regulations, 2020, for the projects availing the benefit of accelerated depreciation, an applicable Corporate tax rate of 34.94% has been considered. For the purpose of determining net depreciation benefits, depreciation @ 5.28% as per Regulations has been compared with depreciation as per Income Tax Act i.e. 40% of the written down value method. Moreover, additional 20% depreciation in the initial year is proposed to be extended to new assets acquired by power generation companies vide amendment in the Section 32, sub-section (1) clause (iia) of the Income Tax Act. 57. Income tax benefits of accelerated depreciation and additional depreciation, have been worked out as per normal tax rate on the net depreciation benefit. Per unit levelized accelerated depreciation benefit has been computed considering the pre-tax weighted average cost of capital as the discount factor. Accelerated depreciation benefit has been computed as per existing provisions of Income Tax Act. The detailed computation of the accelerated depreciation is given as Annexure.

Tariff

44. Based on the above norms and parameters, the levelized tariff provisionally determined by the Commission for the proposed MSW project at Kozhikode is **Rs 6.81/unit without considering the benefit of accelerated depreciation. The benefit of accelerated depreciation for the project is Rs 0.50/unit.**

45. Accordingly, as detailed in the preceding paragraphs, the Commission hereby provisionally **approves the tariff for the electricity generated from the proposed MSW project at Kozhikode @ Rs 6.81/unit without considering the benefit of accelerated depreciation and Rs 6.31/unit in case the developer desires to avail the benefit of accelerated depreciation. As proposed by the petitioner, the Commission hereby adopts the useful life of the plant as 25 years from the date of commercial operation of the project. The provisional tariff now determined shall be uniform and without any escalation.**

Over and above the approved tariff, KSEB Ltd is liable to reimburse the tax paid on RoE specified in this Order, on production of necessary supporting documents on payment of such tax to the authorities.

46. The petitioner, in the third prayer requested before the Commission that, any electricity generated from the project in excess of the levels mentioned in the Power Purchase Agreement be bought by KSEB Ltd at the same levelized tariff approved by the Commission.

The Commission has examined the prayer of the petitioner in detail. As already mentioned, as per the Regulation 55(3) of the KSERC (Renewable Energy & Net Metering) Regulations, 2020, the PLF during the first year of CoD is 65% and the PLF from second year onwards is 75%. The levelized tariff of the project is determined with these PLF as specified in the Regulations. Hence the Commission notes that the cost recovery including the RoE is ensured for the provisionally approved capital cost at these PLFs for the project. Hence, there is no rationale in allowing the excess generation over and above the normative PLFs to be purchased by the distribution licensee, that is KSEB Ltd. also at the same levelized tariff as approved by the Commission.

In this matter, KSEB Ltd. vide their submission dated 13.10.2020 submitted that, the excess generation over the levels mentioned in the power purchase agreement may be limited to 75% of the PPA tariff.

As mentioned above, the Commission notes that the provisional levelized tariff determined above is applicable for the useful life of 25 years of this project. Since the cost recovery, ROE and O&M costs are already factored in the provisional tariff calculation, the Commission hereby orders that, the tariff for the units generated over the PLFs specified in this Order shall be purchased by KSEB Ltd @75% of the provisionally approved levelized tariff mentioned in this Order.

47. In the fourth prayer, the petitioner has requested the Commission to treat the project as a 'MUST-RUN' project by KSEB Ltd. Similarly, the petitioner vide the fifth prayer the petitioner has requested the Commission to exempt the project from Merit Order Dispatch of KSEBL and SLDC of the State.

The Commission has examined the prayers of the petitioner in detail. As per Regulation 2(1)(bi) of the KSERC (Renewable Energy & Net Metering) Regulations, 2020 the electricity generated from MSW based WtE plant is a 'Renewable Source of Energy'. Further, as per the Regulation 38 of the KSERC (Renewable Energy & Net Metering) Regulations, 2020, all the RE plants shall be treated as 'MUST RUN' power plants and shall not be subjected to 'Merit Order Dispatch' principles. The relevant Regulations is extracted below.

"38.Principles for the dispatch for Electricity Generated from Renewable Energy Sources.-

(1) All the renewable energy power plants, unless and otherwise exempted, shall be treated as 'MUST RUN' power plants and shall not be subjected to 'Merit order Dispatch' principles."

Accordingly, the Commission hereby orders that the power plant of the petitioner shall be treated as MUST-RUN power plant and shall also not be subjected to 'Merit Order Dispatch' principles.

Orders of the Commission

48. The Commission, after the detailed examination of the petition filed by M/s Malabar Waste Management Private Limited, the comments received from the general public and the stakeholders as well as the comments of the respondent KSEB Ltd in detail as per the provisions of the Electricity Act-2003, Tariff Policy 2016, KSERC

(Renewable Energy & Net Metering) Regulations, 2020 and other relevant documents wherever necessary, hereby issue the following orders:

- (1) The levelized tariff for the electricity generated from the 6MW MSW plant of the petitioner at Kozhikode is provisionally approved @ Rs 6.81/unit without the benefit of accelerated depreciation and Rs 6.31/unit with the benefit of accelerated depreciation in case the petitioner so desires for the electricity generated upto the normative PLFs specified under paragraph 31 of this Order.
- (2) The tariff for the excess generation over the normative PLF specified under paragraph 31 of this Order shall be @75% of the approved levelized tariff.
- (3) KSEB Ltd shall purchase the entire electricity generated from the project at the tariff as ordered under paragraphs (1) and (2) above.
- (4) As per Regulation 38(1) of the KSERC (Renewable Energy & Net Metering) Regulations, 2020, the project of the petitioner shall be treated as 'MUST-RUN' and shall not be subjected to Merit Order Principles.
- (5) KSEB Ltd shall reimburse, any tax paid on the RoE, limited to the amount of equity specified in this order, after getting separate invoice from the petitioner with necessary documentary evidence on payment of such tax to the authorities.
- (6) The provisional tariff is now determined considering the VGF available for all MSW plants. Any other incentive or subsidy offered by the Central and State Government shall also be necessarily availed by the developer and an appropriate reduction in the provisional tariff now determined will be effected. The Commission would like to emphasise that it is the responsibility of the petitioner to take all appropriate steps to avail these benefits.
- (7) The petitioner, if they so desire, may file a fresh petition for tariff determination after declaring COD with full details as per Regulation 36 of the RE Regulations, 2020.

However, if the petitioner does not file any fresh petition for tariff determination within 180 days from the date of declaration of the CoD, the provisional tariff determined in this Order shall be treated as the final tariff.

Petition disposed off.

Sd/-
Preman Dinaraj
Chairman

Approved for issue

C R Satheeshchandran
Secretary (i/c)

List of participants

1. Sri Abdul Majeed, Deputy Chairman, Ferok Municipality
2. Sri KGP Nampoothiri, K S E B Ltd.
3. Sri Augustin Libin Peous, Secretary, Corporation of Kozhikode
4. Sri Ujin
5. Sri Suresh Kumar, Secretary, Koyilandi Municipality
6. Dr. Ajmal
7. Smt Greena Jose
8. Sri Harikesh, Project Director, KSIDC
9. Smt. Mariyam Nazer
10. Sri Sijan Alappat, Under Secretary, Government of Kerala
11. Sri Surendran, Councilor, Koylandi Municipality
12. Smt. Jaseetha, Secretary, ramanattukara Municipality
13. Sri Mohanan
14. Sri Udayabhanu
15. Smt. Pushpalatha
16. Sri Adam Malik
17. Sri Abdul Jabbar
18. Sri Sreejith P M
19. Sri Padmarajan
20. Smt. Anu Mariya
21. Sri Saisanthosh, MWMP
22. Sri Antony MWMP
23. Sri Rajkumar, MWMP
24. Sri. Rajan, Ramanattukara Municipality
25. Sri Antony Philip

Technical and Financial parameters adopted for determining Tariff for MSW project at Kozhikode

Sl No	Particulars			Remarks
1	Installed capacity	6	MW	As per the petition
2	Life of the plant	25	years	KSERC (RE) 2020
3	Plant load factor			
	(1) First year	65	%	KSERC (RE) 2020
	(2) Second year onwards	75	%	KSERC (RE) 2020
4	Auxiliary consumption	15	%	KSERC (RE) 2020
5	Capital cost of the project	17.12	Rs .Cr/MW	CERC norms 2015 with escalation
6	Debt: Equity	70:30		KSERC (RE) 2020
7	Loan tenure	13	Years	KSERC (RE) 2020
8	Interest rate (MCLR rate+ 2%) (MCLR- last six months- 6.65%)	8.65	%	KSERC (RE) 2020
9	RoE (pre-tax)	14	%	KSERC (RE) 2020
10	MAT/ Income tax	Pass through at actual		
11	Working capital			KSERC (RE) 2020
	(i) O&M cost for one month			
	(ii) Receivable equivalent to two month			
	(iii) Maintennace of spares @15% of the O&M expenses			
12	Interest on WC (MCLR+3%)	9.65	%	
13	O&M cost (first year)	6%		of the Capital cost as per CERC norms 2015
14	O&M cost (second year onwards)- 5.72% escalation on base year O&M	5.72%		
15	Depreciation	5.28%	for first 13years	KSERC (RE) 2020
		1.78%	For remaining 12 years	KSERC (RE) 2020
16	Discount rate = weighted average cost of capital	10.26	%	
17	Levelised tariff without the benefit of accelarated depreciation	6.81		
18	Accelarated depreciation	0.50		
19	Levelised tariff after accounting the benefit of accelarated depreciation	6.31		

