JFE Engineering

Public hearing on Draft Central Electricity Regulatory Commission (Terms and Conditions for Tariff determination from Renewable Energy Sources) Regulations, 2024.

JFE India views on tariff determination conditions for Waste to Energy

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- Waste to Energy – Capital Cost
- Correction Factors
- Technical Features
- Tariff recommendations
- Miscellaneous

Waste to Energy – Capital Cost

JFE India Suggestion - Rs. 28 Crore per MW for Nominal plant capacity between 12 to 14 MW power output with NCV of 1650 Kcal/Kg.

The above should not account for land cost, as land is provided on a lease rental basis

Per MWe capex varies with NCV and power output (at lower power output, Capex/MWe increases)

The capex should have correction factors for NCV and power output (the latter will vary based on NCV and throughput). Following tables provide the correction factors for NCV variation and power output variation.

NCV (kcal/kg)	Correction factor H
1570 or lower	1.05
1570 – 1590	1.04
1590 – 1610	1.03
1610- 1630	1.02
1630 – 1650	1.01
1650 – 1670	1.00
1670 – 1690	0.95
1690 – 1710	0.96
1710 – 1730	0.97
1730 – 1750	0.96
1750 or above	0.95

Gross electric output	Correction factor O
5 MW or Lower	1.4
5 – 5.99 MW	1.35
6 – 6.99 MW	1.3
7 – 7.99 MW	1.25
8 – 8.99 MW	1.2
9 – 9.99 MW	1.15
10 – 10.99 MW	1.1
11 – 11.99 MW	1.05
12 – 14	1.00
14 – 16.99	0.98
17 – 19.99	0.96
20 – 23.99	0.94
24 – 26.99	0.92
27 and above	0.90

Waste to Energy – Technical Features

Pre-Segregated Feed –
As per SWM Rules (2016) unprocessed MSW cannot be combusted in WtE plants. Hence, having separate benchmarks for MSW and RDF isn't necessary. We recommend to keep only one category i.e., pre segregated waste/RDF.

Technology for high reliability

- Alloy cladding for preventing corrosion
- High-grade Stainless-Steel tubes for preventing tube leakages
- High pressure, temperature parameters with heat re-circulation for increasing plant efficiency

Such features are quite standard in plants across Europe and Japan. Appropriate correction in capital cost should be considered for only for those Developers incorporating such technical features in their solution

Waste to Energy – Opex, RoE and Tariff suggestions

Operation Expenditure

The Operation and Maintenance cost sees a major maintenance overhaul every 5 years. Factoring the same in the Operation and Maintenance cost, we propose the following estimates for operation and maintenance cost:

- Normal O&M – 8% of Capital Cost
- Major maintenance at each 5 years – 4% of CAPEX

Return on Equity (RoE)

The current RoE is estimated to be 14% for Waste to Energy projects. In order to attract more Developers so that this sector is incentivized, **we propose the RoE to be estimated at 16%.**

Tariff suggestions

Suggested tariff for project feasibility:

5 – 10 MW	= Rs 10/KWh
10 – 14 MW	= Rs 9/KWh
14 – 20 MW	= Rs 8.5/KWh
20 – 30 MW	= Rs 8.0/KWh
Above 30 MW	= Rs 7.8/KWh

Waste to Energy – Miscellaneous

Assurance of Payment from DISCOM

Suitable assurance of payment from DISCOM (**via ESCROW**) should be considered as it would mitigate one of the major risks while evaluation in obtaining a loan for the project.

Rate of Interest

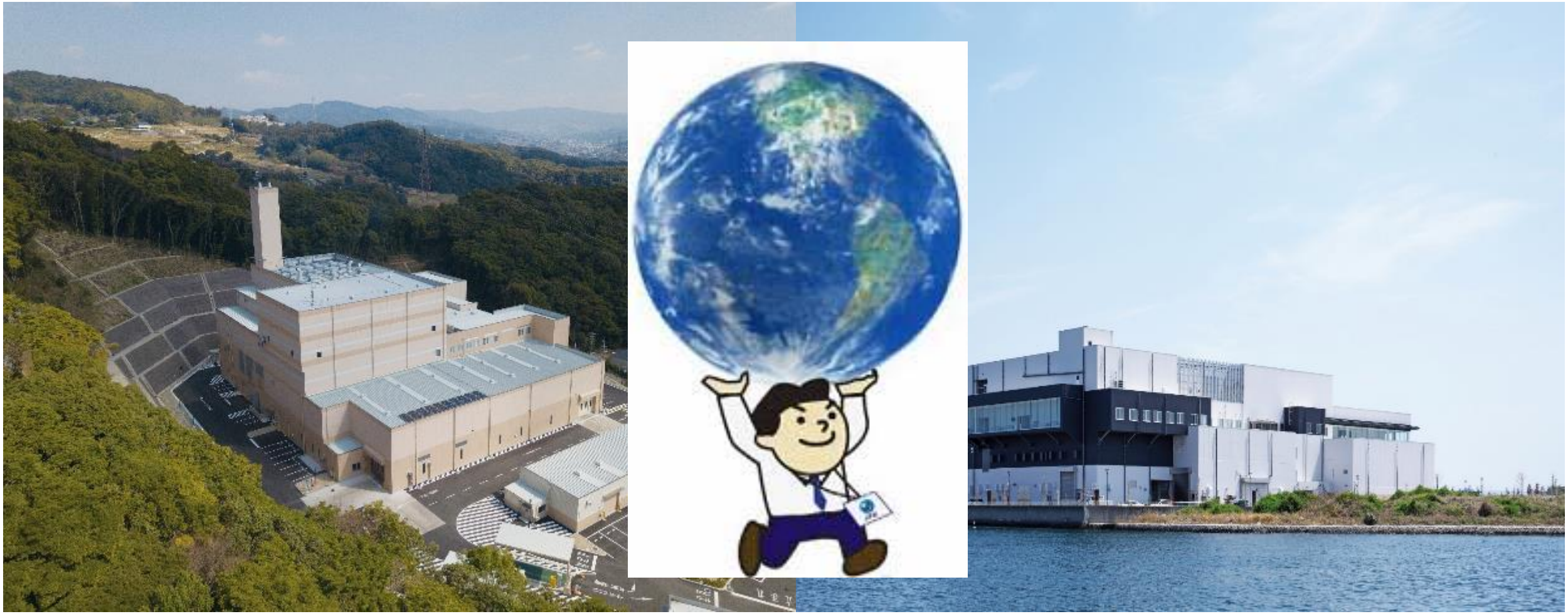
As the WtE is perceived as little difficult business, many lenders may likely provide the loan at slightly higher rate of interest. Hence, we request CERC to consider the typical lending rate of 10.5% for the debt component.

Consent from Beneficiary

As per the Explanatory Memorandum document issued by CERC, for project specific tariffs, consent from procurer of power is necessary for applying project specific tariff application. Our request is to remove such pre-requisite as the purchase of power by local DISCOM from WtE plants is mandatory.

Data from other countries – This should be considered as it would be helpful in incorporating mature technologies and business features that will help boost Waste to Energy in India

Thank you



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