Delhi Electricity Regulatory Commission

Viniyamak Bhawan, 'C' Block, Shivalik, Malviya Nagar, New Delhi – 17

No. F.3(118)/Tariff /DERC/2005-06/

Petition No. 30/2005

In the matter of:
Determination of Tariff for sale of Power generated by integrated Waste Management Complex Plant to be set up at Timarpur, Delhi

And in the matter of: **Timarpur Waste Management Company (Pvt.) Ltd.**
Core-4B, 4th floor, India Habitat Centre
Lodhi Road, New Delhi-110003 - Petitioner

The following were present:-

1. Shri Haziq Beg, VP, IL&FS
2. Shri P.D Grover, Advisor, IL&FS
3. Shri Ashok Harane, Chief Executive , IL&FS-IDC
4. Shri S. Bhaskaran , Manager, IL&FS-IDC
5. Shri Deepak Gupta, Asstt. Manager, IL&FS-IDC

ORDER

(Date of Hearing: 08.09.2006)
Date of Order: 26.12.2006)

This Petition has been filed before the Commission on 1.12.2005 under the provision of Electricity Act, 2003 by the Timarpur Waste Management Company (Private) Limited (TWMCL), hereinafter called the Petitioner for determination of Tariff for sale of Power generated by integrated Waste Management Complex Plant to be set up at Timarpur, Delhi by utilizing the Municipal Waste generated in the city of Delhi as a basic input. The waste is to be supplied by the Municipal Corporation of Delhi (MCD). The project has been conceptualised as an integrated project which is expected to offer a unique and integrated solution for management of both liquid and solid wastes of the city of Delhi.

The proposed project is environment friendly and implementation of this project would help in reducing pollution, minimize the landfill and generate green electricity in the city of Delhi. The project comprises of the following components:

a. Power Plant of 6 MW capacity

b. RDF Plant capable of processing 650 Tonnes of Municipal Solid Waste (MSW) per day

c. Bio-Methanation Plant capable of processing 50 Tonnes of green waste from vegetable/ fruit market per day. The advantage of integration of Bio-Methanation Plant is that methane generated by Bio-Methanation Plant can be used as Auxiliary fuel for flame stabilisation in the Boiler.

d. Sewage Treatment Plant capable of handling 25 MLD of liquid effluent

2. The Petitioner is a Special Purpose Company set up by Infrastructure and Leasing Finance Services (IL&FS) and Andhra Pradesh Technology Development & Promotion Board (APTDC) for implementing an integrated Waste Management Complex Plant at Timarpur, Delhi. The Petitioner has prayed before the Commission to fix tariff for this project in accordance with MNES guidelines issued in 1993 for tariff applicable for power purchase by renewable energy projects. MNES guidelines stipulated a rate of Rs. 2.25 per Kwh in the base year of 1994-95 with an annual escalation of 5%. The Petitioner has mentioned that only after success of few such projects, it would be appropriate to switch over to cost plus tariff.

3. The Delhi Electricity Regulatory Commission (DERC) (herein-after referred to as "Commission") was established under the Electricity Regulatory Commission Act, 1998 and has been assigned the functions as described under the Delhi Electricity Reform Act 2000 and Electricity Act, 2003.

4. Section 86(1) (e) of Electricity Act, 2003 mandates the Commission to promote cogeneration and generation of electricity from renewable sources of energy by providing suitable measures for connectivity with the grid and sale of electricity to any person, and also specify for purchase of electricity from such sources, a percentage of the total consumption of electricity in the area of a distribution licensee.

5. Section-6.4(1) of National Tariff Policy issued by Ministry of Power, Government of India on 6.1.2006 envisages that pursuant to provisions of Section 86(1) (e) of the Act, the Appropriate Commission shall fix a minimum percentage for purchase of energy from such Non-conventional sources of energy generation including co-generation taking into account availability of such resources in the region and its impact on retail tariffs. Such percentage for purchase of energy was to be made applicable for the tariffs to be determined by the SERCs latest by April 1, 2006.

6. Section 5.10.5 of the National Electricity Policy also stipulates setting up of Solid Waste to Energy Projects in urban areas and recovery of energy from industrial effluents with a view to reduce environmental pollution apart from generating additional energy.

7. The filing of the aforesaid petition was followed by a series of interactions, both written and oral, wherein the Commission sought additional information/clarification and justifications on various issues critical for admissibility of the petition. The Petitioner submitted its response on some of the issues raised through separate submission in the month of February, 2006. The petition was however, admitted by the Commission on 30th March 2006 pending reply of the Petitioner on other issues. The reply to other queries, which the Commission sought from time to time were submitted by the Petitioner in due course of time.

8. After the admission of the petition by the Commission, the Petitioner has advertised the proposal in the Indian Express, Financial Express and Jansatta on 06.4.2006. Comments were received from M/s NDPL, M/s BRPL, M/s BYPL and Shri Dilip Biswas, former Chairman, CPCB. The hearing took place on 08.9.2006.

9. Present status of the Project

The Project is expected to generate power in two years and M/S NDPL has agreed, in principle, to off-take the entire capacity of power generated by the Project. The quantum of power to be purchased by NDPL from this source would be around 28 MUs, which constitutes around 0.50% of overall power purchased by NDPL.

The Petitioner is also stated to have taken necessary steps for implementation of the project including preparation of DPR, seeking the various permits, clearance and approvals, etc. The other salient information regarding status of the proposed Project is detailed as under:

9.1 Availability of land

The Petitioner has been allocated land by the MCD. The MCD has informed the Commission vide their submission dated 10.11.2006 that the land will be made available to the Petitioner for this particular project by mid December, 2006 at the nominal lease rental. The Ministry of Non- Conventional Energy Sources (MNES) being the owner of the Plant has already awarded the contract for disposal of the existing Timarpur Plant (Timarpur Refuse incineration–cum power Generation Plant), which was shut down in 1990 due to very poor performance, by mid December, 2006.

9.2 Raw Material Supply

The Petitioner has obtained garbage supply commitment from the MCD. To ensure the availability of the main raw material i.e garbage, the Petitioner is entering into an agreement with the MCD for a period of 25 years which is expected to be finalised shortly. MCD is stated to have allocated the garbage generated from the Civil lines zone and parts of Rohini zone.

During the rainy season, the garbage has high moisture content and requires high energy to reduce the moisture content. Hence, the garbage will not be accepted during the rainy season and MCD has agreed to dispose the garbage at their landfill site. It is also the responsibility of MCD to supply the garbage, free of cost, at the project site. The processing and disposal of garbage is the responsibility of the Petitioner. The other government entity, i.e. the Delhi Jal Board (DJB) has agreed to supply 25 MLD of sewage to be treated in the sewage treatment plant.

9.3 Sale of end products

There are mainly two saleable end products from the plant –Electricity and Organic Fertilizer. In terms of revenue potential, power contributes the major component of the total expected revenues whereas fertilizer contributes a small insignificant fraction and the markets are yet to be developed.

9.4 Grant /Concession from the Government

The Petitioner has submitted that the following grants/ concessions are available for the project:-

a) Grant under "Scheme for Financial Support to the Public Private Partnerships in Infrastructure" (Viability Gap Funding support) - the scheme of the Department of Economic Affairs, Ministry of Finance. Under this scheme, the project is eligible for 20% of the project cost and also the line ministry (i.e. MNES in case of Timarpur Project) may provide an additional 20% of the project cost subject to a cumulative ceiling of 40% of the project cost as capital grant.

b) Grant under the "Accelerated Programmes on Energy Recovery from Urban Wastes"- the scheme of the Ministry of Non-Conventional Energy Sources (MNES). Under this scheme, the project is eligible for Rs.1.5 Cr./MW for power generation from RDF and Rs.2.0 Cr./MW for power generation from Bio- Methanation subject to maximum of Rs. 8.0 Cr. per project.

9.5 Tax benefit available for project

The Ministry of Finance (MOF) has notified the exemption of excise duty and the customs duty for the waste to energy projects and accordingly, the capital cost has been estimated by the Petitioner.

9.6 CDM benefits

The Timarpur Project is eligible for CDM/Carbon Benefit and the Petitioner has obtained the Host Country Approval from the Ministry of Environment & Forest (MOE&F). As a next step, the Petitioner has also appointed a reputed validation agency, which is presently validating the project. The Petitioner has submitted that there have been few instances of projects succeeding in getting CDM benefits in India. The Petitioner has, therefore, requested the Commission not to consider CDM benefits for the purpose of tariff fixation. However, they have advised the Commission to direct the Petitioner to share a percentage of CDM benefits with the consumers as and when it is available.

10. Analysis of Tariff proposal

i) Insofar as fixing of minimum percentage for purchase of energy from Non-conventional sources of energy generation as envisaged in Section 86(1)(e) of the Act is concerned, the Commission is of the view that Delhi is a city state where land is available only at a premium and hence adequate potential for renewable energy is very limited. Fixing of targets under these circumstances would only increase the cost of power from such projects. Consequently, the Commission is of the view that this issue could be considered later after some such projects are taken up in the NCT of Delhi. The Govt. of NCT of Delhi is separately taking up promotion of energy conservation measures such as installation of solar water heaters, use of CFL, etc. as a part of Demand side management. The Notification no. F. No. 11 (149) / 2004 / Power / 2386 dated 28.9.2006 and Notification no. F. No. 11 (149) / 2004 / Power / 2387 dated 28.9.2006 respectively issued by GNCTD can be referred in this regard . These measures are in the nature of Energy Conservation under the Energy Conservation Act, 2001. This action is expected to bring some reduction in the demand thereby reducing carbon emissions.

ii) Regarding determination of tariff on the basis of MNES guidelines, those guidelines indicated a uniform tariff for all Non-Conventional Energy Sources and further, those guidelines were applicable for the initial period of 10 years from 1994-95, which is already over. As such, it is the considered view of the Commission that it would not be appropriate to adopt the MNES tariff for the present exercise. The task of fixing tariffs now lie with Electricity Regulatory Commissions.

iii) While analysing the tariff petition, the Commission held various technical sessions to validate the data submitted by the Petitioner. The Commission had also considered various submissions made by the Petitioner during the course of the tariff determination process and has carefully analysed the different parameters of tariff to work out the levelised tariff for this particular project. The levelised tariff for this project has been computed based on a project life of 20 years and 11% discount rate which is the weighted average cost of funds.

iv) While arriving at the levelised tariff for this project, the Commission has considered a grant component @ 20% of the project cost. In order to incentivise the Petitioner, the Commission directs that if the Petitioner is able to arrange grant/subsidy from the Government over and above the considered grant of 20% of the project cost, the impact of 30% of such additional grant shall be retained by the Petitioner and the balance 70% would only be considered for reducing the tariff.

v) For working out the levelised tariff for this project, the Commission has considered only 50% of the revenue out of CDM benefits and the remaining 50% is allowed to be retained by the Petitioner. Also, the CDM benefit has been considered by the Commission only up to 2011-12 as CDM is governed by Kyoto Protocol which is up to 2011-12. In case it is extended beyond 2011-12, the treatment of CDM benefits up to 2011-12 considered in this order shall be extended correspondingly.

vi) The other salient parameters/assumptions based on which the levelised tariff has been worked out by the Commission is mentioned as under:

10.1 Capital Cost

Petitioner's submission

In the Petition, the Petitioner had mentioned that the Capital cost of the Project based on DPR is Rs.59.13 cr. However, in the subsequent submission of the Petitioner, the Capital cost mentioned by the Petitioner in tariff calculation sheet is Rs. 58.90 cr. without grant and Rs. 57.77 cr with 20% grant .

Commission's analysis

The Commission has analyzed the Capital cost of the Project provided by the Petitioner and found that it is on the higher side when compared to a stand-alone Power Plant based on

Non-conventional Energy Sources like bio-mass and cost of other conventional coal/gas Power Plant. However, the Commission is of the view that since it is an integrated project, the capital cost is likely to be high because of additional costs incurred on (i) segregation and processing of Municipal solid Waste (MSW) (ii) designing of boiler capable of using RDF as a fuel (iii) Sewage Treatment plant (iv) Bio-Methanation Plant for producing Methane as an Auxiliary fuel.

The Commission also feels that since similar plants of integrated nature are very few in the Country, the comparison of costs is not possible. Since the Commission has considered 20% grant in its computation of levelised tariff as mentioned in the preceding para, the same capital cost i.e Rs.57.77 cr as considered by the Petitioner, which is the capital cost of the project with 20% grant has been considered by the Commission for the present computations .

10.2. Plant Load Factor (PLF)

Petitioner's submission

The Petitioner has submitted that due to heterogeneous nature of the Municipal Solid Waste (MSW), the plant is prone to frequent unscheduled breakdowns. Also, due to uncertainty in the quality of garbage, the plant is stated to have been designed for a PLF less than the conventional PLF of 85% for gas based power plant. The Petitioner has therefore considered a PLF of 70 % as reasonable and achievable of MSW projects.

Commission's analysis

The Commission after due-diligence has considered the same PLF of 70 % as considered by the Petitioner in its computation also.

10.3 Auxiliary consumption

Petitioner's submission

In the petition, the Petitioner has considered Auxiliary power consumption @ 24 % for the integrated plant, the details of which have been mentioned as under:-

Particulars	(%)
RDF Plant	12%
Bio-Methanation & STP plant	3%
Power Plant	9%
Total Aux. consumption	**24 %**

Commission's analysis

On analysis of the Auxiliary Power Consumption considered by the Petitioner, it is noted that since the project is an integrated complex, it involves fuel processing by way of an RDF plant and Bio-Methanation including Sewage Treatment plant . Thus, besides auxiliary consumption in the Power Plant, power consumption in the RDF plant, Bio-Methanation plant and Sewage Treatment plant is also to be accounted.

Further, it is noted that out of the total Auxiliary power Consumption in RDF Plant which is around 12%, around 7.2% power is consumed by the rotary drier itself, which reduces the moisture content of MSW. Besides, power is also consumed in primary shredder, conveyors and rotary screen in the RDF Plant.

The Auxiliary power Consumption in Bio-Methanation and Sewage Treatment plant together @ 3% appears to be reasonable and the Auxiliary power Consumption @ 9% in case of Power Plant is as per CERC norms. The Commission, therefore, has considered the same percentage of Auxiliary power consumption for computing the tariff for sale of power from the integrated plant.

10.4. Debt Equity Ratio

<u>Petitioner's submission</u>

The Petitioner has considered a debt equity ratio of 70:30 for working out the notional debt and notional equity in their computations.

<u>Commission's analysis</u>

The Commission has considered the same debt equity ratio as considered by the Petitioner as the same is in line with CERC' s regulations for terms and conditions of tariff for the tariff period 2004-09.

10.5. Depreciation

<u>Petitioner's submission</u>

The Petitioner has considered depreciation rate of 3.60 % for working out the depreciation amount.

<u>Commission's analysis</u>

The Commission has considered the same depreciation rate as considered by the Petitioner as the same is in line with depreciation rate notified by CERC' s tariff regulations for the tariff period 2004-09.

10.6. Interest on Loan

<u>Petitioner's submission</u>

The Petitioner has considered a notional interest rate @ 10 % for working out the interest amount on the outstanding loan for calculating the levelised tariff. The tenure of the loan has been considered as 10 years with a moratorium of 1 year.

<u>Commission's analysis</u>

The Commission has considered the same terms and conditions of loan for working out the interest on loan.

10.7 Return on Equity

<u>Petitioner's submission</u>

The Petitioner has considered the rate of return @ 14% on equity in their computations for working out the levelised tariff.

<u>Commission's analysis</u>

The Commission has considered the same rate of return as considered by the Petitioner i.e 14 % on equity in its computations as the same is in line with CERC's tariff regulations for the tariff period 2004-09.

10.8 Income Tax

<u>Petitioner's submission</u>

The Petitioner has considered a base rate of Income Tax @ 30% with surcharge and cess @ 10% and 2%, respectively in their computations for working out the levelised tariff. The Petitioner has considered base rate of MAT (Minimum Alternate Tax) @ 7.5 % for the first 5 years because of negative taxable profit.

<u>Commission's analysis</u>

The Commission has considered the effective Income Tax @ 33.66 % worked out with basic income tax rate @ 30 % with surcharge and cess @ 10% and 2%, respectively. However, since base MAT rate has been revised from 7.50 % to 10%, the Commission has considered the revised base rate of MAT in the working for the first 4 years when the taxable profit is negative .The effective MAT works out as 11.22 % with basic MAT @ 10 % with surcharge and cess @ 10% and 2%, respectively.

10.9 Advance against Depreciation

<u>Petitioner's submission</u>

In the original petition, the Petitioner had considered Advance Against Depreciation for working out the levelised tariff.

<u>Commission's analysis</u>

As the provision of advance against depreciation has been withdrawn in the Tariff Policy notified by the Ministry of Power, Govt. of India on 6.01.2006, the same has not been considered by the Commission in working out the levelised tariff.

10.9.1 Royalty to be paid to MCD

Petitioner's submission

The Petitioner has considered a royalty/tipping fee of 5 paise per unit to be paid to MCD as an incentive for the MCD to supply requisite quality and quantity of garbage to the Project.

Commission's analysis

The above issue was deliberated in detail during the hearing of the petition and during the hearing process, the Commission requested the MCD to withdraw the royalty/tipping fee of 5 paise per unit to be paid to them. The Commission had also requested the Petitioner to take up this issue with the MCD and get their confirmation for withdrawal of royalty/tipping fee. In response thereto, the MCD has now confirmed vide their submission dated 10.11.2006 that they will not seek any royalty on the power produced from this project. Therefore, the Commission has not considered any royalty/ tipping fee in its levelised tariff calculation.

10.9.2 Variable Cost

Petitioner's submission

The Petitioner has considered the variable cost of the integrated plant for the first year as mentioned below with an escalation of 4% every year.

	RDF Plant	**Rs. Crore**
A1	Man Power Cost	0.92
A2	Consumables	0.73
A3	Spares	0.24
A4	Other Administrative Cost	0.24
	Total	**2.13**
	Bio-Methanation & STP Plant	
B1	Man Power Cost	0.18
B2	Consumables (lubricant & chemicals)	0.09
B3	Spares & mechanical/ electrical maintenance	0.05
B4	Other Administrative Cost	0.02
	Total	**0.34**

Commission's analysis

The Commission has analyzed the manpower cost, consumables, spares and other administrative costs for both RDF and Bio-Methanation plant and after due diligence has considered the same norms for variable charges for working out the variable cost in the year of commercial operation of the project. For working out the variable charges for the next year onwards, the Commission has considered an annual escalation of 4%. The Commission also observes that these items are normally part of O&M costs in a Conventional Thermal Power Station, which is a part of fixed cost and the variable cost is fuel cost. In this case, the fuel is Municipal Waste which is supplied at the plant boundary by the MCD free of cost.

10.9.3 O & M Cost of power plant

<u>Petitioner's submission</u>

The Petitioner has considered the O&M norms of Rs.13 lakh per MW in the petition for working out the O & M Cost of the power plant in the first year with an escalation of 4% every year.

<u>Commission's analysis</u>

As the specific norms for small sized power project is not available, the Commission has considered the same O&M norms @ Rs.13 lakhs per MW as considered by the Petitioner for the first year i.e in the year of commercial operation with an escalation of 4% every year.

10.9.4 Interest on working capital

<u>Petitioner's submission</u>

The Petitioner has considered working capital norms of two months of receivables, one month of O & M Expenses and spares at the rate of 1% of the project cost with an escalation of 6 % per annum. The interest rate on working capital has been considered as 12%.

<u>Commission's analysis</u>

The Commission has considered the same working capital norms as considered by the Petitioner for working out the interest on working capital. However, the interest rate on Working Capital has been considered as 10.25% which is the SBI prime lending rate (PLR) for short term loans as on 1.4.2006.

11. Considering all the above, the Commission decides as follows:

i) The levelised tariff for sale of power from 6 MW Timarpur integrated Waste Management Complex Plant to be set up at Delhi based on above parameters works out as Rs.3.53/Kwh. The Commission therefore, approves the tariff of Rs.3.53/Kwh for the aforesaid plant, which will feed power at 11 KV grid and at the load centre and directs the Petitioner to go ahead with the competitive bidding process to select the prospective developer /operator with above tariff on BOT (Build , operate and Transfer) basis. The issues relating to grant, VGF , statutory clearances shall be dealt with by the Petitioner separately.

ii) The Commission is aware of the fact that procurement of Power by the Distribution Company at the tariff of Rs.3.53/Kwh is not very competitive when compared to the rate at which the Distribution Company gets power from Conventional sources of power. However, the preferential tariff @ Rs.3.53/Kwh approved by the Commission for Timarpur MSW plant is in line with provisions made in Section-6.4(1) of National Tariff Policy, which envisages that procurement by Distribution Companies shall be done at preferential tariffs determined by the Appropriate Commission as It will take some time before non-conventional technologies can compete with conventional sources in terms of cost of electricity. Further, the tariff approved is also comparable with other MSW projects in operation in the Country, duly taking into account the differences in scope.

iii) M/s TWMCL shall take appropriate action to finalise the executing agency and the work at site shall commence not later than 9 months from the date of this order and the MSW Power Plant shall be commissioned within a period of 24 months thereafter.

iv) The Power Purchase Agreement with M/s NDPL duly indicating year-wise tariff and other terms and conditions, Financing Arrangements including Grant & VGF, obtaining of statutory clearances etc. shall also be finalised accordingly.

v) The Commission also notes that this approval of tariff and the execution of this project will lead to a cleaner Delhi, which is in the best interest of citizens of Delhi. This implies that some amount of social costs are also involved in such projects due to which a preferential tariff, as provided in the Electricity Act, 2003 has been allowed in this case.

The Commission orders accordingly.

Sd/-	Sd/-	Sd/-
(K. Venugopal)	**(R. Krishnamoorthy)**	**(Berjinder Singh)**
Member	**Member**	**Chairman**

DELHI ELECTRICITY REGULATORY COMMISSION

Public hearing held on 08.9.2006 for the Tariff Petition filed by Timarpur Waste Management Company (Pvt.) Ltd.

The following were present:-

Petitioners

1. Shri Deepak Gupta, Asstt. Manager, IL&FS-IDC
2. Shri S. Bhaskaran, Manager, IL&FS-IDC
3. Shri Ashok Harane, Chief Executive , IL&FS-IDC
4. Shri Haziq Beg, VP, IL&FS
5. Shri P.D Grover, Advisor, IL&FS

Respondents

1. Shri Pramod Singh, Sr. Manager, NDPL
2. Shri Bibhu Biswal, Asstt. Manager, NDPL
3. Shri Jyoti Kumar, Counsellor, APTDL
4. Shri P.K. Khandelwal, SE, MCD
5. Shri S.K. Sharma, HOD (G&PT), NDPL
6. Shri Pankaj Kumar, VP, BRPL
7. Shri Charanjit Singh, Addl. Manager, BYPL
8. Shri A.K. Dhussa, Director, MNES