



**Tenughat Vidyut Nigam Limited (TVNL)**

**(A Government of Jharkhand Undertaking)**

Hinoo, Doranda, Ranchi-834 002

**Annual Revenue Requirement**

FY 2008-09

Submitted to

**Jharkhand State Electricity Regulatory Commission (JSERC)**

2<sup>nd</sup> Floor, Rajendra Jawan Bhawan-Cum Sainik Bazar  
Main Road, Ranchi-834 001

**2009**

**BEFORE THE JHARKHAND STATE ELECTRICITY  
REGULATORY COMMISSION**

Filing No: \_\_\_\_\_

Case No: \_\_\_\_\_

**IN THE MATTER OF:**

Petition/Application for approval of Tariff for the financial year 2008-09, under Section 64 of the Electricity Act, 2003, read with Regulation 5 of the JSERC (Terms and Conditions for Determination of Thermal Generation Tariff) Regulations, 2004 issued by the Honourable Jharkhand State Electricity Regulatory Commission (JSERC), hereinafter referred to as Honourable Commission.

**AND**

**IN THE MATTER OF:**

**Tenughat Vidyut Nigam Limited (“TVNL”)**

Hinoo, Doraanda, Ranchi

Jharkhand – 834 002

.....**PETITIONER**

**The Petitioner respectfully submits**

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## 1. Executive Summary

The Petitioner owns and operates an installed power generation capacity of 420 MW with two units of 210 MW each. Historically the generating units have been operating at much below their potential because of transmission constraints and frequent tripping of transmission lines. However, after 2006-07, the plant has shown an impressive performance and now both the units are able to dispatch simultaneously.

Table 1 provides the performance of the generating units during the period 2000-2009.

**Table 1: Generation Performance (MU)**

Year	Generation (MUs)		Total	Station PLF (%)	Auxiliary Consumption (%)
	Unit -I	Unit-II			
2000-01	741	589	1330	36.11	16.09
2001-02	305	851	1156	31.39	15.79
2002-03	185	1183	1368	37.18	15.58
2003-04	616	731	1248	36.62	16.00
2004-05	1326	-	1326	36.04	17.60
2005-06	1240	289	1529	41.56	14.23
2006-07	1412	1303	2715	73.80	12.04
2007-08	226	1569	1795	48.68	9.95
2008-09	826	1397	2223	60.43	8.37

Last year's performance of the Petitioner (FY 2008-09):

**Table 2: Generation Parameters for FY'09**

Year	Generation (MU)	PLF (%)	Auxiliary Consumption (%)	Heat Rate (kCal/kWh)	Specific Coal Consumption (kg/kWh)	Specific Oil Consumption (kg/kWh)
2008-09	2223	60.43	8.37	3075	0.715	2.779

The fixed costs for the year 2008-09 are summarized below:

**Table 3: Summary of Fixed Costs (Rs.Crores)**

	2008-09
Interest on Loan	83.05
Depreciation	45.28
O&M Expenses	84.12
Interest on Working Capital	15.70

Return on Equity	19.32
Income Tax	Nil
<b>Total</b>	<b>247.48</b>

The landed cost of coal and oil for FY08-09 was Rs.1295.50/MT and Rs.39045.20/KL respectively.

**Table 4: Summary of Variable Costs (Rs.Crores)**

S.No	Item	Unit	2007-08 (Approved)	2007-08 (Actuals)	2008-09 (Actual)
1	Coal Cost per Unit	Rs./kWh	0.82	0.926	1.014.
	Oil Cost per Unit	Rs./kWh	0.06	0.108	0.1180.
<b>2</b>	<b>Total Fuel Cost per Unit</b>	<b>Rs./kWh</b>	<b>0.88</b>	<b>1.034</b>	<b>1.132</b>

Data taken from the letter of GM TTPS

The non-tariff income was Rs. 419.5 lakhs during the FY 2008-09

The sum of fixed and energy costs gives the total revenue requirement of the company for the FY 2008-09. The revenue requirement less other income will be the revenue to be raised through tariff. This has been worked out in the Table 5 below:

**Table 5: Revenue Requirement**

Particular	(Rs. crores)
Fixed Charges	247.48
Energy Charges	230.70
<b>Revenue Requirement</b>	<b>478.18</b>
Other Income	4.195
<b>Revenue to be raised through Tariff in FY 2009</b>	<b>473.98</b>

The Petitioner has estimated a revenue requirement of Rs 473.98 Crores after adjusting for its non-tariff income and derived the following fixed and energy components of tariff:

**Table 6: Proposed Tariff Increase**

Tariff Component	Rs./kWh
Fixed Charges Proposed	1.194
Energy Charges Proposed	1.132
Tariff Proposed	2.327
Existing Tariff	2.05
<b>Increase in Tariff requested</b>	<b>0.277</b>

The Petitioner requests the Honourable Commission to approve the estimated Rs. 0.28 per kWh increase in its tariff.

# **Background**

## **1.1 Introduction**

Tenughat Vidyut Nigam Limited (hereinafter referred to as “Petitioner”), a wholly owned Generating Company of Government of Jharkhand was constituted in 1987 under Indian Company’s Act, 1956. The Petitioner owns and operates an installed power generation capacity of 420 MW with two units of 210 MW each. The units were commissioned as detailed below:

Unit I - September 1996

Unit II - September 1997

With the creation of Jharkhand state on 15<sup>th</sup> November 2000 from the erstwhile Bihar State, the Petitioner has become an undertaking of Government of Jharkhand. But all the papers relating to Tenughat Thermal Power Station (TTPS) are still lying with Bihar State Electricity Board, Patna and in spite of the orders of the Jharkhand High Court the documents are not made available to the Petitioner. As such the details of estimated costs of various items related to the project are not available with the Petitioner. However, based on expenditure details available with TTPS the total cost of the project including interest during construction (IDC) is estimated at Rs.1355.58 crores. This has been audited by Chartered Accountants. The cost of the project is discussed later in the petition.

## **1.2 Need for the Petition**

The Honourable Commission has notified the regulations on Terms and Conditions for Determination of Thermal Generation Tariff on 28<sup>th</sup> July 2004 in exercise of the powers conferred by Section 61 and 62 read with Section 181 of the Electricity Act, 2003. The sub-clause (2) of Clause 5 of these regulations require the generating company, in case of existing generating station, to make an application for determination of tariff as per Appendix I to these regulations for getting the same approved by the Honourable Commission. In compliance to this provision, the Petitioner is filing this petition.

The Honourable Commission had passed tariff order dated January 03, 2008 for the financial year 2007-08 approving a tariff of Rs 2.05 per unit, which is inclusive fixed charges of Rs.1.17 per kWh and variable cost of Rs 0.88 per kWh for the year 2007-08. The Petitioner seeks revision in tariff on account of, increase in new capital works and higher operation, higher employee expenses, capital expenditure, repair and maintenance expenditure on account of aging of the existing units of the plant.

## 2. Generation Performance and Projection

### 2.1 Generation Performance

The Petitioner has existing generation facility of 420 MW (2x210 MW) coal based thermal power plant at Bokaro and is also envisaging a plan for extension of another three units (Stage II) of 210 MW each.

Table 1 provides the performance of the generating units during the period 2005-2009.

**Table 7: Generation Performance Actual (MU)**

Year	Generation (MUs)		Total	Station PLF (%)	Auxiliary Consumption (%)
	Unit -I	Unit-II			
2005-06	1240	289	1529	41.56	14.23
2006-07	1412	1303	2715	73.80	12.04
2007-08	226	1569	1795	48.86	9.95
2008-09	826	1397	2223	60.43	8.37

### 2.2 Plant Load Factor (PLF)

Historically the generating units have been operating at much below their potential because of transmission constraints like frequent tripping of transmission lines. In addition JSEB has not been a position to consume the power generated when both the units operate and the station is asked to back down. Apart from this there are unit outages due to tube leakages etc. Due to the above reasons the station has recorded lower PLF.

Efforts have been and are being made to remove the constraints and improve the performance of the station. Efforts are also being made to sell the surplus power to others instead of backing down the units whenever JSEB does not require the power, especially, when both the units are being dispatched simultaneously. The PLF has increased to 73.8% in 2006-07 from the mid-30% levels during the years 2000-01 to 2004-05. This can be attributed to both the units being able to operate simultaneously. However, on 31.05.2007 Unit I of TTPS has suffered a major breakdown due to sudden load throw-off to 34 MW which resulted in severe damage of all the moving and guide blades of the LP

turbines. BHEL has provided its observation on the LP turbine following the blade failure and has recommended appropriate maintenance and replacement operations to be conducted (Annexure 2). Unit I was therefore not available during FY 2007-08 since major overhauling and operation and maintenance was undertaken and therefore a lower PLF was registered for FY 2007-08. For FY 2008-09, both the units were available and hence a higher PLF of 60.43% was registered. The PLF was lower than normative value due to transmission constraints, for which TVNL plans to invest in the year 2009-10. The PLF and Generation for the FY 2007-08 and FY 2008-09 are given below in Table 8:

**Table 8: Projected Generation Performance for 2007-08 and 2008- 09**

Year	Generation (MUs)	PLF (%)
2007-08	1795	48.86%
2008-09	2223	60.43%

### 2.3 Auxiliary Consumption

The auxiliary consumption is specific to a particular power station and depends on its configuration, age and related technical parameters. Auxiliary power is required for different equipments like feed pumps, cooling water pumps, air fans, coal grinding mills, ash handling equipments, common auxiliaries etc. of the generating station. The Petitioner has taken many steps to keep the auxiliary consumption of its units at minimum level like testing and calibrating defective meters measuring auxiliary consumption and installing digital energy meter in the Petitioner’s colony substation. As a result the auxiliary consumption has gone down to 8.37% in FY 2008-09 from 9.95% in FY 2007-08.

**Table 9: Auxiliary Consumption for 2007-08 and 2008-09**

Year	Auxiliary Consumption (%)
2007-08	9.95
2008-09	8.37

### 2.4 Heat Rate

The actual heat rate for the generating plant has been 2945 kCal/kWh for the FY 2007-08, though Commission had approved a normative rate of 2500 Kcal/kWh. In the year 2008-

09, the actual heat rate was 3075 Kcal/kWh. The all-India weighted average heat rate for plants as per the Central Electricity Authority's (CEA) Review of Performance of Thermal Power Stations (2007-08) has been 2703 kCal/kWh and as complete report for the year 2007-08 is still not available average rate for Eastern region is not available. For the FY 2006-07 the Eastern region average was 3148 kCal/kWh when national average was 2861 kCal/kWh. TVNL in the year 2006-07 registered a PLF of 2821 kCal/kWh which was below the Eastern average reflecting the improved performance.

**Table 10: Heat Rate for 2008-09**

Year	Heat Rate (kCal/kWh)
2008-09	3075

## 2.5 Specific Coal Consumption

The Petitioner sources D grade coal from the collieries of Central Coal Fields Limited with calorific value of about 4300 kCal/kg.

**Table 11: Specific Coal Consumption**

Year	Specific Coal Consumption (kg/kWh)
2000-01	0.705
2001-02	0.706
2002-03	0.695
2003-04	0.680
2004-05	0.685
2005-06	0.688
2006-07	0.656
2007-08	0.689
2008-09	0.715

The all-India average specific consumption of coal as per CEA's Review of Performance of Thermal Power Stations (2007-08) the all India for 2007-08 was 0.689 kg/kWh. However, the Honourable Commission approved only a normative specific consumption of coal 0.581kg/kWh which is far off from the realistic specific coal consumption observed in the country. For the 2008-09, specific coal consumption is on the higher side. The Petitioner requests the Honourable Commission to consider the actual specific coal consumption observed by the Petitioner in its generation plant.

**Table 12: Specific Coal Consumption for FY'09**

Year	Specific Coal Consumption (%)
2008-09	0.715

## 2.6 Secondary Fuel Consumption

Due to the large number of outages experienced by the station due to transmission line trippings etc., the Petitioner has not been able to achieve the norm of 2 ml/kWh fixed by the Honourable Commission for specific oil consumption. The Petitioner observed a specific oil consumption of 2.78 ml/kWh during FY 2008-09. The following Table 7 below provides the trend in specific oil consumption over the last 7 years.

**Table 13: Specific Oil Consumption**

Year	Specific Oil Consumption (ml/kWh)
2004-05	2.33
2005-06	3.39
2006-07	2.31
2007-08	1.95
2008-09	2.78

The delivered cost of oil at the thermal station by the oil companies has also increased to Rs. 39045/kl in FY 2008-09

**Table 14: Actual Specific Oil Consumption for 2008-09**

Year	Specific Coal Consumption (%)
2008-09	2.78

## 2.7 Summary

The Petitioner has registered the following for the FY 2008-09:

**Table 15: Generation Parameters for 2008-09**

Year	Generation (MU)	PLF (%)	Auxiliary Consumption (%)	Heat Rate (kCal/kWh)	Specific Coal Consumption (kCal/kg)	Specific Oil Consumption (kCal/kg)
2008-09	2223	60.43%	8.37	3075	0.715	2.78

### 3. Fixed Charges

#### 3.1 Project Cost

The station comprises of 2 units of 210 MW each, the first unit was commissioned in September 1996 and the second unit in September 1997. The project cost as admitted by the petitioner in 2007-08 was Rs.1355.58 Crores. In the year 2008-09 assets worth Rs.0.24 Crores were capitalized during the year. An amount of Rs.0.12 Crores has been considered for this year, remaining amount would be considered in next year.(Details attached in depreciation schedule). Also, additional capitalization of Rs. 38.Crores on account of closing of contract with M/s BHEL has been done in this year hence in total an amount of Rs. 38.12 Crores has been capitalized during 2008-09.

The details of funding the project cost are given in Table 16 below:

**Table 16: Project Cost**

S.No.	Funding Source	Amount (Rs. Crores)
<b>Phase 1: 2x210 MW</b>		
1	Project cost at the start of 2008-09	1355.58
2	Additional Capitalization in 2008-09	38.12
3	<b>Total Project Cost</b>	<b>1393.70</b>
5	Outstanding Debt Component at the start of 2008-09	638.90
6	Debt Component for additional capitalization	0.084
7	<b>Total Debt</b>	<b>638.984</b>
8	Equity Component at the start of 2008-09	100
9	Equity Component of additional capitalization	38.036
10	<b>Total Equity</b>	<b>138.036</b>

The majority of the Phase 1 of the project was financed by the State Government while about Rs.158 crores (11.67 % of the funding) was financed by PFC. The entire loan obtained from PFC has been repaid completely along with interest. The outstanding loan is from State Government only. The Petitioner has requested the State Government to reduce the interest rate in view of the lower interest rates provided by banks. Response from the State Government is still awaited.

The Petitioner is also planning to extend (Phase 2) the existing generating project, by adding three new units of 210 MW each, the capital cost of which for the FY 2007-08 is

estimated to be Rs.354 crores. This is the Phase 2 of the generating project which will be financed by a mix of debt in the form of funds from PFC and equity in the form of share capital contribution from Government of Jharkhand. It is expected to procure about Rs.284 crores from PFC and the remaining from the Government of Jharkhand. The decision on the expansion plan is expected early next year.

### 3.2 Elements of Fixed Costs

The fixed costs include:

- Interest on Loan
- Depreciation
- O&M Costs
- Interest on Working Capital
- Return on Equity
- Tax on Income

The details are submitted below for consideration of Honourable Commission

### 3.3 Interest on Loan

The loan outstanding as on 31.03.2009 is Rs.83.06 crores. As per the terms and conditions the State Government loan is repayable in 15 equal installments. But the Petitioner could not meet the repayment obligation due to insufficient funds on account of non-payment of electricity charges by the Jharkhand State Electricity Board (JSEB).

**Table 17: Loan Outstanding and Interest Charges (Rs.Crores)**

S.No	Name of the Institution	Balance at the beginning of the year	Loan received during the year	Repayment During the year	Balance O/S at the end of the year	Rate of Interest %	Interest for the year
<b>2005-06</b>							
1	Bihar Govt. Loan	608.90	-	-	608.90	13	79.16
2	Jharkhand Govt. Loan	30.00	19.00	-	49.00	13.25	6.49
<b>Total 2005-06</b>		<b>638.90</b>	<b>19.00</b>	<b>-</b>	<b>657.90</b>		<b>85.65</b>
<b>2006-07</b>							
1	Bihar Govt. Loan	608.90		-	608.90	13	79.16

2	Jharkhand Govt. Loan	49.00	8.00	-	57.00	13.25	7.55
	<b>Total 2006-07</b>	<b>657.90</b>	<b>8.00</b>	<b>-</b>	<b>665.90</b>		<b>86.71</b>
	<b>2007-08</b>						
1	Bihar Govt. Loan	608.90		-	608.90	13	79.16
2	Jharkhand Govt. Loan	30.00			30.00	13	3.9
	<b>Total 2007-08</b>	<b>638.90</b>			<b>638.90</b>		<b>83.06</b>
	<b>2008-09</b>						
1	Bihar Govt. Loan	608.90		-	608.90	13	79.16
2	Jharkhand Govt. Loan	30.00			30.00	13	3.9
	<b>Total 2008-09</b>	<b>638.90</b>			<b>638.90</b>		<b>83.06</b>

The Petitioner's inability to repay loan is due to non-recovery of dues from JSEB. Therefore the Petitioner requests the Honourable Commission to approve the interest charges for 2008-09.

**Table 18: Loan Outstanding and Interest Charges for 2008-09 (Rs.Crores)**

S.No	Name of the Institution	Balance at the beginning of the year	Loan received during the year	Repayment During the year	Balance O/S at the end of the year	Rate of Interest %	Interest for the year
1	Bihar Govt. Loan	608.90		-	608.90	13	79.16
2	Jharkhand Govt. Loan	30.00	-	-	30.00	13	3.9
	<b>Total 2008-09</b>	<b>657.90</b>	<b>-</b>	<b>-</b>	<b>665.90</b>		<b>83.06</b>

### 3.4 Depreciation

The Petitioner has calculated the depreciation on its fixed assets on historical capital cost of the asset. Depreciation is calculated annually as per the straight line method as per rates of depreciation prescribed in the schedule attached at Appendix-II of the JSERC (Terms and Conditions for Determination of Thermal Generation Tariff) Regulations, 2004, and depreciation cost has been arrived at accordingly.

**Table 19a: Depreciation for the Plant (Rs. Crores)**

S.No	Asset Classification	Asset value at the beginning of 2008-09	Rate of depreciation (%)	Depreciation Amount (Rs.Cr.)
1	Land	38.64	-	-
<b>Buildings</b>				
1	Factory Buildings	42.10	3.60	1.52
2	Residential Buildings	22.82	1.80	0.41
3	Non Residential Buildings	17.61	1.80	0.32
<b>Roads</b>				
1	Pucca Roads	17.77	1.80	0.32
2	Boundary Wall & Others	2.23	1.80	0.04
<b>Plant and Machinery</b>				
1	Plant & Machinery	1072.32	3.60	38.60
2	D.G. Set	2.16	6.00	0.13
3	Refrigeration	0.02	6.00	0.001
4	Internal Wiring	0.00	6.00	0.00
5	Overhead line	48.91	3.60	1.76
6	Hydraulic works	79.24	1.80	1.43
7	Tools and Tackles	0.41	3.60	1.48
8	Miscellaneous Equipment	0.09	6.00	0.005
9	Air Conditioners	0.33	18.00	0.06
10	Dozers	2.82	18.00	0.51
11	Computers	0.27	6.00	0.02
12	Furniture and Fixtures	0.46	6.00	0.03
13	Office equipment	0.16	6.00	0.01
<b>Total</b>		<b>1207.19</b>		<b>45.16</b>

As per the JSERC regulations, the residual life of an asset is considered as 10% and depreciation is allowed upto a maximum of 90% of the historical capital cost of the asset. Therefore, depreciation is not calculated on the assets where the cumulative depreciation has reached 90% of the historical cost of such assets.

**Table 19 b : Depreciation for Head Office (Rs. Crores)**

S.No	Asset Classification	Asset value at the beginning of 2008-09	Rate of depreciation (%)	Depreciation Amount (Rs.Cr.)
1.	Furniture & Fixtures	0.39	6.00	0.02
2.	Close Circuit Camera	0.06	6.00	0.0035

3.	Photocopy Machine	0.04	6.00	0.0023
4.	Refrigerator	0.064	6.00	0.004
5.	Miscellaneous Equipment	0.06	6.00	0.0035
6.	Telephone & Mobile Sets	0.076	6.00	0.0046
7.	EPBX System	0.06	6.00	0.0034
8.	Fax Machine	0.006	6.00	0.0004
9.	Typewriter	0.005	6.00	0.0003
10.	Television	0.001	6.00	0.0011
11.	Computer & Accessories	0.16	6.00	0.0097
12.	Generator	0.025	6.00	0.0015
13.	Air Conditioner & Coolers	0.17	18.00	0.03
14.	Car	0.14	18.00	0.026
15.	Cycle	0.00	6.00	0.00
16.	V.Set	0.005	6.00	0.00
17.	Capital Work in Progress	0.52	-	-
<b>Total</b>		<b>1.74</b>		<b>0.11</b>

**Table 19 c : Depreciation on Additional Capitalization (Rs. Crores)**

S.No	Asset Classification	Asset value at the beginning of 2008-09	Rate of depreciation (%)	Depreciation Amount (Rs.Cr.)
1.	Plant & Machinery	0.00	0.00	0.00
2.	New EPABX	0.00	0.00	0.00
3.	New Dozer	0.00	0.00	0.00
4.	Air Compressor for TH	0.00	0.00	0.00
5.	New Engine for Dozer	0.00	0.00	0.00
6.	Pay Loader	0.00	0.00	0.00
7.	Electronic Weigh Bridge	0.04	0.00	0.00
8.	Airconditioner	0.01	0.00	0.00
9.	Air Compressor for CHP	0.00	0.00	0.00
10.	Lift	0.00	0.00	0.00
11.	High Mast towers	0.00	0.00	0.00
12.	Furniture & Fixtures	0.09	0.01	0.01
13.	Computer & other office equip	0.02	0.00	0.00
14.	Office Equipment	0.08	0.00	0.00
15.	Land	0.00	0.00	0.00
16.	Ambassdor car/Jeep	0.00	0.00	0.00

17.	Mobile Sets	0.00	0.00	0.00
18.	Tools & Tackles	0.00	0.00	0.00
19.	Miscellaneous Equipment	0.00	0.00	0.00
20.	V-Sat	0.00	0.00	0.00
<b>Total</b>		<b>0.24</b>		0.02

**Table 19: Total Depreciation**

S.No	Item	Depreciation Amount (Rs.Cr.)
1.	Deprecaion for Plant	45.17
2.	Depreciation for HO	0.11
3.	Depreciation for Additional Capitalization	0.00
<b>Total</b>		<b>45.28</b>

It is requested that the Honourable Commission may kindly approve the depreciation at Rs. 45.28 crores for the year 2008-09.

### 3.5 Operation and Maintenance (O&M) Expenses

The O&M expenses include expenditure incurred in the operation and maintenance of the generating station, including employee cost, repairs and maintenance, consumption of stores and spares, water charges, ash disposal, pollution control cess, insurance and other administrative and general expenses of the Petitioner corporate office at Ranchi. The maintenance expenditure has increased substantially due to the age of the plant and numerous outages experienced. In the previous tariff order for FY 2007-08 the Honourable Commission had approved the normative O&M expenses as per the JSERC (Terms and Conditions for Determination of Thermal Generation Tariff) Regulations, 2004 for plants set prior to 01.04.2004 that is 2.5% of the capital cost escalated at 6% per annum from the year of commissioning and also an amount of Rs.9.23 crores on account of overhaul of unit 1. This year due to higher R&M costs the petitioner has incurred expense on account of O&M of Rs.84.12 Crores.

**Table 20: O&M Expenses**

Item	(Rs. Crores)
Employee Cost	15.32
A&G Expenses	10.59

R&M	11.26
O&M including Capital Expenditure	46.85
Total	84.12

The major components of the O&M expenses have been explained below:

**a) Employee cost:** The actual employee cost for FY 2007-08 was Rs.13.27 crores. The employee cost increases continuously on account of inflation, increment in salaries and wages, honorarium/incentives and increased demand for trained manpower on account of increased development in infrastructure sectors. For the year 2008-09 the employee cost is at Rs. 15.12 Crores. Additional Rs. 20 Lakhs has been made on the account of Fringe Benefit Tax on the necessary employee expenses. This has been added in the employee cost hence total employee cost is Rs.15.32 Crores.

**b) Repairs and Maintenance (R&M):** The Petitioner has to carry out regular repairs and maintenance of its generating plant to ensure maximum generation by optimum utilization of generating assets. The Petitioner undertakes preventive maintenance activities for all critical assets in addition to breakdown maintenance. The actual R&M costs in the year 2007-08 are Rs.4.30 crores. The Petitioner requests the Honourable Commission to approve Rs.11.25 crores for FY 2008-09 inclusive of R&M expenditure and other maintenance expenditures to keep its plant running. This is on account of civil works in the non-residential buildings and power house road and drains.

**c) Administrative and General (A&G) Expenses:** A&G expenditure represents cost of general administration such as rent, rates, taxes, legal expenses, professional fees, conveyance and traveling expenses, printing and stationery, bank charges, etc. In the year 2007-08 A&G expenses were Rs.6.88 Crores. For the FY 08-09 the Petitioner has incurred an expense of Rs.10.58 Crores.

**d) O&M Expenses:** The petitioner has incurred an amount of Rs. 8.98 Crores on account of Annual Maintenance Contract and Other Operation and Maintenance Contract.

**e) Capital Maintenance:** The Petitioner had incurred Rs. 86.82 crores towards capital maintenance during the last 5 years period, that is 2002-03 to 2006-07, including towards spares. These charges are being treated as deferred revenue expenses and proposed to be charged to revenue account in 5 annual installments. The year wise details of capital

maintenance expenses and the amounts proposed to be charged to revenue account are detailed in the table below:

**Table 21: Year wise Capital Maintenance Expenditure (Rs. Lakhs)**

Year	Amount	Proposed to be charged to Revenue in 5 annual installments						
		2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09
2002-03	886.45	177.29	177.29	177.29	177.29	177.29		
2003-04	45.46	-	9.09	9.09	9.09	9.09	9.09	
2004-05	1209.48	-	-	241.90	241.90	241.90	241.90	241.9
2005-06	3267.00	-	-	-	653.40	653.40	653.40	653.4
2006-07	2856.29	-	-	-	-	571.26	571.26	571.26
2007-08	5519.20	-	-	-	-	-	1103.84	1103.84
<b>2008-09</b>	6134.86							1226.97
<b>Total</b>		<b>177.29</b>	<b>186.39</b>	<b>428.28</b>	<b>1081.68</b>	<b>1652.94</b>	<b>2579.49</b>	<b>3797.37</b>

The amount proposed to be charged during 2008-09 is Rs.37.97 crores.

### 3.6 Interest on Working Capital:

In accordance with clause (v) of Regulation 21 of the JSERC (Terms and Conditions for Determination of Thermal Generation Tariff) Regulations, 2004, working capital in case of coal based fired generation stations shall cover:

- Cost of coal for 1½ months for pithead generating stations and 2 months for non-pithead generating stations, corresponding to the target availability
- One month stock of secondary fuel oil
- O&M expenses for 1 month
- Maintenance spares @ 1% of plant and equipment cost as on 01.04.2004 or the date of commercial operation, whichever is later; and
- Receivables equivalent to 2 months of fixed and variable charges for sale of electricity calculated on target availability

The interest on working capital is estimated at Rs.15.75 crores for the year 2008-09 as detailed in the Table 22 below:

**Table 22: Interest on Working Capital (Rs. Lakhs)**

S.No	Particulars	2008-09
------	-------------	---------

1	Cost of Coal for 1½ months	2582.21
2	Secondary Fuel Oil for 1 month	201.08
3	Operation & Maintenance Expenses for 1 month	701.01
4	Maintenance Spares @ 1% of Plant and Equipment	1172
5	Receivables Equivalent to 2 Months of Fixed and Variable Charges	7899.82
6	Total Working Capital	12556.12
7	<b>Interest on Working Capital @ 12.5%</b>	<b>1569.51</b>

### 3.7 Return on Equity

For the last so many years, the Petitioner has been asking return on its initial equity contribution of Rs.100 Crores. The petitioner had also not asked any return on the additional capitalization during these years.

In the year 2007-08 the petitioner made the contract settlement and paid Rs.38 Crores to M/s BHEL Limited. This amount was a part of project cost but as this was not settled, the petitioner in the larger interest of consumer did not include the amount in project cost.

Petitioner has closed this contract and paid the required amount and hence now request Hon'ble Commission to admit this cost. Also Petitioner would like to request the Hon'ble Commission to treat the total amount as equity contribution as complete payment has been made through its reserves and also no return or interest has been charged earlier. Petitioner would also like to draw the point that its equity contribution is much lower than the capped percentage of 30% as investments made through its reserves has not been added in equity component.

Petitioner has also capitalized assets worth Rs. 0.24 Crores during the year, of which Rs.0.12 Crores has been capitalized in this year. Applying normative debt equity ratio of 70:30, an additional equity contribution of Rs. 0.036 Crores has been considered. The total equity contribution is Rs.138.036 Crores. Petitioner requests Hon'ble Commission to kindly approve the return of Rs.19.32 Crores as Return on equity for the FY 2008-09.

**Table 23: Return on Equity (Rs.Crores)**

Particular	Proposed for 2008-09 (Rs.Crores)
Equity	138.036
Return on Equity (%)	14%
Return on Equity	19.32

### 3.8 Income Tax

There is no assessable income for Income tax purpose and hence no tax on income is proposed for the year 2008-09.

### 3.9 Elements of Fixed Costs

The fixed costs for the year 2008-09 are summarized below:

**Table 24: Summary of Fixed Costs (Rs.Crores)**

<b>Particular</b>	<b>2008-09</b>
Interest on Loan	83.06
Depreciation	45.28
O&M Expenses	84.12
Interest on Working Capital	15.70
Return on Equity	19.32
Income Tax	-
<b>Total</b>	<b>247.48</b>

The proposed fixed charges of Rs.247.48Crores and expected net generation of 2037 MUs the Petitioner requests the Honourable Commission to kindly approve this.

## 4. Variable Charges

### 4.1 Coal Consumption

The generating unit uses coal from the collieries of Central Coalfields Ltd. (CCL). The coal is transported through road over a distance of about 34 to 49 kms. The completion of MGR system to transport coal is delayed and efforts are being made to complete this as early as possible. The Petitioner received Rs.8 crores from the Government of Jharkhand towards construction of MGR system in 2006-07.

In the tariff order for the year FY 2007-08 the Honourable Commission had allowed specific consumption of coal at 0.58 kg/kWh based on the normative heat rate of 2500 kcal/kWh. The normative levels are far from the ground situations experienced by most plants in India. The normative level of heat rate may be applicable for the stations operating at high level of efficiency and high plant load factor. As per CEA's Review of Performance of Thermal Power Stations (2006-07) average specific coal consumption for Eastern region as a whole it was 0.72 kg/kWh. However, the Honourable Commission approved only a normative specific consumption of coal of 0.56 kg/kWh. TTPS is incurring heavy loss due to low specific consumption allowed by the Honourable Commission.

The Tenughat Thermal Power Station is operating under various constraints.

- Momentary outages due to tripping of transmission lines.
- Outages due to other reasons.
- Backing down of the units under instructions of JESB due to lack of load.

Due to the number of tripping of transmission lines and lack of load the generating units are backed down resulting in frequent shutting down and start ups. This impacts the fuel and plant efficiency adversely. In FY 2008-09 Petitioner has registered a specific coal consumption of 0.715 kg/kWh and heat rate of 3075 kCal/kWh. The Petitioner requests the Honourable Commission to consider the actual heat rate observed by the Petitioner in its generation plant.

**Table 25: Specific Coal Consumption & Heat Rate for FY'09**

Year	Specific Coal Consumption (kg/kWh)	Heat Rate (kCal/kWh)
2008-09	0.715	3075

The transport of coal on a bumpy road in fully loaded trucks is resulting in loss of coal by spilling from the trucks. In addition, there is loss due to wind, evaporation of moisture, during rainy season the coal powder gets washed out. All these factors result in loss of coal in transport and storage. The coal is weighed at loading end and at receiving end, the difference accounts for loss in transit. The experience has shown that the loss accounts to about 0.3% of coal transported. TVNL requests the Honourable Commission to allow 0.3% of total coal transported towards transit loss in FY 2008-09.

#### 4.2 Specific Consumption of Oil

The specific consumption of secondary fuel (oil) during the last two years is given below:

**Table 26: Specific Oil Consumption**

Year	Specific Consumption (ml/kWh)
2006-07	2.31
2007-08	1.96
2008-09	2.78

The station authorities had brought down the oil consumption considerably during FY 2006-07 to 2.31 ml/kWh from the 6 – 14 ml/kWh levels experienced during FY 2000-01 to FY 2003-04. The norm of 2.0 ml/kWh may be workable for a station working efficiently. It may be difficult to limit the oil consumption to 2.0 ml for a station like TTPS with a numerous outages due to transmission line trippings, backing down of units, etc. For the FY 08, petitioner registered a specific oil consumption of 1.96 ml/kWh Though for FY 09, petitioner registered a specific oil consumption of 2.78 ml/kWh as unit I has also operated after repair.

#### 4.3 Fuel Prices and Costs

For the FY 09 the delivered cost of coal was Rs.1295.50 / MT The delivered cost of oil at the thermal station by the oil companies was Rs. 39045/kL during the year 2008-The cost of coal and oil consumption based on the actual prices for FY 2008-09 indicated above and the coal and consumption worked against the electricity generation results in an aggregate fuel cost of Rs.230.70 Crores for FY 2008-09 as detailed in the Table 27 below:

**Table 27: Variable Cost**

S.No	Item	Derivation	Unit	2008-09
1	Installed Capacity	IC	MW	420
	PLF	PLF	%	60.43%
	Generation	$A = IC * PLF * 8.76$	MU	2223
	Auxiliary Consumption	B	%	8.37%
	Net Generation	$C = A * (1 - B)$	MU	2037
2	Specific Coal Consumption	D	kg/kWh	0.715
	Total Coal Consumption	$E = A * D * 1000$	MT	1589745.3
	Total Coal Consumption including transit losses @ 0.3%	$E'' = E * 1.003$	MT	1594515
	Delivered Coal Price	F	Rs./MT	1295.50
	Total Coal Cost	$G = E * F$	Rs.lakhs	20656.94
3	Specific Oil Consumption	H	ml/kWh	2.78
	Total Oil Consumption	$I = A * H$	kl	6181
	Delivered Oil Price	J	Rs./kl	39045.00
	Total Oil Cost	$K = I * J$	Rs.lakhs	2413.41
4	Coal Cost per Unit	$L = G / C$	Rs./kWh	1.014
	Oil Cost per Unit	$M = K / C$	Rs./kWh	0.118
<b>5</b>	<b>Total Fuel Cost per unit</b>	<b><math>O = L + M</math></b>	<b>Rs./kWh</b>	<b>1.132</b>
	<b>Total Fuel Cost</b>	<b><math>N = G + K</math></b>	<b>Rs.lakhs</b>	<b>23070.35</b>

The proposed variable/energy charges of Rs.230.70 Crores and expected generation of 2037 MUs would result in a energy tariff charge of Rs.1.132/kWh for FY 2008-09. The Petitioner requests the Honourable Commission to kindly approve this.

## **5. Revenue Requirement**

### **5.1 Fixed Charges**

The aggregate fixed charges for the year amount to Rs.247.48 Crores. The Petitioner therefore requests the Honourable Commission to approve the fixed charges at Rs.247.48 Crores and fixed tariff charge at Rs.1.194 /kWh for the FY 2008-09 after accounting for non tariff income of Rs.4.195 Crores.

### **5.2 Variable/Energy Charges**

The aggregate variable/energy charges computed for the year amount to Rs. 230.70Crores resulting in energy tariff charge of Rs.1.132 /kWh. Petitioner therefore requests the Honourable Commission to approve the variable/energy charges at Rs. 230.70 Crores and energy tariff charge at Rs.1.132/kWh for the FY 2008-09.

### **5.3 Other Income**

The non-tariff income includes miscellaneous receipts such as penalties, rent received, interest on investments, sale of scrap etc. The non-tariff income is estimated at Rs.419.5 lakhs during the FY 2008-09

### **5.4 Revenue Requirement & Proposed Tariff**

The sum of fixed and energy costs gives the total revenue requirement of the company for the FY 2008-09. The revenue requirement less other income will be the revenue to be raised through tariff:

**Table 28: Revenue Requirement**

<b>Particular</b>	<b>(Rs. crores)</b>
Fixed Charges	247.48
Energy Charges	230.70
<b>Revenue Requirement</b>	<b>478.18</b>
Other Income	4.195
<b>Revenue to be raised through Tariff in FY 2007</b>	<b>473.99</b>

The Petitioner has estimated a revenue requirement through tariffs of Rs.473.99 Crores after adjusting for its non-tariff income and derived the following fixed and energy components of tariff:

**Table 29: Proposed Tariff Increase**

<b>Tariff Component</b>	<b>Rs./kWh</b>
Fixed Charges Proposed	1.194
Energy Charges Proposed	1.132
Tariff Proposed	2.327
Existing Tariff	2.05
<b>Increase in Tariff requested</b>	<b>0.277</b>

The Petitioner requests the Honourable Commission to approve the above modest Rs.0.28/kWh increase in its tariff.

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## **Annexures**

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## ANNEXURE I

### FORM –1: Summary Sheet

**Name of the Company:** Tenughat Vidyut Nigam Limited

**Name of the Station:** Tenughat Thermal Power Station

**Region:** Eastern, **State:** Jharkhand, **District:** Ranchi

Rs.Lakhs

S.No.	Particulars	Actuals				
		2004-05	2005-06	2006-07	2007-08	2008-09
1.1.	Depreciation (FORM-11)	4365.29	4368.96	4377.45	4388.05	<b>4528.03</b>
1.2	Interest on Loan (FORM-12)	8319.51	8313.18	8564.93	8670.93	<b>8305.68</b>
1.3	Return of Equity	1400	1400.00	1400.00	1400.00	<b>1932.00</b>
1.4	Advance against Depreciation (FORM-13)	-	-	-	-	-
1.5	Interest on Working Capital(FORM-14)	1087.34	1015.16299	1687.39	1518.77	<b>1569.51</b>
1.6	O & M Expenses (FORM-15)	5487.56	5816.82	6165.83	6535.78	<b>8412.12</b>
	<b>Total</b>	<b>20659.70</b>	<b>20914.12</b>	<b>22195.60</b>	<b>22513.53</b>	<b>24748.08</b>
	Less: Non Tariff Income	56.18	60.67	116.96	117.30	<b>419.5</b>
	<b>Fixed Charges to be recovered</b>	<b>20603.52</b>	<b>20853.45</b>	<b>22078.64</b>	<b>22396.23</b>	<b>24328.58</b>
2	<b>Calculation Of Rate of Energy Charge (Rs./Kwh)1</b>	1.128	2.55	1.02	1.08	<b>1.139</b>
2.1	Rate of Energy Charge from Primary Fuel(REC)P2	1.07	1.66	0.948	1.00	<b>1.021</b>
	Net Energy Export (in MU)	1092.61	1529	2715	1679	<b>2037</b>
2.2	Rate of Energy Charge from Secondary Fuel (REC)	0.058	0.89	0.073	0.080	<b>0.118</b>
2.3	Rate of Energy Charge ex-bus (REC) 3A, 3B, 3C					

1. Details of calculations, considering equity as per regulations, to be furnished

2. If multi-fuel is used simultaneously, give 2.1 in respect of every fuel individually

3A. The rate of energy charges shall be computed for open cycle operation and combined cycle operation separately incase of gas/liquid fuel fired plants.

3B. The total energy charge shall be worked out based on ex-bus energy scheduled to be sent out in case of plants covered by ABT, and ex-bus energy delivered sent out in case of plants not covered by ABT as the case may be.

3C. Any escalation in fuel cost to be considered for subsequent years or FPA to take care of the escalation.

\*Includes interest on GPF

**PETITIONER**

**FORM 2: Plant Characteristics**

**Name of the Company:** Tenughat Vidyut Nigam Limited

**Name of the Station:** Tenughat Thermal Power Station

**Basic characteristics of the plant:** Coal Based Plant with conventional steam generator

**Fuel type:** Coal

Details	Module number Or Unit number						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Rate capacity (MW)	210	210					
Date of synchronization	Apr. 94	Oct. 96					
Capacity at the date of synchronization	210	210					
Date of entry into commercial operation	Sept. 96	Sept. 97					
Date of stabilisation	Sept. 96	Sept. 97					
Capacity at the date of stabilization	210	210					
Has any performance test been performed	No	Yes					
If yes, capacity at test (MW)	-	210					
Type of cooling system for condenser <sup>3</sup>	Once through						
Type of Boiler Feed Pump <sup>4</sup>	Motor driven						
Type of cooling system for electric generator <sup>5</sup>	H <sub>2</sub> cooling	H <sub>2</sub> cooling					
Any other special feature <sup>6</sup>							

Has the station received any notice or shut down the power station or penalty imposed for violation of any environmental standard by the Central / State Statutory Authorities: NO

If yes, furnish full details: N.A.

1. Describe the basic characteristics of the plant e.g. in the case of a coal based plant whether it is a conventional steam generator or circulating fluidized bed combustion generator or sub-critical once through steam generator etc.
2. Coal or natural gas or naphtha or lignite etc.
3. Closed circuit cooling, once through cooling, sea cooling etc
4. Motor driven, Steam turbine driven etc.
5. Air cooled, water cooled, hydrogen cooled etc.
6. Any special feature such as merry-go-round, scrubbers etc. Specify all such features

**PETITIONER**

**FORM-3: Normative Parameters**

**Name of the Company:** Tenughat Vidyut Nigam Limited

**Name of the Station:** Tenughat Thermal Power Station

Particulars	(1)	Year Ending March As notified by JSERC		
		2006-07 (2)	2007-08 (3)	2008-09 (4)
Target Availability	%	80	80	80
Normative PLF	%	80	80	80
Auxiliary Consumption	%	9.0	9.0	9.0
Station Heat Rate	kCal/kWh	2500	2500	2500
Hours of Operaiton at Target Availability				
Hours of Operation at Target PLF Unit I / Unit II				
Specific Oil Consumption	ml/kWh	2.0	2.0	2.0
O & M charges (% of CC for plants less than 5 years old)	%	2.5%	2.5%	2.5%
Based on actuals for plants more than 5 years	%	3.72%	4.36%	4.36%
Coal Stock + Expense in months for Working Capital (WC)	MT	1.5	1.5	1.5
Oil stock in months for WC	KL	1	1	1
Spares stock for WC as % of Plant & Equipment	%	1	1	1
Receivables in Months for WC	Months	2	2	2
Rate of Return on Equity	%	14	14	14

CC - Capital Cost

WC - Working Capital

**PETITIONER**



PETITIONER

**FORM-7: Statement Giving Details of Project Specific Loans  
(As on COD)**

**Name of the Company:** Tenughat Vidyut Nigam Limited

**Name of the Station:** Tenughat Thermal Power Station

<b>Particulars (1)</b>	<b>Package 1 (2)</b>	<b>Package 2 (3)</b>	<b>Package 3 (4)</b>	<b>Package 4 (5)</b>	<b>Package 5 (6)</b>	<b>Package 6 (7)</b>
Source of Loan 2 1)	Govt. of Bihar					
2	P.F.C.					
Currency 3	Indian Re					
Amount of Loan	766.89 Cr					
Interest Type 4	Fixed					
Fixed Interest Rate, if applicable	13 %					
Base Rate, if Floating interest 5						
Margin, if Floating Interest 6						
Are there any Caps/Floor 7						
Moratorium Period 8	6 years on Govt. loan					
Moratorium effective from	01-4-88 on Govt. loan					
Repayment Period 9	21 years for Govt. loan					
Repayment Frequency 10	Yearly for Govt. loan					
	monthly for P.F.C. loan					
Base Exchange Rate 11						
Date of Base Exchange Rate						

PETITIONER

**FORM-9: Statement of Additional Capitalisation after COD****Name of the Company:** Tenughat Vidyut Nigam Limited**Name of the Station:** Tenughat Thermal Power Station

	Year	Work/Equipment added after COD (In Rs.)	Amount Capitalised/ Proposed to be capitalized (In Rs.)	Justification	Admitted cost
(1)	(2)	(3)	(4)	(5)	(6)
Closing	1997-98		15417600440		15417600440
1	1998-99	17931781	17931781		
2	1999-00	38254870	38254870		
3	2000-01	6114383	6114383		
4	2001-02	9339766	9339766		
5	2002-03	16997615	1431927		
6	2003-04	6393904	1561640		
7	2004-05	64498768	10773760		
8	2005-06	112743201	15607373		
9	2006-07	148892000	8853000		
10	2007-08	557650000	44900000		
11	2008-09	2406000	1203000		
	<b>Total</b>	<b>978,816,288</b>	<b>15,573,571,940</b>		<b>15,417,600,440</b>

1 In case the project has been completed and any tariff notification(s) has already been issued in the past by GOI, fill column 6 giving the cost as admitted for the purpose of tariff notification already issued by (Name of the authority) (Enclose copy of tariff order).

Note:

1. Fill the form in chronological order.

2. In case initial spares are purchased along with any equipment, then the cost of such spares should be indicated separately, e.g. Rotor - 50 Crs

Initial spares - 5 Crs

**PETITIONER**

**FORM-11: Statement of Depreciation**

**Name of the Company:** Tenughat Vidyut Nigam Limited

**Name of the Station:** Tenughat Thermal Power Station

Financial Year (Starting from COD)	Depreciation on Capital Cost as on COD (In Rs)	Depreciation on Additional Capitalisation		Details of FERV	
		Amount of Additional Capitalisation (In Rs.)	Depreciation Amount	Amount of FERV on which depreciation charged	Depreciation amount (In Rs.)
(1)	(2)	(3)	(4)	(5)	(6)
2004-05		10773760			
2005-06		15607373			
2006-07		8853000			
2007-08		44900000			
2008-09	452757000	69000	452826000		
	<b>Total</b>	<b>80,203,133</b>			

Note: Details of calculations to be furnished

**PETITIONER**

**FORM-12: Statement Showing Computation of Interest on Various Loans**

**Name of the Company:** Tenughat Vidyut Nigam Limited

**Name of the Station:** Tenughat Thermal Power Station

in Rs. Lakhs

Year	Particulars	Loan 1				Loan-2				Total	Total
		Opening Balance	Repayment	Closing Balance	Interest due	Opening Balance	Repayment	Closing Balance	Interest due	interest Due	Repayment
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Year 2009	Orginal Currency		0								
	Rs.	6088987030	0	6088987030	791568313.9	300000000	0	300000000	39000000	830568314	0
	Orginal Currency										
<b>Total</b>	<b>Rs.</b>	<b>60890</b>	<b>0</b>	<b>60890</b>	<b>7915.68</b>	<b>3000</b>	<b>0</b>	<b>3,000.00</b>	<b>390.00</b>	<b>8,305.68</b>	<b>0.00</b>

Govt. of Bihar: Rs.608.89 cr.  
Govt. of Jharkhand: Rs.30.00 cr.  
Total: 665.89 cr.

**PETITIONER**

**FORM-13: Statement of Advance Against Depreciation (AAD)**

**Name of the Company:** Tenughat Vidyut Nigam Limited

**Name of the Station:** Tenughat Thermal Power Station

(In Rs.)

Year	1/12 of the Original Scheduled Loan(s)	Originally Scheduled Repayment the Loan(s)	Min. of Col. (2) and (3)	Depreciation during the year	AAD1=(4) - (5)
(1)	(2)	(3)	(4)	(5)	(6)
0-1	639075000	1917656000	639075000	506306241	132768759
1-2	639075000	1204256000	639075000	506338750	132736250
2-3	639075000	731888000	639075000	506840406	132234594
3-4	639075000	568898000	568898000	506840406	62057594
4-5	50740833	545405000	50740833	436529000	-385788167
5-6	50740833	485405000	50740833	437687114	-386946281
6-7	50740833	485405000	50740833	437745000	-387004167
7-8	50740833	485405000	50740833	438805000	-388064167
8-9	50740833	485405000	50740833	452569000	-401828167
	<b>Total</b>		2536863833	3777091917	74009030

Note: 1 If the amount under the col (6) is negative, it will be shown as zero

(Rs. in Crores)

1. Loan received from Govt. of Bihar during the period from 87-88 to 98-99

708.89

Less: Loan transferred to Share Capital vide L.No.287 dt 4.3.92 of  
Energy Dept. Govt. of Bihar

100

608.89

2. Loan taken from M/s.PFC during the period from 88-89 to 91-92

158

(This loan has been completely repaid as on 31.03.2003)

766.89

**Note: Advance against Depreciation is not claimed since repayment is not made against State Government Loan.**

**PETITIONER**

**FORM-14: Statement of Calculation of Average Rate of Interest (CC) on Working Capital Loans**

**Name of the Company:** Tenughat Vidyut Nigam Limited

**Name of the Station:** Tenughat Thermal Power Station

		Year ending March
(1)	(2)	2008-09 (Actual) (6)
	<b>INTEREST ON WORKING CAPITAL</b>	
	Fuel Cost - 1 month	2582.21
	Fuel Stock - 1 or 1/2 month	201.08
	Oil stock - 1 month	701.01
	O & M expenses - 1 month	1172.00
	Spares 1 year = 40% of O & M Less 1/5th of initial capitalised spares for first 5 years	7899.82
	Receivables- 2 months	12556.12
	Total Working Capital (Rs. in lakh)	
	Working Capital Loan allowed	
	<b>Weighted Average Interest Rate (14%)/</b>	<b>1569.52</b>
	<b>INTEREST ON WORKING CAPITAL@12.5% (Rs cr)</b>	
SL.NO.	Source of Loan for Working Capital	
(1)	(2)	
a		
b		
	TOTAL	
	Weighted Average Rate of Interest	

**PETITIONER**

### FORM-15: Calculation of Operation and Maintenance Expenses

**Name of the Company:** Tenughat Vidyut Nigam Limited

**Name of the Station:** Tenughat Thermal Power Station

	Average 95-96 to 99-00 (1)	Base 1999-00 (7)	Base 2000-01 (8)	Base 2000-01 (9)	Tariff Period							
					2001-02 (10)	2002-03 (11)	2003-04 (12)	2004-05 (13)	2005-06 (14)	2006-07 (15)	2007-08 (17)	2008-09 (18)
<b>CASE I. O &amp; M data available for 1995-96 to 1999-2000</b>												
(Base O & M on the basis of actual data)												
A) Total O & M Expenses												
B) Abnormal O & expenses												
- On account of water charges												
- On account of other factors												
C) Calculation of Base O & M (A-B)	E	X=Ex(1.1)2	Xx 1.06	Xx (1.06)2	Xx (1.06)3	Xx (1.06)4	Xx(1.06)5	Xx(1.06)6	Xx(1.06)7	Xx(1.06)8	Xx(1.06)8	Xx(1.06)8
<b>CASE II: Recent Plants for which O &amp; M data for five year data for 1995-96 to 1999-2000 is not available and other new plants which come up during the tariff period</b>												
Year of Commissioning												
Calculation of Base O & M 3		Y	Yx 1.06	Yx(1.06)2	Yx (1.06)3	Yx (1.06)4	Yx (1.06)5	Yx (1.06)6	Yx (1.06)7	Yx (1.06)8	Yx (1.06)8	Yx (1.06)9
		4.1E+08	4.35E+08	460746478	488391267	517694742.6	548756427	581681813	616582722	653577685	692792346	

Notes:

1. Abnormal O & M expenses such as on account of sharp increase in water charges etc which are abnormal in nature and for which the utility shall file a separate petition

2. Base O & M(Y) = (0.025x Capital cost) escalated at the rate of 10 percent per annum after the year of commissioning to bring it to 1999-2000 level

For example if the capital cost of the plant commissioned in 1996-97 is Rs.100 crores then the base for 1999-2000 is computed as: Base O & M for 1999-2000 ('Y' in the format) = (0.025\*100)\* (1.10)3

Capital cost as on 31.03.1998 = 13555792566.49 - say 1355.8 Crores

Base O & M for 1999-2000 (in format) = (0.025x13555792566.49)x (1.10) 2 = 466382413

**PETITIONER**

**FORM-16: Calculation of Operation and Maintenance Expenses**

**Name of the Company:** Tenughat Vidyut Nigam Limited

**Name of the Station:** Tenughat Thermal Power Station

		<b>(Rs lakhs)</b>				
<b>(1)</b>	<b>(2)</b>	<b>(3)</b>	<b>2005-06</b>	<b>2006-07</b>	<b>2007-08</b>	<b>2008-09</b>
<b>(A)</b>	<b>Breakup of O&amp; M expenses</b>		<b>(4)</b>	<b>(5)</b>	<b>(6)</b>	<b>(7)</b>
1	Employee cost (a)		1004.99	1333	1326.8	1531.98
	--do-(b) Pension & Gratuity		72.39			
	-do-© Labour for O & M		604.38			
2	Repair and Maintenance		200.00	211.596	430.77	1125.61
3	Stores consumed					
4	Power Charges		1.56	1.98	9.74	16.65
5	Water Charges & Cess		2000.00	0.25	19.43	
6	Communicaiton/ Telephone expenses		5.14	11.1	11.68	23.07
7	Travelling expenses		6.60	9.23	11.48	22.70
8	Insurance		148.00	87.37	25.2	27.71
9	Others					26.93
10	Pollution Control ces		288.00	25	30	
11	Ash Disposal		58.17	166.09	131.04	
12	Rent, Rates and Taxes.		4.62	10.18	9.81	89.98
13	Security expenses		222.17	246.5	298.08	522.43
14	Professional expenses(Admn. Exp.)		8.26	5.59	13.71	6.81
15	Printing and Stationery		10.31	9.35	16	11.31
16	Corporate office expenes allocation		230.10			302.47
17	Other Expenses (Deferred Revenue Expenses, capital Maintenance etc)		1081.68	1652.94	2579.49	4704.57
18	Total ( 1 to 17)		6717.09	3770.176	4913.23	8412.12
	<b>LESS: RECOVERED (IF ANY)</b>					
	<b>NET Expenses</b>		6717.09	3770.176	4913.23	8412.12

**PETITIONER**

**FORM-17: Details /Information to be Submitted in respect of Fuel for Computation of Energy Charges**

**Name of the Company:** Tenughat Vidyut Nigam Limited

**Name of the Station:** Tenughat Thermal Power Station

Month	For preceeding 3rd Month						For preceeding 2nd Month					For preceeding 1st Month				
Grade of Coal	"C"	"D"	"E"	"F"	"G"	"C"	"D"	"E"	"F"	"G"	"C"	"D"	"E"	"F"	"G"	
Quantity of Coal / Lignite	(MMT)															
Amount charged by the coal Co.	(Rs.)															
Transportation by rail/ship/road	(Rs.)															
Weighted average GCV of coal/Lignite for a grade	(k. Cal/Kg)	4300														
Unit price corresponding to the grade of coal charged by the Coal Co.	Base Price	(Rs/MT)	1134.65													
	Any other chrg	(Rs/MT)														
	Royalty	(Rs/MT)														
	Cess or duty	(Rs/MT)														
	Sales Tax	(Rs/MT)														
Transportation by rail/ship/road	Transportation	(Rs/MT)	160.85													
	Total	(Rs/MT)	1295.50													
	Distance	(Km)	40													
	Amount	(Rs/Km/MT)														
	(Rs/MT)															

**Note:**

- Furnish copies of relevant coal/lignite price notifications or the fuel supply agreement, tariff rates of Railways or other transport authorities as applicable
- Similar details to be furnished for natural gas/ liquid fuel for CCGT station and secondary fuel oil for coal/lignite based thermal.

**PETITIONER**